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DRILLING WORK PLAN

BUILDING 320B

Former IBM East Fishkill Facility
Hopewell Junction, New York

Prepared for Whiting-Turner Contracting Corporation
File No. 4757.01
April 2020

SANBORN HEAD ENGINEERING
Building Trust. Engineering Success.

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

April 20, 2020
File No. 4757.01

Re: Drilling Work Plan
Global Foundries Building 320B
Former IBM East Fishkill Facility
Hopewell Junction, New York
NYSDEC Site No. 314054

Dear Ms. LaClair:

On behalf of the Whiting-Turner Contracting Corporation under contract to Global Foundries (Global), Sanborn Head Engineering, P.C. is submitting this drilling work plan as part of the proposed foundation construction project to be completed in the southwest portion of Building 320B (B320B) at the former IBM East Fishkill property. B320B is owned by Global, and the proposed drilling work is intended to support the geotechnical engineering analysis and soil management for the building modification project further described below. The location of B320B and the property subdivision lines are shown on Figure 1.

Jacobs, the lead engineer for the project under contract to Whiting-Turner, has retained Chazen Engineering Consultants (Chazen) to complete the drilling and geotechnical engineering for the new foundation system. Chazen will retain a drilling subcontractor to complete the soil borings. Sanborn Head will be responsible for implementing the Community Air Monitoring Program (CAMP). Chazen and their drilling subcontractor are responsible for implementing controls to maintain appropriate indoor and outdoor air quality and to make adjustments if needed based on CAMP results.

The purpose of this work plan is to document the steps that will be taken by Global to maintain compliance with the requirements of the site's Draft Interim Site Management Plan[1] (SMP), specifically the Intrusive Activities Work Plan[2] (IAWP) included as Appendix C to the Interim SMP. This work plan also serves as notification to the New York State Department of Environmental Conservation (NYSDEC) of the intrusive activities, as required by Section 1.0 of the IAWP. As required by the IAWP, this notification includes the following components:

[1] "Draft Interim Site Management Plan, Hudson Valley Research Park (Former IBM East Fishkill Facility), 2070 Route 52, Hopewell Junction, NY", dated August 2017.
[2] "Appendix C, Draft Intrusive Activities Work Plan, Hudson Valley Research Park (Former IBM East Fishkill Facility), 2070 Route 52, Hopewell Junction, NY", dated August 2017.

1. A detailed description of the work to be performed;
2. A summary of environmental conditions anticipated in the work areas;
3. A schedule for the work;
4. A summary of the applicable components of the IAWP;
5. A statement that the work will be performed in compliance with this IAWP and 29 CFR 1910.120;
6. Contractor's health and safety plan (HASP);
7. Identification of disposal facilities for potential waste streams; and
8. Identification of sources of anticipated backfill, along with all required chemical testing results.

Each of these components is described below.

1. A detailed description of the work to be performed

B320B is located at the northern edge of the B322 Groundwater Area of Concern (AOC) (Operable Unit 7 [OU7]), and is in the western portion of IBM's Area A Property Use Restriction Area, as shown on Sheet UR1 of the IAWP.

The north-central and eastern portions of Building 320B house clean room manufacturing areas and labs. The western portion of the building is a former manufacturing area and is currently vacant. The interior and exterior areas of the building where drilling work is proposed are located within and just outside the south-central portion of the building, as shown on Figure 1. The interior drilling area is a rarely occupied contractor equipment/materials storage area.

Global is proposing to construct a new penthouse over a portion of B320B to house mechanical equipment associated with expanded semiconductor manufacturing operations. The project will involve intrusive work activities to be completed below the floor slab and exterior pavement, including improvements to the existing foundation system, installation of a new loading dock, and utility relocation.

This work plan covers the subsurface drilling program being conducted to collect data for the geotechnical engineering analysis and soil management procedures during construction. The approximate locations of the soil borings are shown on Figure 2. Clean rooms are located to the north and east of the interior work area, the vacant former manufacturing area is located to its west, and a hallway and the location of the exterior soil borings are located to its south. The interior work area itself is a contractor staging/storage area that will be made inaccessible for that purpose during the work.

The drilling subcontractor will advance 8 borings (5 interior and 3 exterior) using hollow stem auger drilling methods and a split spoon sampler at the approximate locations shown on Figure 2. Interior borings will be advanced to a depth of approximately 20 feet below ground surface (ft bgs), or bedrock refusal. Exterior borings will be advanced to a depth of 40 ft bgs, or bedrock refusal. The soil will be visually classified and logged every five feet, and the soil head space will be screened for the potential presence of volatile organic

compounds (VOCs) using a photoionization detector (PID). A five-foot rock core may be collected at one of the exterior drilling locations if bedrock is encountered at a depth of less than 40 ft bgs. A core drill with a 6-inch-diameter diamond bit will be used to core through the concrete at each interior location.

If groundwater is encountered in the exterior borings, a temporary, 1-inch-diameter piezometer will be installed in one of the borings that is not cored. The purpose of the piezometer is to obtain a depth to water measurement. The temporary piezometer will be removed and backfilled prior to the drilling subcontractor demobilizing from the site.

In accordance with Section 5.1 of the IAWP, one representative composite sample will be collected per 250 cubic yards (CY) of soil to be excavated in a future phase of work to assess whether the soil can be reused on-site. In addition, if soil data from the first 1,000 CY of soil indicate compliance with the industrial or commercial use soil cleanup objectives (SCOs), a reduced sampling frequency may be requested.

We understand that the interior excavation will be approximately 12,000 square feet (SF) and 5-feet-deep, and the exterior excavation will be approximately 3,500 SF and 5-feet-deep. Therefore, assuming 20% soil volume expansion upon excavation, the interior and exterior soil excavations will generate approximately 2,700 CY and 800 CY of soil, respectively, for a total of approximately 3,500 CY of soil. Two chemical characterization soil samples per boring location (total of 16 samples) will be collected from depths of less than 5 ft bgs. One soil sample from each soil boring (8 samples) will be submitted for analysis initially, and the second sample from each boring will be placed on hold at the laboratory. This results in a sampling frequency of 1 sample / 250 CY for the first 1,000 CY, and 1 sample / 625 CY for the remaining 2,500 CY of soil.

If a soil sample exceeds industrial or commercial use SCOs, the sample placed on hold from that location will be submitted for analysis to further refine the volume of soil that cannot remain on-site. If there are no exceedances in the initial samples, then no additional samples will be submitted for laboratory analysis and the soil will remain on-site for reuse.

In addition, two soil samples (1 interior and 1 exterior) will be collected from a depth of between 5 and 7 ft bgs as a contingency in case the soil excavation extends deeper than 5 ft bgs. Refer to Section 4 for a description of soil sample depths and analytical methods.

A utility scan at the proposed soil boring locations will be completed prior to drilling operations. Excess soil generated during the drilling program will be used to backfill the boring from which it was generated. Disposable soil sampling materials will be bagged and disposed of as solid waste. Additional soil and water management procedures are described under Section 4 of this work plan. Borings will be patched with non-shrink grout (interior) or cold-patch asphalt (exterior) upon completion.

2. A summary of environmental conditions anticipated in the work areas

Historical Data

Previous environmental sampling work completed in the proposed work area of B320B included the collection of 8-hour indoor air samples by the former building owner, IBM, in 2010 and 2012 as part of its Vapor Intrusion RCRA Facility Investigation[3] (VI RFI). In that sampling, trichloroethene (TCE) and vinyl chloride (VC) were detected in indoor air at concentrations of up to 0.76 and 0.43 µg/m^3, respectively. Tetrachloroethene (PCE) was not detected above the laboratory reporting limit. Other compounds detected and their highest concentrations included CFC 11 (5.0 µg/m^3), CFC 12 (3.0 µg/m^3), CFC 113 (12 µg/m^3), toluene (7.3 µg/m^3) m,p-xylene (11 µg/m^3), o-xylene (2.2 µg/m^3), ethylbenzene (3.8 µg/m^3), carbon tetrachloride (0.72 µg/m^3), and acetone (55 µg/m^3).

Low levels of PCE, TCE, cis-1,2-dichloroethene (DCE), and CFC 113 (i.e., less than 5 µg/L each) were detected in overburden groundwater just to the south of B320B in 2018.[4]

Subslab Vapor Sampling

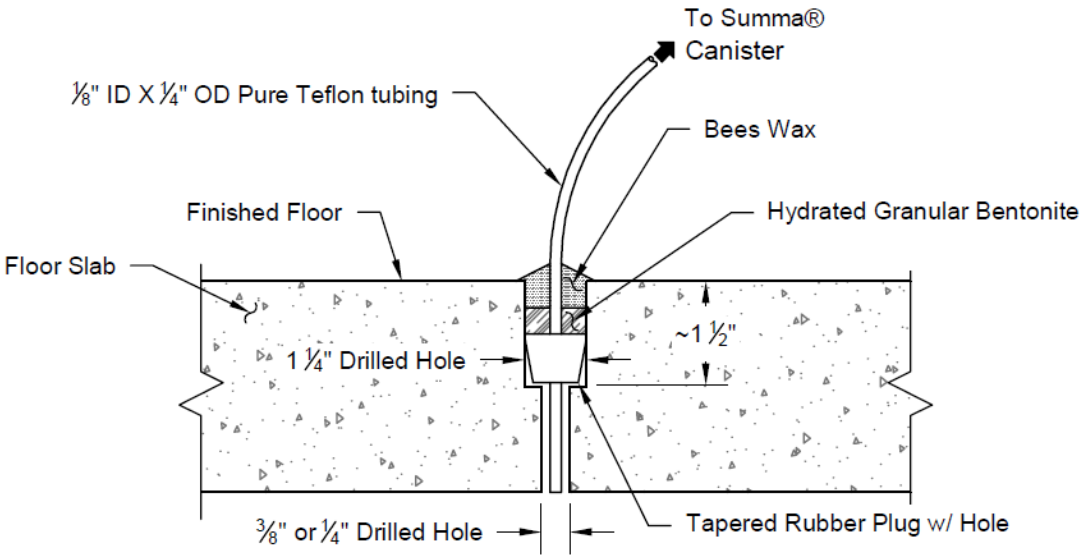
Sanborn Head collected four subslab vapor (SSV) screening samples from within the proposed interior work area on February 25, 2020 to assess the types of engineering controls that may be implemented during slab removal and soil excavation work to be protective of workers and building occupants. The results are described below and have been incorporated into the procedures described in the applicable sections of this work plan.

The temporary SSV port locations were scanned for utilities by Underground Surveying of Brookfield, CT prior to installation. The temporary SSV ports were installed using a hammer drill, and an industrial vacuum equipped with a HEPA-filter was used to collect concrete chips and dust generated during the installation. The SSV ports consisted of ¼-inch-diameter Teflon tubing and were sealed at the slab surface with a layer of hydrated bentonite and beeswax. Refer to Exhibit 2.1 for construction details of the temporary SSV ports.

[3] "Work Plan, RCRA Facility Investigation (RFI), VOC Source Assessment, IBM East Fishkill Facility, Hopewell Junction, New York", prepared by Sanborn Head Engineering, PC, dated June 2009.

[4] "2018 Annual Corrective Action Status Report", prepared by Groundwater Sciences Corporation, dated May 30, 2019.

Exhibit 2.1 – Temporary Subslab Vapor Monitoring Port Schematic



The breathing zone was screened for the presence of total VOCs using a PID during concrete drilling and port installation. Total VOCs were not detected above the instrument reporting limit.

Subslab vapor samples were collected from the temporary SSV ports into 1-L SUMMA® canisters equipped with 1-hour flow controllers. Samples were submitted to Eurofins Air Toxics, Inc. (EATI) of Folsom, California for analysis of the site-specific list of VOCs established as part of the VI RFI using USEPA Method TO-15.

Subslab vapor was screened for total VOCs using a PID after the subslab vapor samples had been collected. Total VOCs were detected at concentrations of up to 4.1 parts per million by volume (ppmv) with the PID.

Subslab vapor analytical results are presented in Table 1, and laboratory analytical reports are provided in Appendix A. The compounds detected and their highest detected concentration are as follows: CFC-113 at 110,000 µg/m^3; tetrachloroethene (PCE) at 780 µg/m^3; trichloroethene (TCE) at 3,100 µg/m^3; cis-1,2-dichloroethene (cis-1,2-DCE) at 580 µg/m^3; toluene at 3,600 µg/m^3; and acetone at 2,000 µg/m^3.

The above results do not suggest the presence of grossly contaminated soil beneath the floor slab. Given the limited surface area of floor slab to be removed at any given time during drilling (i.e., a 6-inch-diameter hole), it is not anticipated that indoor air concentrations will be significantly impacted. CAMP (perimeter) air monitoring and exclusion zone air monitoring will be completed during interior and exterior drilling operations as further discussed Section 4.

3. Schedule

The tentative schedule for advancing the soil borings is the week of May 4, 2020. It is anticipated that the soil borings will take five days to complete.

4. Summary of the applicable components of the IAWP

Community Air Monitoring Plan – A Community Air Monitoring Plan (CAMP) that describes required particulate and vapor monitoring to protect the neighboring community is attached as Appendix B to this work plan. The CAMP includes procedures and practices outlined under the NYSDOH Generic Community Air Monitoring Plan provided as Appendix 1A of DER-10, dated May 2010, as well as special requirements for working within an occupied building.

Continuous monitoring for VOCs will be conducted during concrete slab removal and interior and exterior advancement of soil borings.

In accordance with the special requirements for work areas within occupied structures, the continuous monitoring locations for VOCs and particulates during interior drilling will be situated next to the nearest potentially exposed building occupants. The continuous monitoring locations for VOCs and particulates during exterior drilling will be at upwind and downwind locations, to be adjusted as needed based on wind direction.

There are no return air system intakes within the area of B320B where the drilling is occurring. Potential air pathways relative to adjoining rooms were not identified during a site reconnaissance. However, if pathways are identified in the future, the monitoring locations will be adjusted accordingly.

As discussed in subsequent sections, engineering controls will be used to create a localized area of negative air pressure in the vicinity of the drill rig and will be vented outside the building. In addition, outside air will be brought into the room via a fan and flexible hose to increase air exchange.

Prior to beginning the drilling work, VOC background readings will be collected using a PID within adjacent occupied areas. In addition, daily VOC and particulate background readings will be collected at the established monitoring stations prior to the beginning of intrusive work.

Refer to Appendix B for a description of CAMP procedures and action levels.

Engineering Controls (VOCs) – Based on the results of subslab vapor sampling and groundwater data in the vicinity of the exterior drilling, we expect limited VOC impacts to indoor and outdoor air during drilling activities. Air monitoring will be completed in accordance with the special requirements CAMP. In addition, the following engineering controls will be implemented for added protection during interior drilling.

- An exhaust hose will be placed proximate to the drill rig to provide a localized area of negative pressure and to vent VOC vapors outside the building. The hose will be exhausted to the exterior of the building at a height of approximately eight feet above ground surface.

- Outside air will be actively introduced into the room using a fan and flexible hose connected to the building exterior.

- If a soil boring is to be left open overnight, the opening of the drilling tools will be covered and sealed around the edges with plastic or other suitable method.

Engineering Controls (Dust) – Dust suppression will be conducted by wetting the work area with water during the concrete slab and asphalt removal and drilling work as needed based on the results of the CAMP dust monitoring. In addition, a core machine with a wetting feature will be used for coring through the floor slab.

Soil Screening and Characterization – Soil from 0-2 ft, 2-4 ft, and 5-7 ft bgs will be screened for the presence of total VOCs using a PID. As previously discussed, two chemical characterization soil samples from the upper five feet of each boring (total of 16 samples) will be collected for analytical laboratory analysis to plan for soil management procedures during future excavation, with one sample submitted for laboratory analysis and the second placed on hold pending results of the first sample. If no evidence of contamination is present, the sample from 0 to 2 ft will be placed on hold at the laboratory. In addition, a soil sample will be collected from a depth of 5 to 7 ft below the floor slab or pavement from one interior and one exterior soil boring and submitted for laboratory analysis.

Chemical characterization soil samples will be submitted to Alpha Analytical of Westborough, Massachusetts, a NYSDOH ELAP-certified laboratory, for analysis of VOCs by USEPA Method 8260, semivolatile organic compounds (SVOCs) by USEPA Method 8270, target analyte list (TAL) metals by USEPA Method 6010C, herbicides by USEPA Method 8151A, pesticides by USEPA Method 8081B, and polychlorinated biphenyls (PCBs) by USEPA Method 8082A as listed in 6 NYCRR Part 375-6.8(b). One trip blank will be submitted for VOC analysis for quality assurance / quality control (QA/QC) purposes.

Stockpile Methods / Materials Excavation and Load-Out / Materials Re-Use – Stockpiles are not expected to be generated during drilling activities. Excess soil will be temporarily placed into a 55-gallon drum or other holding receptacle and will be used to backfill the boring upon completion.

Transportation / Disposal – Off-site transportation and disposal of soil is not anticipated for the drilling work.

Fluids Management – It is anticipated that groundwater will be encountered in the soil borings at depths of greater than 10 feet bgs. Groundwater handling is expected to be minor given the proposed drilling technique (hollow stem augers). Groundwater in the split spoon samples will be allowed to drain back into the borings prior to opening the split spoon for sampling. Decontamination water will be contained in a 55-gallon drum and either sent to

the on-Site industrial waste treatment plant or transported off-site by a licensed contractor for treatment / disposal. If rock coring is conducted, the drilling fluids will be containerized in 55-gallon drums for off-site disposal by a licensed contractor.

Cover System Restoration – After the borings have been backfilled, the cover system will be restored by completing the borings at the ground surface with non-shrink grout at interior locations, and material to match the existing surface cover at the exterior locations (e.g., cold patch asphalt, concrete, or topsoil).

Backfill from Off-Site Sources – Backfill from off-site sources is not expected for the drilling work.

Stormwater Pollution Prevention – A SWPPP is not required because an area of significantly less than one acre will be disturbed during the drilling work.

Contingency Plan – In accordance with Section 15.0 of the IAWP, appropriate sampling and notification procedures will be followed if unidentified contaminant sources are encountered. In addition, the drilling work will be suspended as needed until the situation can be adequately and safely addressed.

Odor Control Plan – Although not anticipated, if nuisance odors originating from the drilling operations are identified at the site boundary, or if odor complaints are received, work will be suspended and the source of odors will be identified and corrected.

5. A statement that the work will be performed in compliance with this IAWP and 29 CFR 1910.120

The work performed under this work plan will be completed in accordance with the IAWP and 29 CFR 1910.120 (OSHA Hazardous Waste Operations and Emergency Response).

6. Contractor's health and safety plan (HASP)

Site-specific HASPs prepared by Sanborn Head and Chazen are included in Appendix C. Chazen's HASP is also intended to cover their drilling subcontractor, Northeast Specialized Drilling, Inc. of Liverpool, New York.

7. Identification of disposal facilities for potential waste streams

Off-site disposal of soil is not expected as part of the drilling program. If needed, appropriate disposal / treatment facilities for decontamination and rock coring water will be evaluated by Whiting-Turner or its designee based on waste characterization sampling.

8. Identification of sources of any anticipated backfill, along with all required chemical testing results.

Soil will be used to backfill the boring from which it was generated. Clean, commercially available bagged sand will be used if additional backfill material is needed. No other backfill is anticipated to be needed for the drilling work.

Please contact us if you have any questions.

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

Jennifer H. Sanborn
Project Director

David Shea, P.E.
Sr. Vice President

JHS/DS:

Encl.

Figure 1	Building Location Plan	
Figure 2	Exploration Location Plan	
Table 1	Summary of Subslab Vapor Sample Analytical Results	
Appendix A	Analytical Laboratory Report	
Appendix B	Community Air Monitoring Plan w/Special Requirements	
Appendix C	Health and Safety Plans	

cc:

Julia Kenney	NYSDOH	(w/enclosure via e-mail)
Gary Marone	Global Foundries	(w/enclosure via e-mail)
James Gorham	Whiting-Turner	(w/enclosure via e-mail)

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TABLE

TABLE 1
Summary of Subslab Vapor Sample Analytical Results
Building 320B
Former IBM East Fishkill Facility
Hopewell Junction, New York

Analyte	Sample Location	SSVB320B-001	SSVB320B-002	SSVB320B-003	SSVB320B-004
	Collection Date	2/25/2020	2/25/2020	2/25/2020	2/25/2020
Acetone	µg/m^3	2,000	<580	260	<290
Benzene	µg/m^3	<240	<78	<6.5	<39
Carbon tetrachloride	µg/m^3	<470	<150	<13	<77
CFC113 (Ethane, 1,1,2-trichloro-1,2,2-trifluoro-)	µg/m^3	110,000	63,000	450	22,000
Chlorobenzene (Monochlorobenzene)	µg/m^3	<340	<110	<9.3	<56
Dichlorobenzene (1,2-)	µg/m^3	<450	<150	<12	<74
Dichlorobenzene (1,3-)	µg/m^3	<450	<150	<12	<74
Dichlorobenzene (1,4-)	µg/m^3	<450	<150	<12	<74
Dichlorodifluoromethane (CFC12)	µg/m^3	<370	<120	<10	<60
Dichloroethene (1,1-)	µg/m^3	<300	<96	<8.0	<48
Dichloroethene (cis-1,2-)	µg/m^3	<300	180	580	<48
Ethylbenzene	µg/m^3	<320	<100	<8.8	<53
Methylene Chloride (Dichloromethane)	µg/m^3	<2600	<840	<70	<420
Tetrachloroethene (PCE)	µg/m^3	680	780	380	350
Toluene	µg/m^3	3,600 CN	<92	<7.6	<46
Trichlorobenzene (1,2,4-)	µg/m^3	<2200	<720	<60	<360
Trichloroethane (1,1,1-)	µg/m^3	<410	<130	<11	<67
Trichloroethene (TCE)	µg/m^3	600	1,900	3,100	540
Trichlorofluoromethane (CFC11)	µg/m^3	<420	<140	<11	<69
Vinyl chloride	µg/m^3	<190	<62	<5.2	<31
Xylene (m,p-)	µg/m^3	<320	<100	<8.8	<53
Xylene (o-)	µg/m^3	<320	<100	<8.8	<53

Notes:

1. Samples were collected by Sanborn Head on the dates indicated in Summa canisters over an approximately 1-hour sampling period. The samples were analyzed by Eurofins Air Toxics, Inc. (EATI) of Folsom, California for the project-specific list of volatile organic compounds (VOCs) by United States Protection Agency (USEPA) Method TO-15 in the full scan mode.

2. Samples were collected from temporary subslab vapor monitoring ports that were removed after the samples were collected.

3. Results are presented in micrograms per cubic meter (µg/m^3).

4. "<" indicates the analyte was not detected above the indicated reporting limit.
"CN" indicates high concentrations of VOCs required an off-line dilution using a Tedlar bag. Toluene is a common contaminant in Tedlar bags. Certification of the Tedlar bag lot indicates artifact concentrations of 5.8 ppbv (22 µg/m^3) for Toluene. A CN-flag was applied to the Toluene concentration to indicate a high bias.

FIGURES

Figure 1

Building Location Plan

B320B Drilling 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: 4757.01
Date:April 2020

Figure Narrative

This figure shows the buildings at the former IBM East Fishkill facility. Building B320B is outlined. The general area where the proposed soil borings will be competed is shaded. Refer to Figure 2 for additional details.

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 B320B
- General area of proposed soil borings

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

SANBORN HEAD ENGINEERING

File:P:\290s\2999.00\Graphics Files\CAD\B320B\Excavation WP\B320B_BldLocationPlan.dwg Plot Date: 3-25-20

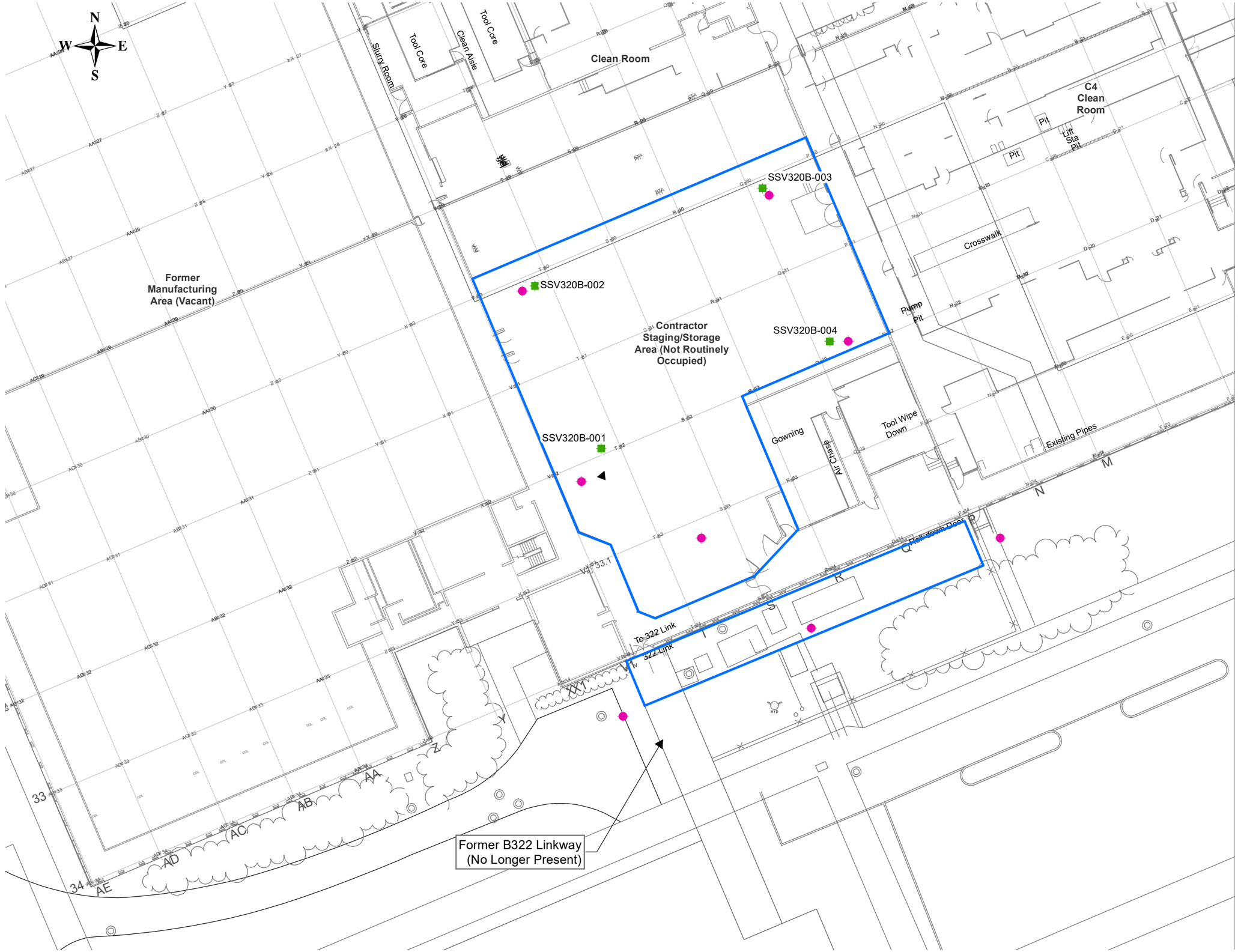

Figure 2

Exploration Location Plan

B320B Drilling Work Plan

Former IBM East Fishkill Facility

Hopewell Junction, New York

Drawn By:	E. Wright
Designed By:	J. Sanborn
Reviewed By:	J. Sanborn
Project No:	4757.01
Date:	March 2020

Figure Narrative

This figure shows the approximate proposed excavation areas in the interior and exterior areas of Building 320B. The figure also shows the locations of temporary soil vapor ports that were installed, sampled, and removed by Sanborn Head on February 25, 2020, as well as the locations of proposed soil borings to be installed by others.

Legend

- Temporary subslab vapor port
- Approximate location of proposed soil boring
- Approximate area of proposed soil excavation

15 7.5 0 15 30 Feet

SANBORN HEAD ENGINEERING

APPENDIX A

ANALYTICAL LABORATORY REPORT

eurofins | Air Toxics

3/2/2020
Ms. Jennifer Sanborn
Sanborn, Head & Associates
20 Foundry Street

Concord NH 03301

Project Name:
Project #: 4757.00
Workorder #: 2002680

Dear Ms. Jennifer Sanborn

The following report includes the data for the above referenced project for sample(s) received on 2/26/2020 at Air Toxics Ltd.

The data and associated QC analyzed by TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Ausha Scott at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Ausha Scott

Project Manager

eurofins | Air Toxics

WORK ORDER #: 2002680

Work Order Summary

CLIENT:	Ms. Jennifer Sanborn Sanborn, Head & Associates 20 Foundry Street Concord, NH 03301	**BILL TO:**	Accounts Payable Sanborn, Head & Associates 20 Foundry Street Concord, NH 03301
PHONE:	603-229-1900	**P.O. #**	
FAX:	603-229-1919	**PROJECT #**	4757.00
DATE RECEIVED:	02/26/2020	**CONTACT:**	Ausha Scott
DATE COMPLETED:	03/02/2020		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	SSVB320B-001_20200225	TO-15	4.7 "Hg	15.1 psi
02A	SSVB320B-002_20200225	TO-15	4.7 "Hg	15.5 psi
03A	SSVB320B-003_20200225	TO-15	4.9 "Hg	15.3 psi
04A	SSVB320B-004_20200225	TO-15	5.3 "Hg	15 psi
05A	Lab Blank	TO-15	NA	NA
06A	CCV	TO-15	NA	NA
07A	LCS	TO-15	NA	NA
07AA	LCSD	TO-15	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 03/02/20

Technical Director

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209218, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-18-13, UT NELAP – CA009332019-11, VA NELAP - 460197, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005-011, Effective date: 10/18/2019, Expiration date: 10/17/2020.
Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

LABORATORY NARRATIVE
EPA Method TO-15
Sanborn, Head & Associates
Workorder# 2002680

Four 1 Liter Summa Canister samples were received on February 26, 2020. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

Receiving Notes

The Chain of Custody contained incorrect method information. EATL proceeded with the analysis as per the original contract or verbal agreement.

Analytical Notes

Dilution was performed on samples SSVB320B-001_20200225, SSVB320B-002_20200225, SSVB320B-003_20200225 and SSVB320B-004_20200225 due to the presence of high level target species.

High concentrations of VOCs in sample SSVB320B-001_20200225 required an off-line dilution using a Tedlar bag. Toluene is a common contaminant in Tedlar bags. Certification of the Tedlar bag lot indicates artifact concentrations of 5.8 ppbv for Toluene. A CN-flag was applied to the Toluene concentration to indicate a high bias.

Definition of Data Qualifying Flags

Ten qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).
J - Estimated value.
E - Exceeds instrument calibration range.
S - Saturated peak.
Q - Exceeds quality control limits.
U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.
UJ- Non-detected compound associated with low bias in the CCV
N - The identification is based on presumptive evidence.
M - Reported value may be biased due to apparent matrix interferences.
CN - See Case Narrative.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified
b-File was quantified by a second column and detector
r1-File was requantified for the purpose of reissue

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Summary of Detected Compounds
EPA METHOD TO-15 GC/MS FULL SCAN

Client Sample ID: SSVB320B-001_20200225

Lab ID#: 2002680-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 113	75	14000	570	110000
Acetone	750	840	1800	2000
Trichloroethene	75	110	400	600
Toluene	75	960 CN	280	3600 CN
Tetrachloroethene	75	100	510	680

Client Sample ID: SSVB320B-002_20200225

Lab ID#: 2002680-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 113	24	8200	190	63000
cis-1,2-Dichloroethene	24	44	96	180
Trichloroethene	24	350	130	1900
Tetrachloroethene	24	120	160	780

Client Sample ID: SSVB320B-003_20200225

Lab ID#: 2002680-03A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 113	2.0	59	16	450
Acetone	20	110	48	260
cis-1,2-Dichloroethene	2.0	140	8.0	580
Trichloroethene	2.0	580	11	3100
Tetrachloroethene	2.0	56	14	380

Client Sample ID: SSVB320B-004_20200225

Lab ID#: 2002680-04A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 113	12	2900	94	22000
Trichloroethene	12	100	66	540
Tetrachloroethene	12	51	83	350

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Client Sample ID: SSVB320B-001_20200225

Lab ID#: 2002680-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j022810**	**Date of Collection: 2/25/20 2:03:00 PM**	
Dil. Factor:	**150**	**Date of Analysis: 2/28/20 02:57 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	75	Not Detected	370	Not Detected
Vinyl Chloride	75	Not Detected	190	Not Detected
Freon 11	75	Not Detected	420	Not Detected
Freon 113	75	14000	570	110000
1,1-Dichloroethene	75	Not Detected	300	Not Detected
Acetone	750	840	1800	2000
Methylene Chloride	750	Not Detected	2600	Not Detected
cis-1,2-Dichloroethene	75	Not Detected	300	Not Detected
1,1,1-Trichloroethane	75	Not Detected	410	Not Detected
Carbon Tetrachloride	75	Not Detected	470	Not Detected
Benzene	75	Not Detected	240	Not Detected
Trichloroethene	75	110	400	600
Toluene	75	960 CN	280	3600 CN
Tetrachloroethene	75	100	510	680
Chlorobenzene	75	Not Detected	340	Not Detected
Ethyl Benzene	75	Not Detected	320	Not Detected
m,p-Xylene	75	Not Detected	320	Not Detected
o-Xylene	75	Not Detected	320	Not Detected
1,3-Dichlorobenzene	75	Not Detected	450	Not Detected
1,4-Dichlorobenzene	75	Not Detected	450	Not Detected
1,2-Dichlorobenzene	75	Not Detected	450	Not Detected
1,2,4-Trichlorobenzene	300	Not Detected	2200	Not Detected

CN =See Case Narrative explanation

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	104	70-130
1,2-Dichloroethane-d4	104	70-130
4-Bromofluorobenzene	110	70-130

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Client Sample ID: SSVB320B-002_20200225

Lab ID#: 2002680-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j022809**	**Date of Collection:**	**2/25/20 2:13:00 PM**
Dil. Factor:	**48.7**	**Date of Analysis:**	**2/28/20 02:31 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	24	Not Detected	120	Not Detected
Vinyl Chloride	24	Not Detected	62	Not Detected
Freon 11	24	Not Detected	140	Not Detected
Freon 113	24	8200	190	63000
1,1-Dichloroethene	24	Not Detected	96	Not Detected
Acetone	240	Not Detected	580	Not Detected
Methylene Chloride	240	Not Detected	840	Not Detected
cis-1,2-Dichloroethene	24	44	96	180
1,1,1-Trichloroethane	24	Not Detected	130	Not Detected
Carbon Tetrachloride	24	Not Detected	150	Not Detected
Benzene	24	Not Detected	78	Not Detected
Trichloroethene	24	350	130	1900
Toluene	24	Not Detected	92	Not Detected
Tetrachloroethene	24	120	160	780
Chlorobenzene	24	Not Detected	110	Not Detected
Ethyl Benzene	24	Not Detected	100	Not Detected
m,p-Xylene	24	Not Detected	100	Not Detected
o-Xylene	24	Not Detected	100	Not Detected
1,3-Dichlorobenzene	24	Not Detected	150	Not Detected
1,4-Dichlorobenzene	24	Not Detected	150	Not Detected
1,2-Dichlorobenzene	24	Not Detected	150	Not Detected
1,2,4-Trichlorobenzene	97	Not Detected	720	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130
1,2-Dichloroethane-d4	104	70-130
4-Bromofluorobenzene	85	70-130

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Client Sample ID: SSVB320B-003_20200225

Lab ID#: 2002680-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j022807**	**Date of Collection:**	**2/25/20 2:09:00 PM**
Dil. Factor:	**4.06**	**Date of Analysis:**	**2/28/20 01:41 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	2.0	Not Detected	10	Not Detected
Vinyl Chloride	2.0	Not Detected	5.2	Not Detected
Freon 11	2.0	Not Detected	11	Not Detected
Freon 113	2.0	59	16	450
1,1-Dichloroethene	2.0	Not Detected	8.0	Not Detected
Acetone	20	110	48	260
Methylene Chloride	20	Not Detected	70	Not Detected
cis-1,2-Dichloroethene	2.0	140	8.0	580
1,1,1-Trichloroethane	2.0	Not Detected	11	Not Detected
Carbon Tetrachloride	2.0	Not Detected	13	Not Detected
Benzene	2.0	Not Detected	6.5	Not Detected
Trichloroethene	2.0	580	11	3100
Toluene	2.0	Not Detected	7.6	Not Detected
Tetrachloroethene	2.0	56	14	380
Chlorobenzene	2.0	Not Detected	9.3	Not Detected
Ethyl Benzene	2.0	Not Detected	8.8	Not Detected
m,p-Xylene	2.0	Not Detected	8.8	Not Detected
o-Xylene	2.0	Not Detected	8.8	Not Detected
1,3-Dichlorobenzene	2.0	Not Detected	12	Not Detected
1,4-Dichlorobenzene	2.0	Not Detected	12	Not Detected
1,2-Dichlorobenzene	2.0	Not Detected	12	Not Detected
1,2,4-Trichlorobenzene	8.1	Not Detected	60	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	103	70-130
1,2-Dichloroethane-d4	104	70-130
4-Bromofluorobenzene	94	70-130

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Client Sample ID: SSVB320B-004_20200225

Lab ID#: 2002680-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j022808**	**Date of Collection:**	**2/25/20 2:11:00 PM**
Dil. Factor:	**24.5**	**Date of Analysis:**	**2/28/20 02:06 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	12	Not Detected	60	Not Detected
Vinyl Chloride	12	Not Detected	31	Not Detected
Freon 11	12	Not Detected	69	Not Detected
Freon 113	12	2900	94	22000
1,1-Dichloroethene	12	Not Detected	48	Not Detected
Acetone	120	Not Detected	290	Not Detected
Methylene Chloride	120	Not Detected	420	Not Detected
cis-1,2-Dichloroethene	12	Not Detected	48	Not Detected
1,1,1-Trichloroethane	12	Not Detected	67	Not Detected
Carbon Tetrachloride	12	Not Detected	77	Not Detected
Benzene	12	Not Detected	39	Not Detected
Trichloroethene	12	100	66	540
Toluene	12	Not Detected	46	Not Detected
Tetrachloroethene	12	51	83	350
Chlorobenzene	12	Not Detected	56	Not Detected
Ethyl Benzene	12	Not Detected	53	Not Detected
m,p-Xylene	12	Not Detected	53	Not Detected
o-Xylene	12	Not Detected	53	Not Detected
1,3-Dichlorobenzene	12	Not Detected	74	Not Detected
1,4-Dichlorobenzene	12	Not Detected	74	Not Detected
1,2-Dichlorobenzene	12	Not Detected	74	Not Detected
1,2,4-Trichlorobenzene	49	Not Detected	360	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	103	70-130
1,2-Dichloroethane-d4	107	70-130
4-Bromofluorobenzene	93	70-130

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Client Sample ID: Lab Blank

Lab ID#: 2002680-05A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j022806a**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/28/20 12:12 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.50	Not Detected	2.5	Not Detected
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
Freon 11	0.50	Not Detected	2.8	Not Detected
Freon 113	0.50	Not Detected	3.8	Not Detected
1,1-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Acetone	5.0	Not Detected	12	Not Detected
Methylene Chloride	5.0	Not Detected	17	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Carbon Tetrachloride	0.50	Not Detected	3.1	Not Detected
Benzene	0.50	Not Detected	1.6	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected
Toluene	0.50	Not Detected	1.9	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected
Chlorobenzene	0.50	Not Detected	2.3	Not Detected
Ethyl Benzene	0.50	Not Detected	2.2	Not Detected
m,p-Xylene	0.50	Not Detected	2.2	Not Detected
o-Xylene	0.50	Not Detected	2.2	Not Detected
1,3-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,4-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,2-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,2,4-Trichlorobenzene	2.0	Not Detected	15	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	105	70-130
4-Bromofluorobenzene	90	70-130

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Client Sample ID: CCV

Lab ID#: 2002680-06A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j022802**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/28/20 08:58 AM**	

Compound	%Recovery
Freon 12	99
Vinyl Chloride	90
Freon 11	92
Freon 113	96
1,1-Dichloroethene	94
Acetone	99
Methylene Chloride	108
cis-1,2-Dichloroethene	100
1,1,1-Trichloroethane	102
Carbon Tetrachloride	102
Benzene	100
Trichloroethene	97
Toluene	102
Tetrachloroethene	102
Chlorobenzene	102
Ethyl Benzene	104
m,p-Xylene	108
o-Xylene	103
1,3-Dichlorobenzene	105
1,4-Dichlorobenzene	105
1,2-Dichlorobenzene	107
1,2,4-Trichlorobenzene	111

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	105	70-130
1,2-Dichloroethane-d4	105	70-130
4-Bromofluorobenzene	102	70-130

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Client Sample ID: LCS

Lab ID#: 2002680-07A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j022803**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/28/20 09:23 AM**	

Compound	%Recovery	Method Limits
Freon 12	104	70-130
Vinyl Chloride	94	70-130
Freon 11	96	70-130
Freon 113	97	70-130
1,1-Dichloroethene	97	70-130
Acetone	100	70-130
Methylene Chloride	106	70-130
cis-1,2-Dichloroethene	96	70-130
1,1,1-Trichloroethane	103	70-130
Carbon Tetrachloride	102	70-130
Benzene	100	70-130
Trichloroethene	99	70-130
Toluene	102	70-130
Tetrachloroethene	102	70-130
Chlorobenzene	102	70-130
Ethyl Benzene	107	70-130
m,p-Xylene	108	70-130
o-Xylene	110	70-130
1,3-Dichlorobenzene	104	70-130
1,4-Dichlorobenzene	102	70-130
1,2-Dichlorobenzene	104	70-130
1,2,4-Trichlorobenzene	106	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	105	70-130
1,2-Dichloroethane-d4	102	70-130
4-Bromofluorobenzene	104	70-130

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Client Sample ID: LCSD

Lab ID#: 2002680-07AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j022804**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/28/20 09:48 AM**	

Compound	%Recovery	Method Limits
Freon 12	102	70-130
Vinyl Chloride	92	70-130
Freon 11	94	70-130
Freon 113	96	70-130
1,1-Dichloroethene	97	70-130
Acetone	100	70-130
Methylene Chloride	106	70-130
cis-1,2-Dichloroethene	93	70-130
1,1,1-Trichloroethane	102	70-130
Carbon Tetrachloride	102	70-130
Benzene	100	70-130
Trichloroethene	96	70-130
Toluene	102	70-130
Tetrachloroethene	100	70-130
Chlorobenzene	102	70-130
Ethyl Benzene	106	70-130
m,p-Xylene	108	70-130
o-Xylene	104	70-130
1,3-Dichlorobenzene	102	70-130
1,4-Dichlorobenzene	104	70-130
1,2-Dichlorobenzene	103	70-130
1,2,4-Trichlorobenzene	102	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	100	70-130
4-Bromofluorobenzene	100	70-130

APPENDIX B

COMMUNITY AIR MONITORING PLAN

APPENDIX B
Community Air Monitoring Plan (CAMP) with Special Requirements
B320B Drilling Activities
Former IBM East Fishkill Facility
Hopewell Junction, New York

Introduction

This document summarizes the Community Air Monitoring Plan (CAMP) associated with the soil boring drilling portion of the Building 320B soil excavation project being undertaken by Global Foundries at the former IBM East Fishkill Facility in Hopewell Junction, New York. The air monitoring program described herein will be performed by Sanborn, Head Engineering, P.C. (Sanborn Head).

The CAMP was developed in general accordance with the Generic Community Air Monitoring Plan (Generic CAMP) provided as Appendix 1A of DER-10 "Technical Guidance for Site Investigation and Remediation", dated May 2010, prepared by the New York State Department of Environmental Conservation (NYSDEC). Special requirements have also been included for intrusive work within an occupied building.

Overview

The CAMP requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities), as well as building occupants for indoor work, from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

Special requirements have been included in the CAMP because the work will be conducted within an occupied building. The requirements were prepared in consultation with the New York State Department of Health (NYSDOH).

Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

Community Air Monitoring Plan

The following sections outline the CAMP requirements for the project. Refer to the Drilling Work Plan to which this CAMP is attached for a description of engineering controls to be employed for VOC and dust control during slab removal and soil boring drilling activities.

Special Requirements

When work areas are within occupied structures, the continuous monitoring locations for VOCs and particulates must reflect the nearest potentially exposed individuals and the location of ventilation system intakes (e.g., outdoor air and return air) for the subject structure and nearby structures. The use of engineering controls such as vapor/dust barriers, temporary negative-pressure enclosures, or special ventilation devices should be considered to prevent exposures related to the work activities and to control dust and odors. Consideration should be given to implementing the planned activities when potentially exposed populations are at a minimum, such as during weekends or evening hours in non-residential settings.

Additionally, the location of all exhaust vents in the room and their discharge points, as well as potential vapor pathways (openings, conduits, etc.) relative to adjoining rooms, should be understood and the monitoring locations established accordingly. In these situations, it is strongly recommended that exhaust fans or other engineering controls be used to create negative air pressure within the work area during remedial activities.

- If total VOC concentrations opposite the walls of occupied structures or next to intake vents exceed 1 part per million (ppm), monitoring should occur within the occupied structure(s). Depending upon the nature of contamination, chemical-specific colorimetric tubes of sufficient sensitivity may be necessary for comparing the exposure point concentrations with appropriate pre-determined response levels (response actions should also be pre-determined). Background readings in the occupied spaces must be taken prior to commencement of the planned work. Any unusual background readings should be discussed with NYSDOH prior to commencement of the work.

- If total particulate concentrations opposite the walls of occupied structures or next to intake vents exceed 150 micrograms per cubic meter (mcg/m^3), work activities should be suspended until controls are implemented and are successful in reducing the total particulate concentration to 150 mcg/m^3 or less at the monitoring point.

VOC Monitoring, Response Levels, and Actions

Continuous monitoring for VOCs will be conducted during concrete slab removal and interior and exterior advancement of soil borings.

During interior drilling, continuous monitoring will be conducted at designated locations selected in accordance with the Special Requirements provided above. Background concentrations will be measured at each of the designated locations at the start of each workday before intrusive work begins.

During exterior drilling, continuous monitoring will be conducted at a downwind location. Upwind concentrations will be measured at the start of each workday and periodically thereafter to establish background conditions, particularly if wind direction changes.

The monitoring work will be conducted using a photoionization detector (PID), which will be calibrated at the beginning of each day using an isobutylene standard. The PID will be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below. In the case of interior drilling, the term perimeter refers to the selected monitoring locations which will be selected based on the Special Requirements section above. In the case of exterior drilling, the term perimeter refers to the downwind perimeter of the work area or exclusion zone.

1. If the ambient air concentration of total organic vapors at the perimeter of the work area or exclusion zone exceeds 5 ppm above background for the 15-minute average, work activities will be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

2. If total organic vapor levels at the perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities will be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet away from of the exclusion zone (downwind for exterior locations) or half the distance to the nearest potential receptor or structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

3. If the organic vapor level is above 25 ppm at the perimeter of the work area, activities will be shutdown.

4. All 15-minute readings will be recorded and be available for NYSDEC and NYSDOH personnel to review upon request. Instantaneous readings, if any, used for decision purposes will also be recorded.

Particulate Monitoring, Response Levels, and Actions

During interior drilling, particulate concentrations will be monitored continuously at the perimeter of the exclusion zone at temporary particulate monitoring stations at the locations selected in accordance with the Special Requirements above. Background concentrations will be measured at each of the designated locations at the start of each workday before intrusive work begins.

During exterior drilling, particulate concentrations will be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations.

The particulate monitoring will be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment will be equipped with an audible alarm to indicate exceedance

of the action level. In addition, fugitive dust migration will be visually assessed during all work activities. In the case of interior drilling, the term perimeter refers to the selected monitoring locations which will be selected based on the Special Requirements section above. In the case of exterior drilling, the term perimeter refers to the downwind perimeter of the work area or exclusion zone.

1. If the perimeter PM-10 particulate level is 100 mcg/m^3 greater than background for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that perimeter PM-10 particulate levels do not exceed 150 mcg/m^3 above background and provided that no visible dust is migrating from the work area.

2. If, after implementation of dust suppression techniques, perimeter PM-10 particulate levels are greater than 150 mcg/m^3 above background, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the perimeter PM-10 particulate concentration to within 150 mcg/m^3 of the background level and in preventing visible dust migration.

3. All readings must be recorded and available for NYSDEC, NYSDOH, and County Health personnel to review upon request.

P:\4700s\4757.01\Source Files\Drilling Work Plan\Appendix B - CAMP\202004-SpecialRequirementsCAMP.docx

APPENDIX C

HEALTH AND SAFETY PLAN

Sanborn, Head & Associates, Inc.

SANBORN HEAD

Building Trust. Engineering Success.

HEALTH AND SAFETY PLAN

Former IBM East Fishkill Facility – B320B

Hopewell Junction, New York

File No. 4757.01
April 2020

EMERGENCY INFORMATION

Global Foundries Emergency Control (Medical/Fire/Safety and Health) ..... (845) 894-3333

Facility Ext: 4-3333

Global Foundries Security .....(845) 894-2000; Facility Ext: 4-2000

East Fishkill Fire District..... 911 or (845) 226-1652

East Fishkill Police Department ..... 911 or (845) 221-2111

St. Luke's Hospital..... (845)-568-2311

Poison Control Center.....1 800 222-1222

National Response Center.....1 800 424-8802

Site Superintendent/Site Safety Officer:
See Project Contacts Table

Safety Consultant: Rick Ecord .....(781) 278-3809

Directions from Global Foundries East Fishkill facility to St. Luke's Hospital:

1. Go east on NY-52 toward West Dr.
2. Turn right onto Lime Kiln Rd/CR-27.
3. Merge onto I-84 W towards Newburgh.
4. Take the Rt-32 exit, Exit 10S, toward US-9W S/Newburgh.
5. Take the ramp toward Newburgh/West Pt.
6. Turn slight right onto N Plank Rd/NY-32.
7. Turn right onto US-9W/NW-32/Albany Post Rd. Continue to follow US-9W/NY-32.
8. Turn left onto South St.
9. Turn Right onto Dubois St.
10. Destination is at 70 Dubois St., Newburgh, NY 12550.
    Total Time 22 minutes, total distance 15 miles.


MAPQUEST
Milton
Red Oaks Mill
Lagrangeville
Crown Heights
Ulster
Dutchess
Plattekill
Marlboro
Myers Corner
Wappingers Falls
Hillside Lake
New Hamburg
Hughsonville
Hopewell Junction
Ulster
Orange
Albany Post Rd
Chelsea
Castle Point
Brinckerhoff
Fishkill
Orange Lake
Gardnertown
Balmville
Newburgh
Stewart
Int'l
Airport
Dutchess
Putnam
New Windsor
North Highland
Vails Gate
Cornwall On Hudson
Firthcliffe
Salisbury Mills
Storm
King
State
Park
Nelsonville
Cold Spring
Mountainville
West Point
Garrison
Tompkins Corners
Kent Cliffs
Taconic State Pkwy
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PROJECT CONTACTS

Client/Site Contacts

Title	Name	Phone
Whiting-Turner Project Coordinator	James Gorham	845-629-1160 (cell)
Global Foundries Project Manager	Michael O'Callaghan	TBD
Global Foundries Coordinator	Gary Marone	845-894-5700 (office)

Sanborn, Head & Associates, Inc.

Title	Name	Cell Phone	Office Phone
Principal-in-Charge	Dave Shea	603-219-8394	603-415-6130
Project Manager	Jennifer Sanborn	603-674-8752	603-415-6137
Project Manager	Joe Corsello	603-969-2324	857-327-9741
Site Superintendent/ Site Safety Officer (varies for each mobilization)	Jim Flood	203-673-4609	978-577-1049
	Chris Vignola	203-752-7470	603-415-6165

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1.0 INTRODUCTION

This Site-Specific Health and Safety Plan (HASP) has been developed for use by employees who will be working on the Building 320B soil excavation project on the former IBM East Fishkill Facility (hereinafter referred to as the site). It describes safety and health procedures and requirements for work that will be performed at this site. All corporate health and safety programs (i.e., Respiratory Protection, Hazard Communication, Personal Protective Equipment (PPE), Hearing Conservation, etc.) also apply to work performed on this Site.

For purposes of this plan, "employee(s)" means all Sanborn, Head & Associates, Inc. (Sanborn Head) employees who will be working on this site. All employees will comply with the requirements of this HASP and will sign the Acknowledgement on the last page of this HASP. This HASP will be provided to on-site subcontractors at their request for informational purposes only. Pursuant to Occupational Safety and Health Administration (OSHA) regulations and Sanborn Head's subcontract agreement, subcontractors are responsible for the health and safety of their employees. Similarly, the health and safety of employees of other entities (e.g., site owners) will be the responsibility of their respective employers, and this HASP will be provided to them at their request for informational purposes only.

Based on the results of Site characterization and the history of the Site, Level D/D+ PPE is anticipated to be required (see Section 8.0, Table 4). However, the level of PPE required will depend on the field conditions observed and will be upgraded if appropriate at the discretion of the Site Safety Officer. If previously unidentified conditions which affect health or safety issues are discovered, work in the Exclusion Zone will cease and this HASP will be amended accordingly. Amendments are found in Appendix B of this HASP.

2.0 KEY PERSONNEL / CONTACTS

2.1 Contact Procedure – Non-Medical Emergency

For non-medical emergencies, the Site Superintendent should contact the Project Manager (PM), and if they are unavailable, the Site Superintendent should contact the Principal-in-Charge (PIC). Based on the issue(s) involved, the PM and/or PIC will determine how to proceed and if other project personnel should be contacted.

2.2 Contact Procedure – Medical Emergency

For a severe medical emergency, the Site Superintendent should call Global Foundries Emergency Control ((845) 894-3333) who will contact 911. If Global Foundries Emergency Control cannot immediately be reached, contact 911. The Site Superintendent should then contact the PM, and if they are unavailable, the Site Superintendent should contact the PIC.

For less severe medical situations, the Site Superintendent should make arrangements to get the injured/ill individual to the local hospital. Also contact Global Foundries Emergency Control ((845) 894-3333) for additional procedures that may be needed. Contact the PM,

and if they are unavailable, the Site Superintendent should contact the PIC. The PM and/or PIC will determine how to proceed, and if other project personnel should be contacted.

2.3 Organization, Responsibilities, and Authority

2.3.1 Client/Site Contacts

Title	Name	Phone
Whiting-Turner Project Coordinator	James Gorham	845-629-1160 (cell)
Global Foundries Project Manager	Michael O'Callaghan	TBD
Global Foundries Coordinator	Gary Marone	845-894-5700 (office)

2.3.2 Sanborn, Head & Associates, Inc.

Title	Name	Cell Phone	Office Phone
Principal-in-Charge	Dave Shea	603-219-8394	603-415-6130
Project Manager	Jennifer Sanborn	603-674-8752	603-415-6137
Project Manager	Joe Corsello	603-969-2324	857-327-9741
Site Superintendent/ Site Safety Officer (varies for each mobilization)	Jim Flood	203-673-4609	978-577-1049
	Chris Vignola	203-752-7470	603-415-6165

2.3.2.1 Principal-in-Charge (PIC):

- Reviews and approves the HASP;
- Ultimate responsibility for project health and safety, and satisfactory completion of all tasks for this project; and
- Primary client contact.

2.3.2.2 Project Manager:

- Reports to PIC and day-to-day client contact;
- Oversees preparation and updates of HASP, and monitors that fieldwork proceeds according to HASP requirements; and
- Primary office contact of field staff.

2.3.2.3 Site Superintendent:

The Site Superintendent (or designee) is responsible for:

- Oversight of field aspects of the project; and
- Coordination of health and safety issues with the Site Safety Officer.

The Site Superintendent (or designee) will:

- Be present on-site during all work activities;
- Be available for regulatory personnel; and
- Be familiar with all aspects of this HASP.

2.3.2.4 Site Safety Officer:

The Site Safety Officer (or designee) is responsible for:

- Oversight of the health and safety of site employees;
- Implementing the provisions of this HASP;
- Performing site hazard analysis;
- Providing recommendations for PPE modifications; and
- Emergency response procedures in conjunction with the Site Superintendent.

The Site Safety Officer (or designee) will:

- Provide safety briefings to inform site employees of hazardous conditions; and
- In consultation with the Site Superintendent and the Project Manager, modify this HASP to provide adequate protection from physical, health or environmental hazards.

2.3.3 Subcontractor Responsibilities

All Sanborn Head subcontractors are responsible for their own health and safety, and are therefore responsible for adhering to their own HASPs. All Sanborn Head subcontractors are also responsible for providing their own safety equipment and for ensuring a safe work place for their employees. Information such as emergency routes and telephone numbers, should be provided to the Sanborn Head subcontractors.

3.0 SITE DESCRIPTION AND ENVIRONMENTAL DATA

The facility, formerly IBM's East Fishkill facility, is located on approximately 500 acres in the town of Hopewell Junction, Dutchess County, New York. The facility formerly developed and manufactured semiconductor logic and memory devices and modules for many of IBM's product lines. The facility is located in a semi-rural area with private residences adjacent to the north and eastern facility boundaries; John Jay High School is located in between the Main Site and West Complexes. The Wicoppee Creek and commercial property form the western perimeter and I-84 is the southerly facility boundary.

Activities associated with this HASP are focused on B320B, located on the northern portion of the Site, which is currently owned by Global Foundries. During indoor air sampling completed in the B320B drilling and excavation area in 2010 and 2012, trichloroethene (TCE) and vinyl chloride (VC) were detected in indoor air at concentrations of up to 0.76 and 0.43 $\mu g/m^3$, respectively. PCE was not detected above the laboratory reporting limit.

Other compounds detected in indoor air in that area of B320B and their highest concentrations include CFC 11 (5.0 µg/m^3), CFC 12 (3.0 µg/m^3), CFC 113 (12 µg/m^3), toluene (7.3 µg/m^3) m,p-xylene (11 µg/m^3), o-xylene (2.2 µg/m^3), ethylbenzene (3.8 µg/m^3), carbon tetrachloride (0.72 µg/m^3), and acetone (55 µg/m^3). The following compounds were detected at the indicated highest concentrations during subslab vapor sampling in B320B in February 2020: CFC-113 (110,000 µg/m^3); tetrachloroethene (PCE; 780 µg/m^3); trichloroethene (TCE; 3,100 µg/m^3); cis-1,2-DCE (580 µg/m^3) toluene (3,600 µg/m^3); and acetone (2,000 µg/m^3).

Low levels of PCE, TCE, cis-1,2-DCE, and CFC 113 (i.e., less than 5 µg/L) were detected in overburden groundwater just to the south of B320B in 2018.

4.0 SCOPE OF WORK

Our objective is to conduct air monitoring and soil screening / sampling during test pit excavation activities.

The Scope of Work covered under this HASP includes:

- Conducting site walks;
- Conducting air monitoring and soil sampling during drilling and excavation activities.

5.0 SITE CONTROL

Work zones may be established and marked prior to beginning work activities. The purpose of work zones is to:

- Reduce the migration of contaminants into “clean areas”;
- Limit access of unauthorized personnel;
- Control chemical exposure; and
- Limit physical hazards.

The work zones if established will include, at a minimum the following:

- Exclusion Zone
- Contamination Reduction Zone
- Support Zone

5.1 Exclusion Zone

The Exclusion Zone is the area where work is being performed and where physical and chemical hazards may be present. At locations where the Site Superintendent/Site Safety Officer feels that risk to the public, co-workers, and the environment is relatively limited, cording off or physically marking the exclusion zone (designated with traffic cones and/or tape or other appropriate methods) will be discretionary. Only authorized employees who meet training and medical surveillance requirements may enter this zone.

5.2 Contamination Reduction Zone / Decontamination Zone

The Contamination Reduction Zone (CRZ) is the buffer zone between the Exclusion Zone and the Support Zone. If a CRZ is established, it will serve as the only means of entry or exit to the exclusion zone. Employees entering and leaving the exclusion zone must use this corridor. Only authorized employees who meet training and medical surveillance requirements may enter this zone.

The access corridor through the CRZ to the Exclusion Zone will be clearly delineated with traffic cones and/or tape and may serve as the Decontamination Zone, if one is required.

5.3 Support Zone

This zone is the "clean area" and contains site offices, sanitation facilities, and clean equipment. Any function that need not or cannot be performed in hazardous or potentially hazardous area is performed here.

The following equipment will be available and will be located in the support zone:

- First aid kit (Located in personnel 'ready bags')

6.0 WORK HAZARDS – KNOWN AND ANTICIPATED

The following table summarizes the health risk analysis for substances noted in Section 3.0.

Table 1
Health Risk Analysis Data

Substance	OSHA PEL	ACGIH TLV	NIOSH IDLH	Action Level	Vapor Pressure	Principal Routes of Exposure	Target Organs and Effects	Known Carcinogen
CFC 113	1,000 ppm	1,000 ppm	2,000 ppm	500 ppm	330 mm HG	Inh, Ing, Cont	Heart, eyes, skin, CNS	Unknown
PCE	100 ppm / C 200 ppm	25 ppm / STEL 100 ppm	150 ppm	12.5 ppm	14 mm Hg	Inh, Ing, Abs, Cont	Liver, kidneys, skin, eyes, resp. sys, CNS	Yes
TCE	100 ppm / C 200 ppm	50 ppm / STEL 100 ppm	1,000 ppm	25 ppm	58 mm Hg	Inh, Ing, Abs, Con	Resp. sys, heart, liver, eyes, CNS, skin	Yes
Dichloroethene (1,2-DCE) (cis- and trans- isomers)	200 ppm	200 ppm	1,000 ppm	100 ppm	180-265 mm Hg	Inh, Ing, Con	CNS, eyes, resp. sys	No
Vinyl Chloride (VC)	1 ppm / C 5 ppm	1 ppm	NE	5 ppm	2,508 mm Hg	Inh, Con	Liver, resp. sys, CNS, blood, lymphatic sys.	Yes
Acetone	1,000 ppm	500 ppm	2,500 ppm	250 ppm	180 mm Hg	Inh, Ing, Con	Eyes, skin, resp sys, CNS	No
Toluene	200 ppm	50 ppm	500 ppm	25 ppm	21 mm Hg	Inh, Ing, Abs, Con	Eyes, skin, resp sys, CNS, liver, kidneys	No
Respirable Crystalline Silica	50 ug/m^3	25 ug/m^3	NE	25 ug/m^3	NA	Inh, Ing, Con	Eyes, resp. sys	Yes
Nuisance Dust	15 mg/m^3	3 mg/m^3	NE	2.5 mg/m^3	NA	Inh, Ing, Con	Eyes, skin, resp. sys	No

Notes:

OSHA = Occupational Safety and Health Administration
ACGIH = American Conference of Governmental Industrial Hygienists
NIOSH = National Institute for Occupational Safety and Health

CNS = Central Nervous System.

NE = Not Established.

Table 1
Health Risk Analysis Data

PEL = Permissible Exposure Limit.

TLV = Threshold Limit Value.

IDLH = Immediately Dangerous to Life or Health

C = Ceiling Limit. An instantaneous/15 minute concentration which must not be exceeded without further engineering controls, work modifications, or PPE.

Carcinogen = An agent that is known or suspected to cause cancer.

Vapor Pressure indicates the volatility of a substance; for vapor pressure < 1 mmHg, the contaminant is not considered an inhalation hazard due to lack of volatility.

Early recognition of chemical exposure symptoms is essential in the prevention of serious chemical exposure incidents. Symptoms of exposure to the type of compounds potentially present at the Site include the following: fatigue, weakness; eye, nose, throat irritation; headache; dizziness; nausea; staggered gait; and dermatitis.

Each task to be performed as part of the scope of work for this site has been identified in Section 4.0. Table 2 provides a summary of tasks associated with the Work Plan for this project and the hazards and protective measures anticipated for each. Precautions will be taken to abate physical hazards as well as chemical hazards.

TABLE 2
HAZARD ANALYSIS FOR WORK ACTIVITIES

Task	Hazard (Chemical or Physical)	Hazard Control or Abatement
Site Walk	Slip/Trip/Fall	PPE as described in Section 8.0 and Table 4. Maintain good housekeeping. Watch for slippery surfaces and loose raised floor tiles.
Air Monitoring and Soil Sampling During Drilling and Excavation Activities	Particulate Matter/Dust Silica Dust from Concrete Cutting Chlorinated Ethenes in Soil, Groundwater, and Air Slip/Trip/Fall Noise Subslab utilities Heavy Machinery and Drill Rig Hazards Fuel-powered equipment inside the building	Ambient air monitoring as described in Section 7.0 and Table 3. PPE as described in Section 8.0 and Table 4. Contractor to wet the surface of the concrete during saw-cutting and coring, or use a saw / core drill with integrated dust control. Use fans to introduce outside air into the area during slab removal and drilling and excavation work. Use fans to create a localized area of negative pressure at the opening of the test pit during slab removal and test pit excavation, and in the vicinity of the drill rig during drilling operations. Vent the air outside. Use fans to circulate air within the space. Use diesel exhaust scrubbers or vent exhaust from the machinery outside the building. Follow general construction safety practices. Maintain good housekeeping. Utility locating and mark-out Watch for slippery surfaces and loose raised floor tiles.
All	COVID-19 Exposure	Refer to the attached "Sanborn Head Health and Safety Plan: COVID-19 Supplement"

7.0 AIR MONITORING

The purpose of air monitoring is to identify and quantify airborne contaminants in order to determine and verify the level of PPE required. Direct reading instruments will be used for initial and periodic air monitoring as required by this HASP. All instruments will be calibrated, operated and maintained according to manufacturer's instructions. Table 3 presents the air monitoring procedures for this Site.

An Air Monitoring Log is attached in Appendix C.

A Calibration Log is attached in Appendix D.

TABLE 3
AIR MONITORING PROCEDURES

Type of Monitoring (i.e., *Dust, Ambient Air*)	**Instrument**	**Monitoring Frequency / Protocols**	**Action Level**	**Remedial Action**
Dust	Visual	Continuous / as needed	Visible Dust	Moisten work area. Discontinue work and re-evaluate engineering controls if not effective.
Dust (during concrete saw cutting)	Dust Meter	Continuous during concrete saw cutting	25 µg/m^3	Moisten work area. Discontinue work and re-evaluate engineering controls if not effective.
Dust	Dust Meter	Continuous during drilling and soil excavation	PM-10 @ 100 µg/m^3 above background for 15-minute period	Moisten work area
Dust	Dust Meter	Continuous during drilling and soil excavation	PM-10 @ 150 µg/m^3 above background for 15-minute period	Stop and re-evaluate engineering controls
Ambient Air	PID	Continuous	>5 ppm for 15-minute average	Discontinue work, leave work area, and take appropriate measures to evaluate and mitigate the exceedance.
Ambient Air	PID	Continuous	>100 ppm	Stop work immediately and contact site safety officer for further instruction.
Ambient Air (Inside Building)	O2/LEL/CO Meter	Continuous during interior operations involving use of excavator and other fuel-powered machinery	>10% LEL Or <20% O2 Or >22% O2 Or >20 ppm CO	Stop work immediately and contact site safety officer for further instruction.

8.0 PERSONAL PROTECTIVE EQUIPMENT (PPE)

Based on analytical data available, it is anticipated that field activities will generally be performed in Level D or Level D+. However, the level of PPE required will depend on the field conditions observed and will be upgraded if appropriate at the discretion of the Site Safety Officer. Use Tables 1 and 3 to obtain Action Levels for each contaminant and Table 4 to determine appropriate PPE levels. Hard hats, boots, and safety glasses shall meet ANSI standards. Respirators shall meet MSHA standards. Should the action levels for the PID or for visible dust be exceeded continuously for five minutes, work will cease, workers will leave the area, and this HASP will be revised.

TABLE 4
PPE LEVELS AND CORRESPONDING AIR LEVELS

PPE Level		Application
Level D/D+	■ Long pants ■ Long/Short sleeve shirts ■ Safety glasses with side shields, as required ■ Hard hat, as required ■ Steel-toed and shank work boots, as required ■ Hearing protection, as required ■ Chemical-resistant gloves, as required ■ Work gloves, as required ■ Outer boot covers, as required ■ Tyvek coveralls, as required	■ PID level ≤ 5 ppm ■ Particulates <25 µg/m^3 during saw cutting ■ Particulates <2,500 µg/m^3 during drilling and soil excavation ■ Levels should be monitored above background readings.
PPE Level		**Application**
Level C	■ Respirator: TBD based on application ■ Long pants ■ Long/Short sleeve shirts ■ Hard hat, as required ■ Steel-toed and shank work boots ■ Hearing protection, as required ■ Chemical-resistant gloves, as required ■ Work gloves, as required ■ Outer boot covers, as required ■ Tyvek coveralls, as required	■ PID level greater than or equal to 5 ppm but less than 100 ppm ■ Particulates >25 µg/m^3 during saw cutting ■ Particulates >2,500 µg/m^3 during drilling and soil excavation ■ Levels should be monitored above background readings. ■ Uncontrolled hazardous materials abatement in progress.

Notes:

1. This Table pertains to employees in the CRZ and Exclusion Zone.

2. Cartridge respirators can only be used when the contaminant has adequate warning properties to indicate breakthrough, oxygen levels are between 19.5% and 23.5%, the chemical is identified and a cartridge is available for that substance. If any of the listed conditions are not present, an air purifying respirator is not adequate protection.

3. This HASP will be revised if an upgrade to Level C is required.

In the unlikely event that employees encounter conditions which are immediately dangerous to life and health (IDLH) **all work in the Exclusion Zone will cease and this HASP will be revised.**

9.0 DECONTAMINATION PLAN

9.1 Decontaminating PPE

Decontamination of PPE is not expected to be needed, as disposable PPE will be used. Based on current data, the decontamination procedures anticipated for use on this site are doffing gloves using an outside-in approach and placing into sealed plastic bags for disposal as solid waste. If used, tyvek and rubber boot covers should be doffed while wearing rubber gloves and placed into sealed plastic bags for disposal as solid waste.

9.2 Decontaminating Equipment

Air Monitoring Equipment: If contamination is likely, wrap monitoring equipment in Ziploc bags to avoid the need for decontamination. If the equipment has to be decontaminated, follow the manufacturer's recommendations.

Soil Sampling Equipment: Non-disposal soil sampling equipment will be decontaminated before and after collecting soil samples using liquinox detergent and a potable water rinse.

10.0 SITE RULES

In addition to all applicable Corporate Health and Safety Programs, the following general safety rules will be followed by all project employees:

- While in the exclusion and contamination reduction zones, do not eat, drink, chew gum, or tobacco, smoke or engage in any practice which increases the probability of hand-to-mouth transfer and ingestion of contaminants.
- Because medication can increase the effects of toxic chemicals in exposure situations, employees who must be on medication may discuss this issue with their supervisor prior to beginning work on site.
- When working in a "buddy system required" area/task, employees are paired with other employees or non-Sanborn Head personnel, and must always be in close proximity to each other.
- A tailgate health and safety meeting will be held before commencing a new phase of work; when there are changes to project environmental, chemical, and health hazards; the monitoring equipment requirements change; when PPE requirements change; or when there is a change in field personnel. In the meeting the Site Safety Officer shall:
    - Establish updates to evacuation routes.
    - Establish emergency meeting points.

- Review any newly identified Hazards, PPE, or precautions to follow.

11.0 REPORTING INJURIES AND ILLNESSES

All employees on the site must immediately report injuries, and illnesses to their supervisor. If the injury or illness is a result of, or could result in, a chemical exposure, the supervisor will report it to the Site Superintendent/Site Safety Officer. He or she will then take appropriate action to prevent further exposure. The exposure will be reported in the Sanborn Head Incident/Injury Reporting Form.

Following an incident, a report will be completed by the supervisor and a copy given to the Site Superintendent/Site Safety Officer. All incident and illness reporting will follow corporate policies and procedures. Blank reports are available on Sanborn Head's HR Manager.

In the event of a hazardous material spill or chemical release above the reportable quantity, the Site Superintendent or designee will notify the appropriate Federal and State agencies.

ACKNOWLEDGEMENT OF SITE-SPECIFIC HEALTH AND SAFETY PLAN

Individuals signing below agree and acknowledge as follows:

I have read and understand the Site-Specific Health and Safety Plan for Global Foundries' East Fishkill Facility. I agree to abide by these safety rules and understand that any violation may result in my removal from the Site.

Name (Please Print)	Signature	Date

APPENDIX A

SITE SIGN-IN LOG

APPENDIX A
SITE SIGN-IN LOG
B320B
FORMER IBM EAST FISHKILL FACILITY

Name	Affiliation	Date & Time

APPENDIX B

AMENDMENTS TO THE SITE-SPECIFIC HEALTH AND SAFETY PLAN

APPENDIX B

AMENDMENTS TO THE SITE-SPECIFIC HEALTH AND SAFETY PLAN
FORMER IBM EAST FISHKILL FACILITY

Date	Section	Page	By Whom	Received By

APPENDIX C

AIR MONITORING LOG

APPENDIX C
TO SITE-SPECIFIC HEALTH AND SAFETY PLAN
AIR MONITORING LOG

Former IBM East Fishkill Facility

Date: _____ Project No: _____

Instrument: _____

Contaminants of Concern	PEL / Action Level	Time	Monitoring Results

APPENDIX D

AIR MONITORING EQUIPMENT CALIBRATION AND MAINTENANCE RECORDS

(Typically kept with equipment)

APPENDIX E

SANBORN HEAD HEALTH AND SAFETY PLAN: COVID-19 SUPPLEMENT

Sanborn Head Health and Safety Plan: COVID-19 Supplement

Coronavirus Disease 2019 (COVID-19) is a respiratory disease caused by the SARS-CoV-2 virus. It has spread from China to many other countries around the world, including the United States. Infection can cause illness ranging from mild to severe and, and in some cases, can be fatal. Symptoms typically include fever, cough, and shortness of breath. Some people infected with the virus have reported experiencing other non-respiratory symptoms.

People are thought to be most contagious when they are symptomatic (i.e., experiencing fever, cough, and/or shortness of breath). Other people, referred to as asymptomatic cases, have experienced no symptoms at all. However, it is possible the virus may be spread by asymptomatic transmission before people show symptoms.

According to the CDC, symptoms of COVID-19 may appear in as few as 2 days or as long as 14 days after exposure. The virus is thought to spread mainly from person-to-person, including:

- Between people who are in close contact with one another (within about 6 feet).
- Through respiratory droplets produced when an infected person coughs or sneezes. These droplets can land in the mouths or noses of people who are nearby or possibly be inhaled into the lungs.

It may be possible that a person can get COVID-19 by touching a surface or object that has the virus on it and then touching their own mouth, nose, or possibly their eyes.

As appropriate, all employees should follow good hygiene and infection control practices, including:

- Employees who have symptoms (i.e., fever, cough, or shortness of breath) need to notify their EDGE Leader, Human Resources, and stay home.
- Frequently wash hands with soap and water for at least 20 seconds.
- If soap and running water are not available, use an alcohol-based hand sanitizer that contains at least 60% alcohol
- Use proper respiratory etiquette by covering your mouth and nose with a tissue when you cough or sneeze or use the inside of your elbow. Throw used tissues in the trash and immediately wash hands with soap and water or use hand.
- Practice social distancing by maintaining distance (approximately 6 feet or 2 meters) from others.
- Avoid using other employees' phones, desks, offices, or other work tools and equipment. If necessary, clean and disinfect them before and after use.
- Limit gatherings to no more than 10 people.
- Maintain regular housekeeping practices, including routine cleaning and disinfecting of surfaces, equipment, and other elements of the work environment.

Sanborn Head Health and Safety Plan: COVID-19 Supplement

The situation with the COVID-19 virus is rapidly evolving amidst ever changing governmental and community responses. Employees should check the Sanborn Head Emergency Info Line - **1-877-742-9742** and the COVID Resource Center on The Well for updated information. We also encourage you to continue to stay informed, from reliable sources like the CDC, on how to keep yourself and others around us healthy.

The Chazen Companies

SANBORN HEAD

THE Chazen COMPANIES®
Civil Engineers
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CAPITAL DISTRICT OFFICE
547 River Street
Troy, NY 12180
P: 518.273.0055 or 888.539.9073
www.chazencompanies.com

March 5, 2020
April 20, 2020 (revised)

Re: Global Foundries FAB 10 B320B: Geotechnical Subsurface Work Plan
2070 NY-52, Hopewell Junction, NY 12533

Scope: Geotechnical Subsurface Investigation occurring over five days (May 4th through May 8th).

On Site Staff:

The Chazen Companies (Chazen)

- Dean Anderson – Geotechnical Representative
- Gery Williamson – Survey Subsurface Utilities (day 1 only)

Northeast Specialized Drilling, Inc. (NSD)

- Marc Cheney – Owner/Drilling Superintendent
- Zack Cheney – Assistant Driller

Utility Survey Corp (USC)

- Name TBD – GPR Scan through Concrete (day 3 only)

Equipment:

- Central Mine Equipment Model 55 – Rotary Exploration Drill Rig, mounted on International 4700 Diesel Truck (see image 1). Drill rig utilized for three exterior borings only.
    - Dimensions: 8-ft wide x 30-ft long x 10.5-ft high (mast down/travel position); 30-ft high (mast up/drilling position).
- Model DR2005 Ranger 1 – Rotary Exploration Drill Rig mounted on Rubber Tracks (see image 2). Option trailer mounted rig may be utilized, NSD to verify prior to leaving the site on March 13th.
    - Dimensions: 5-ft wide x 14-ft long x 9.5-ft high (mast down/travel position); 13.8-ft high (mast up/drilling position).
- Milwaukee Stand-on Core Drill equipped with a 6” diameter diamond bit
- 2016 Chevrolet Silverado (NSD support vehicle)
- 2016 Chevrolet Silverado (Chazen truck)

Safety Equipment:

- Personal Protective Equipment (steel toe boots, safety vest, hard hat, safety glasses)
- Spill Kit
- Fire Extinguisher
- Diesel Exhaust Scrubber (for Ranger 1 drill rig) and exhaust system for fresh air
- 4-gas monitor by Q-Ray
- Personal PID and dust monitor

Work Plan:

Day 1 – Mobilize to the project site. At the completion of site safety meeting to review the Activity Hazard Analysis form (attached for reference), Gery will work with NSD and Dean to scan for potential subsurface utilities at the 3 planned exterior boring locations (B6, B7 and B8), per the attached boring location plan. Once utilities are cleared, the truck drill rig will set up over the location and a test boring will be performed. The test boring will be advanced with a 7-inch cutter head and hollow stem augers. At 5-foot intervals, a split spoon test will be performed. The noise levels when the hammer impacts the steel spoon is approximately 120 decibels. The hammering will occur until the spoon is driven 2-foot into undisturbed soils or 50 blows over a 6-inch increment is reached. The advancement of test boring will continue until a depth of 40-feet is achieved or bedrock refusal is encountered. Upon completion of the test boring, the hole will be backfilled with soil cuttings and as necessary bags of sand will be utilized. The borehole will be capped with similar material (i.e. lawn, asphalt or concrete). The second borehole will be advanced using the same procedure. If groundwater is encountered, a 1-inch temporary monitoring well will be installed in the boring. Drilling is anticipated to stop around 5:00 to 5:30pm. During the drilling a dust monitor and portable PID meter will be worn by Dean. All work will stop if readings exceed threshold levels (Dust monitor PM-10 @ 150 ug/m3 and PID meter VOC's @ 5 ppm). Additional air monitor down gradient of the drill rig will be monitored by others in accordance with the site CAMP.

Day 2 – Drilling of the remaining exterior boring will begin around 8:00 am. Similar advancement method will be utilized. If bedrock is encountered shallower than 40-feet, a 5-foot rock core will be obtained. NSD will require access to a water spigot to fill their 500-gallon water reservoir prior to rock coring. All water in the mud tub from the rock coring will be drummed and left on-site for disposal. The truck rig will be demobilized at the end of the day.

Day 3 – Chazen and NSD will mobilize to the site with Ranger 1 drill rig and stand-on core drill. The overhead door at the ramp area will be used to gain access to the room via the hallway. Plywood will be used when traversing down the hallway. The drill rig will be equipped with a scrubber fitted to the exhaust pipe to maintain a safe work environment. Chazen, NSD and USC staff will clear the five-test boring locations (B1 through B5) prior to cutting through the slab. An electric core drill equipped with a diamond bit will be used to remove a 6" diameter core from the existing slab on grade. The portable PID and dust monitor will be worn during drilling operations. An exhaust system will be installed to supply fresh air near the boring locations and to exhaust (if required) VOC from the borehole. Upon completion of coring the crew will auger with 5-inch outside diameter hollow stem augers and obtain split spoon soil samples. Upon completion of the test boring, the hole will be backfilled with soil cuttings and the slab will be patched with a non-shrink grout.

Day 4 and Day 5 – The advancement of the remaining interior borings will be completed following similar procedure as day 3. Once all 5 borings are completed, the drill rig will be removed from the interior space. Prior to demobilizing from the site, the temporary well will be removed and the boring backfilled.

Images of Drill Rigs

Truck Mounted Drill Rig

Ranger 1 – Track Mounted

Ranger 1 – Trailer Mounted (optional)

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ACTIVITY HAZARD ANALYSIS FORM

Activity: Geotechnical Subsurface Investigation at Global Foundries Building 320B	**Date:** May 4, 2020 through May 8, 2020
	Project: Global Foundries FAB 10
Description of the Services: Perform 8 geotechnical test borings (3 exterior and 5 interior).	**Site Supervisor:** Dean Anderson (Chazen)
	Site Safety Officer: Whiting-Turner Safety Officer

Work Activity Sequence (Identify the principal steps involved and the sequence of work activities)	**Potential Health and Safety Hazards** (Analyze each principal step for potential hazards)	**Hazard Controls** (Develop specific controls for each potential hazard)
Site set-up	Hazardous site conditions Traffic Slips, trips and falls	Review work scope, conduct site recon, check weather on exterior work days. Wear highly visible clothing Maintain good housekeeping in work zone
Work area set-up	Electrocution, explosion or utility damage Slips, trips and falls Fire Inhalation	Check for overhead utilities when inside and outside, work with utility locater to avoid buried lines. Use jacks and blocking to level equipment A 20-lb fire extinguisher shall be on-site, fuel store in approved safety can. In addition to the air monitoring performed by others to comply with the site CAMP during drilling, a portable PID and dust tracker will be worn on the body of the site supervisor. while advancing the interior borings, fresh air will be supplied and an exhaust system will be setup (with a hose extending outside) to vacate any VOC's

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ACTIVITY HAZARD ANALYSIS FORM

Activity: Geotechnical Subsurface Investigation at Global Foundries Building 320B	**Date:** May 4, 2020 through May 8, 2020
	Project: Global Foundries FAB 10
Description of the Services: Perform 8 geotechnical test borings (3 exterior and 5 interior).	**Site Supervisor:** Dean Anderson (Chazen)
	Site Safety Officer: Whiting-Turner Safety Officer

Work Activity Sequence (Identify the principal steps involved and the sequence of work activities)	**Potential Health and Safety Hazards** (Analyze each principal step for potential hazards)	**Hazard Controls** (Develop specific controls for each potential hazard)
Rig Safety	Pinching, Crushing & Striking Rig Stability Splashing & Inhalation Strains from lifting Handling of soils	Wear proper PPE (hard hat, steel toe boots, gloves, ear protection, glasses) A 2-ft extension zone around any part of the rig in operation. No part of the body or tool held can enter without coordinating with operator. Tower only raised/lowered when jacks are down. communicate and stay in sight of others when operating winch and cathead. use proper lifting techniques open bags of dry materials with appropriate tool and work up wind. Nitrile gloves will be worn while handling all soil samples due to the potential of containments. Drilling work will be performed by a an operator that has their OSHA 40/Hazwooper safety certificate. any drilling water will be contained and left on-site.
Stand on core drill	Electrocution Utility damage Slips, trips and falls Inhalation	Use proper GFI extension cord. Work with utility locater to avoid buried lines. Maintain good house keeping. Use water when cutting concrete

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ACTIVITY HAZARD ANALYSIS FORM

Activity: Geotechnical Subsurface Investigation at Global Foundries Building 320B	**Date:** May 4, 2020 through May 8, 2020
	Project: Global Foundries FAB 10
Description of the Services: Perform 8 geotechnical test borings (3 exterior and 5 interior).	**Site Supervisor:** Dean Anderson (Chazen)
	Site Safety Officer: Whiting-Turner Safety Officer

Work Activity Sequence (Identify the principal steps involved and the sequence of work activities)	**Potential Health and Safety Hazards** (Analyze each principal step for potential hazards)	**Hazard Controls** (Develop specific controls for each potential hazard)
All Activities	COVID-19	Wear proper PPE (gloves & face mask) maintain 6-foot social distance separation between drillers and observer at all times. Driller and Helper will be required to be within close proximity to safely advance the test borings. This includes, but not limited to, handling and attaching the augers, drilling rods and the split spoon sampler and passing tooling between them. At the end of the shift or prior to eating hands will be washed with soap and water for 20 seconds or a hand sanitizer with at least 60% alcohol.