8976 Wellington Road
Manassas, VA 20109

August 23, 2019

Jessica LaClair
New York State Department of Environmental Conservation
Division of Environmental Remediation
Remedial Bureau E, 12th Floor
625 Broadway
Albany, New York 12233-7014

Re: Work Plan for Subslab Depressurization Pilot Testing
Building 310 – South-Central Area
Former IBM East Fishkill Facility
Hopewell Junction, New York
NYSDEC Site No. 314054

Dear Ms. LaClair:

The enclosed document presents a work plan to evaluate the feasibility of subslab depressurization as a means of mitigating soil vapor intrusion beneath the south-central portion of Building 310 located at the former IBM East Fishkill Facility in Hopewell Junction, New York. Building 310 is currently owned by iPark East Fishkill I LLC.

If you have any questions, please contact me at (703) 257-2583.

Sincerely yours,
International Business Machines Corporation

Dean W. Chartrand
Program Manager
Corporate Environmental Affairs

Enclosure:

Cc:	Julia Kenney	NYSDOH	(w/enclosure via e-mail)
	Mike Buckley	iPark	(w/enclosure via e-mail)
	Carl Monheit	iPark	(w/enclosure via e-mail)
	Gary Marone	Global Foundries	(w/enclosure via e-mail)
	David Shea	Sanborn Head	(w/enclosure via e-mail)

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8976 Wellington Road
Manassas, VA 20109

August 23, 2019
File No. 2999.13

Re: Work Plan for Subslab Depressurization Pilot Testing
Building 310 – South-Central Area
Former IBM East Fishkill Facility
Hopewell Junction, New York
NYSDEC Site No. 314054

Dear Mr. Chartrand:

This letter presents a work plan to evaluate the feasibility of subslab depressurization (SSD) as a means of mitigating soil vapor intrusion beneath the south-central portion of Building 310 (B310) at the former IBM East Fishkill facility located in Hopewell Junction, New York (the site). B310 is currently owned by iPark East Fishkill I LLC, and its location is shown on Figure 1.

The south-central portion of B310 that is the subject of this work plan is defined as the area north of the Model Shop tenant space and south of the current B310 SSD system area of influence. The work described herein will be conducted in general accordance with IBM's RCRA Facility Investigation (RFI) Work Plan[1], which was approved by the New York State Department of Environmental Conservation (NYSDEC) and the Department of Health (NYSDOH) (the Departments). We understand this work plan will be submitted to the Departments for review and comment prior to IBM initiating the work.

BACKGROUND

B310 is equipped with an SSD system that serves the central portion of the building, as shown on Figure 2. The SSD system, combined with heating, ventilating, and air conditioning (HVAC) system operations, was successful in mitigating soil vapor intrusion and maintaining acceptable indoor air quality (IAQ) in B310, as documented in previous reports[2,3] to the Departments.

In late 2018, iPark completed construction of a new wall to partition off the Model Shop area from the remaining areas of B310, as shown on Figure 2. The partition wall extends from the floor to the roof deck, effectively isolating the Model Shop from the portion of B310 subject to this work plan. In November 2018, IBM performed IAQ testing within the

1 *RCRA Facility Investigation Work Plan, VOC Source Assessment, IBM East Fishkill Facility, Hopewell Junction, New York*, Sanborn, Head Engineering, P.C. and IBM Corporation, June 15, 2009.
2 *Performance Monitoring and Confirmatory Sampling Results, Building 310 VOC Source Assessment, IBM East Fishkill Facility, Hopewell Junction, NY*, Sanborn, Head Engineering, P.C., May 2013.
3 *Report of HVAC Adjustment and Indoor Air Quality Testing – Building 310*, Sanborn, Head Engineering P.C. and IBM Corporation, July 22, 2016.

Model Shop area to assess whether the changes to building conditions affected the potential for soil vapor intrusion and resulting IAQ. The results of the IAQ testing were submitted to the Departments in a letter dated January 23, 2019[4].

As documented in the January 2019 letter, indoor air concentrations of tetrachloroethene (PCE) and trichloroethene (TCE) in the Model Shop area had increased since the previous round of IAQ sampling conducted in April 2016 prior to the construction of the partition wall and other changes to the building. Based on these results, and follow-up HVAC adjustment testing, IBM performed subslab vapor sampling and SSD pilot testing within the Model Shop area in May and June 2019 to evaluate the feasibility of SSD as a means of mitigating soil vapor intrusion in that area[5]. The results, which suggest that SSD is likely feasible for soil vapor intrusion mitigation in the Model Shop area, will be presented in a subsequent report to the Departments.

The area between the Model Shop and the existing SSD system is currently vacant and has undergone major renovations, including removal of almost all interior walls and partitions and shut-down of the HVAC units that serve the area. Because iPark intends to re-occupy this space in the future, IBM has preemptively elected to perform additional subslab vapor sampling and SSD pilot testing while the area is readily accessible.

WORK PLAN

The objectives of this work plan are to: 1) further assess the concentrations of volatile organic compounds (VOCs) in subslab soil vapor beneath the south-central portion of B310 where limited data currently exists; and 2) assess whether SSD is a feasible approach to mitigate soil vapor intrusion. To meet these objectives, the following work scope is planned:

Subslab Vapor Monitoring and Extraction Port Installation

Approximately 11 subslab vapor (SSV) monitoring ports and 6 subslab vapor extraction ports (EPs) will be installed at the approximate locations shown on Figure 3. The proposed locations will be cleared for utilities and asbestos-containing floor tile (if floor tile is present) by a licensed asbestos handler prior to installation. Subslab ports will be installed in general accordance with the 2006 NYSDOH Vapor Intrusion Guidance. Refer to Figure 4 for construction details of SSV monitoring and extraction ports. Given that the ports will be constructed through the concrete floor slab using grout sealants and gas-tight hardware, approximately 10% of locations will be leak-tested following installation to verify the integrity of the construction.

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[4] *Indoor Air Quality Testing Results, Building 310 – Model Shop Tenant Space, Former IBM East Fishkill Facility, Hopewell Junction, New York*, Sanborn, Head Engineering, P.C. and IBM Corporation, January 23, 2019.

[5] Work was conducted in accordance with the *Work Plan for Subslab Depressurization Pilot Testing, Building 310 – Model Shop Area, Former IBM East Fishkill Facility, Hopewell Junction, New York,* Sanborn, Head Engineering, P.C. and IBM Corporation, dated April 18, 2019, which was approved by the Departments in a letter dated May 15, 2019.

The SSV ports will be installed using a hammer drill, and an industrial vacuum equipped with a HEPA-filter will be used to collect concrete chips and dust generated during the installation. The EPs will be installed using a concrete coring drill equipped with a water delivery system which will be operated for dust suppression and bit cooling during coring. A wet/dry vacuum will be used to collect excess water and concrete cuttings as they are generated.

The breathing zone will be screened for total VOCs using a photoionization detector (PID) during concrete drilling, coring, and port installation. If sustained PID readings exceed the action levels in Sanborn Head's site-specific health and safety plan, the slab will be temporarily covered using plastic sheeting or similar, and work will be discontinued until the situation can be re-assessed. Additional engineering controls, such as the use of exhaust fans, may be implemented as needed.

Excess soil generated during extraction port installation will be containerized and sampled for waste characterization purposes to assess whether the soil can remain on-site, or if it needs to be managed and transported off-site for appropriate treatment or disposal.

Subslab Vapor Sampling

Existing and proposed subslab vapor monitoring ports in the south-central portion of B310 will be sampled using SUMMA® canisters equipped with 1-hour flow controllers and submitted to a laboratory certified by the NYSDOH Environmental Laboratory Approval Program (ELAP) for analysis in accordance with USEPA Method TO-15 for the analytes listed in IBM's RFI Work Plan. One blind duplicate subslab vapor sample will be collected for quality control/quality assurance.

Subslab Depressurization Pilot Testing

Individual SSD pilot tests will be performed on each of the proposed subslab EPs using a regenerative vacuum blower mounted on a portable cart. Testing of multiple EPs simultaneously may also be conducted depending on the results of individual testing.

During each test, the applied vacuum, subslab vapor extraction flowrate, and total VOC screening values measured with a PID will be monitored and recorded periodically. The cross-slab differential pressure response will be monitored at nearby subslab vapor monitoring ports using digital manometers for each test.

CLOSING

The above work is planned to commence approximately two to three weeks following approval of this work plan by the Departments, and is expected to be completed within one to two months thereafter. A report documenting the results will be submitted approximately six to eight weeks following completion of the work.

Very truly yours,
SANBORN, HEAD ENGINEERING, P.C.

David Shea, P.E.
Principal Engineer

Joseph W. Corsello
Project Manager

Encl. Figure 1 – B310 Location Plan
Figure 2 – Building 310 Layout
Figure 3 – Proposed Exploration Location Plan
Figures 4A and 4B – SSV Monitoring and Extraction Port Construction Details

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FIGURES

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Figure 1

B310 Location Plan

Subslab Depressurization Pilot Testing Work Plan

Former IBM East Fishkill Facility
Hopewell Junction, New York

Drawn By: E. Wright
Designed By: J. Sanborn
Reviewed By: D. Shea
Project No: 2999.06
Date: August 2019

Figure Narrative

This figure shows the buildings at the former IBM East Fishkill facility. Building B335 is highlighted.

Legend

— - - — Property Line

Unlabeled features include wastewater treatment tanks, pump houses, trailers, and other structures and features not intended for human occupancy

B320B Indicates building number

Indicates the location of B310

GlobalFoundries
Lot 1 GlobalFoundries U.S 2 LLC
Lot 5 GlobalFoundries U.S 2 LLC

i.Park
Lot 2 i.Park East Fishkill I LLC
Lot 3 i.Park East Fishkill I LLC
Lot 4 i.Park East Fishkill LLC
Lot 6 i.Park East Fishkill LLC
Lot 7 i.Park East Fishkill LLC
Lot 8 i.Park East Fishkill LLC

- Subdivision (GlobalFoundries U.S. 2 LLC)
- Subdivision (i.Park East Fishkill LLC)
- Subdivision (i.Park East Fishkill I LLC)

N W E S

200' 100' 0 200' 400' Feet

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Figure 2

Building 310 Layout

Subslab Depressurization Pilot Testing
Work Plan
Building 310

Former IBM East Fishkill Facility
Hopewell Junction, New York

Drawn By:	E. Wright
Designed By:	J. Corsello
Reviewed By:	J. Sanborn
Project No:	2999.13
Date:	August 2019

Figure Narrative

This figure shows the extent of the proposed subslab depressurization (SSD) pilot testing area located in the south-central portion of Building 310. Note that most of the interior walls and rooms in this area have been demolished and the building cleared. The building layout and HVAC zones in this area reflect the pre-demolition conditions.

This figure also shows the location of the Model Shop area to the south, and the layout of the existing SSD system to the north, including the approximate area of subslab vapor vacuum influence. The presumed area of vacuum influence represents the inferred apparent vacuum conditions based on subslab differential pressure readings collected on December 18, 2018.

Legend

- Subslab vapor extraction port
- HVAC Zone
- Occupied areas
- Overhead vacuum/discharge piping for existing SSD system
- Inferred area of vacuum influence for existing SSD system
- Extent of proposed SSD pilot testing

Feet
40 20 0 40 80

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Figure 3

Proposed Exploration Location Plan

Subslab Depressurization Pilot Testing
Work Plan
Building 310

Former IBM East Fishkill Facility
Hopewell Junction, New York

Drawn By:	E. Wright
Designed By:	J. Corsello
Reviewed By:	J. Sanborn
Project No:	2999.13
Date:	August 2019

Figure Narrative

This figure shows the locations of proposed subslab vapor monitoring and extraction ports. Actual locations may change based on the presence of subsurface utilities and other building conditions. The locations of subsurface drains and troughs are based on utility plans from the facility and the locations are approximate.

Legend

- Existing subslab vapor monitoring port
- Existing subslab vapor extraction port
- Proposed subslab vapor monitoring port
- Proposed subslab vapor extraction port
- Approximate location of subslab acid waste drains and cleanouts
- Trough associated with former processes
- Occupied areas
- Inferred area of vacuum influence for existing SSD system

B310

Approximate Location of New Partitioning Wall (Floor to Roof) Separating Model Shop Area

Model Shop Area

15 7.5 0 15 30 Feet

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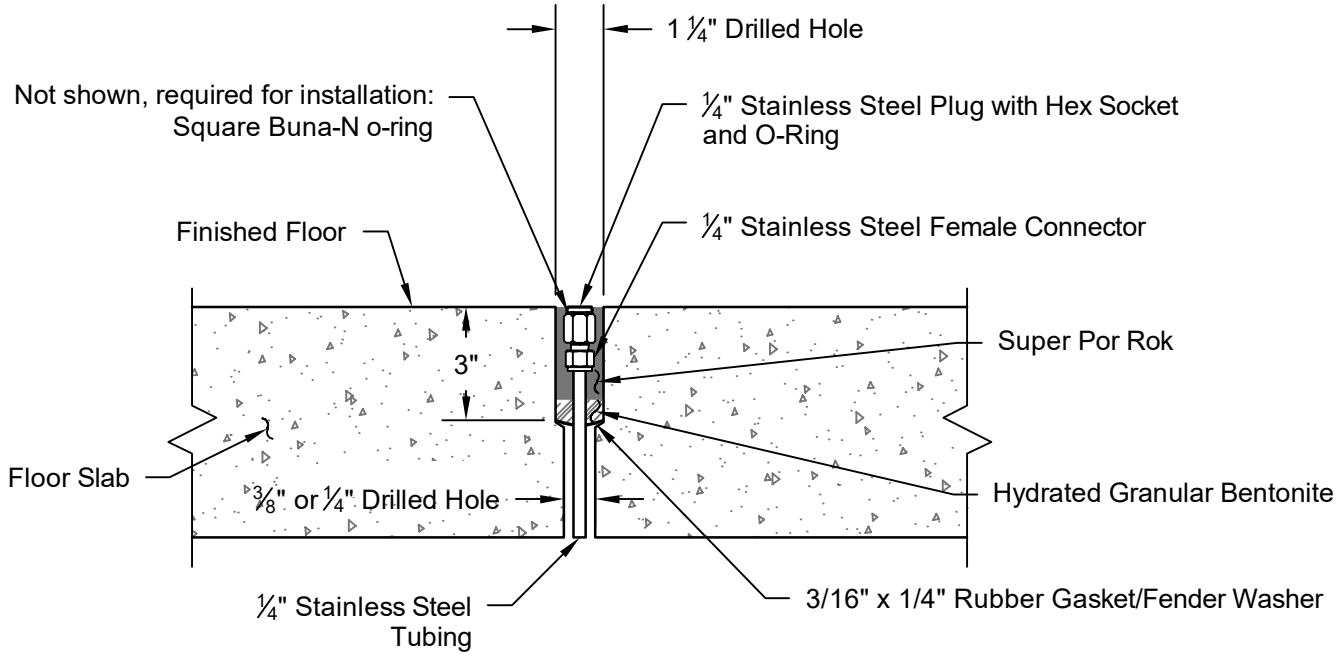
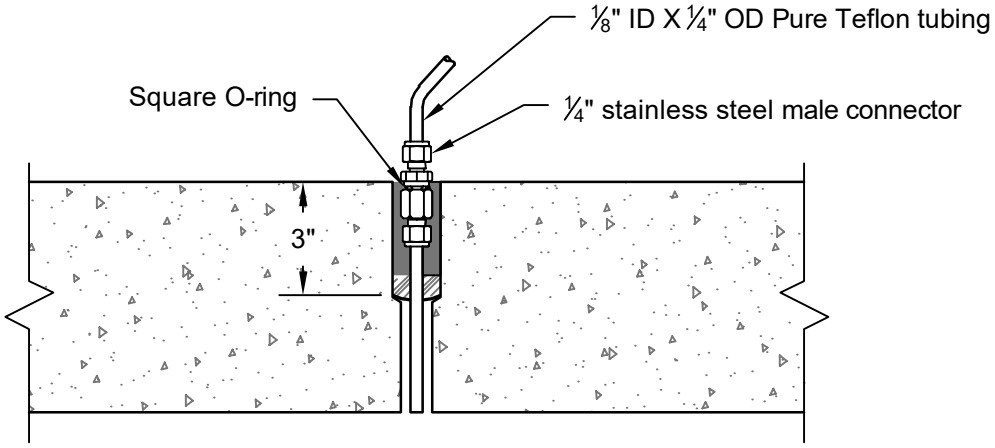


1 Subslab Sampling/Monitoring Port

Not To Scale



2 Subslab Vapor Sampling Configuration

Not To Scale

Drawn By: E. Wright
Designed By: J. Corsello
Reviewed By: J. Sanborn
Project No: 2999.13
Date: August 2019

Scale As Noted

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Figure 4A

Subslab Vapor Sampling/ Monitoring Port Construction Details

Building 310

Former IBM East Fishkill Facility
Hopewell Junction, New York

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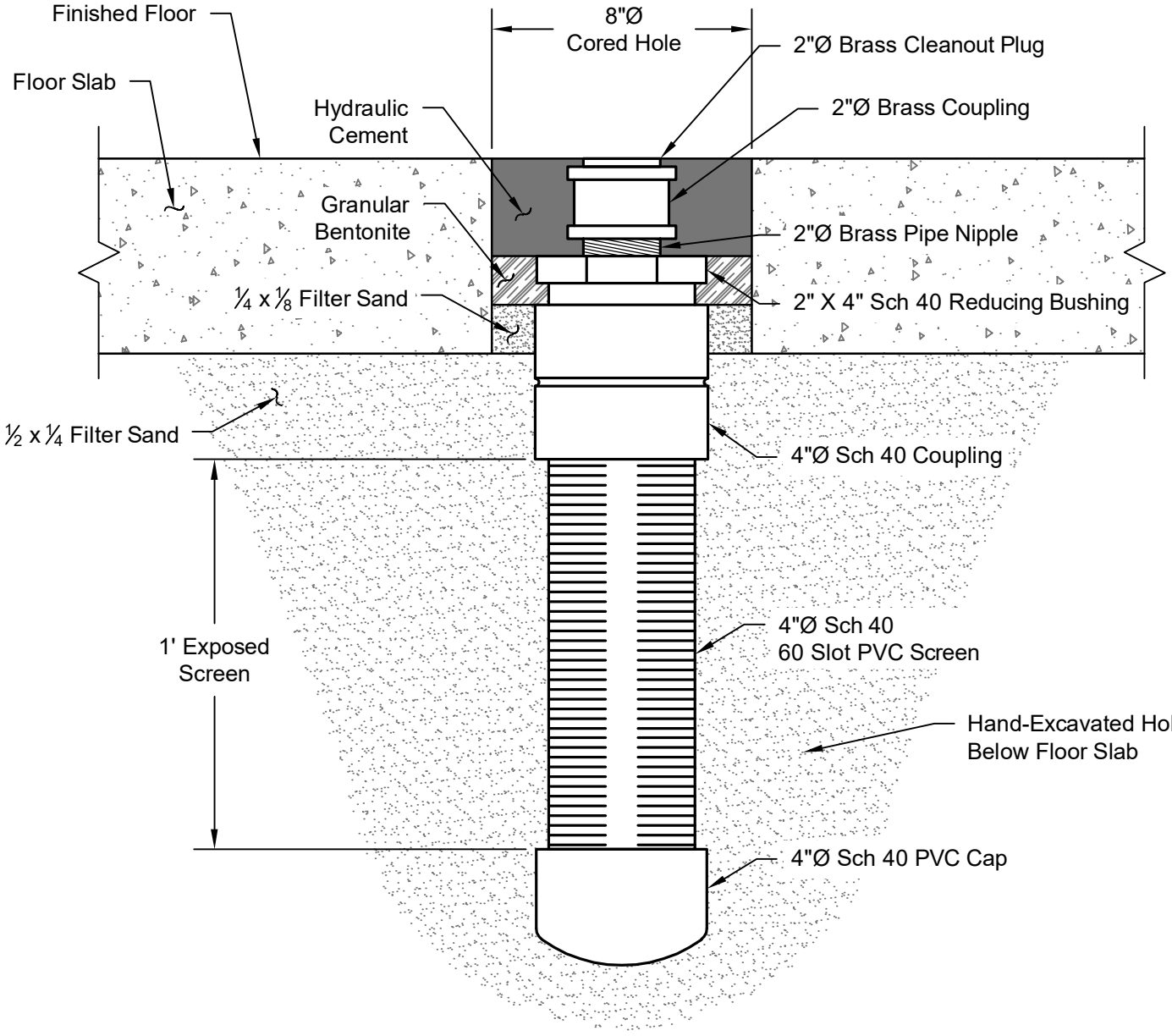

Subslab Vapor Extraction Test Port

1

Not To Scale

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Designed By: J. Corsello
Reviewed By: J. Sanborn
Project No: 2999.13
Date: August 2019

Scale As Noted

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Figure 4B

Subslab Vapor Extraction Port Construction Detail

Building 310

Former IBM East Fishkill Facility
Hopewell Junction, New York