

Former IBM Endicott Site – Then and Now

The New York State Department of Environmental Conservation (DEC) continues to work closely with the State Department of Health (DOH) to protect public health and the environment at and near the Former IBM Endicott site. For more than four decades, the environmental cleanup activities conducted by IBM resulted in significant improvements to soil, soil vapor, and groundwater quality in the village of Endicott, Broome County.

New York State is committed to overseeing the remaining cleanup actions and efforts to address legacy contamination and keep the Endicott community updated throughout this process, and this community update will provide an overview of the site history, investigation and cleanup efforts that have been undertaken and review the current status.

DEC continues to be at the forefront of addressing contamination at this site and continues to use the latest science and data to ensure both current and prior cleanup efforts are fully protective of public health and the environment.

Site Cleanup History

Volatile organic compounds (VOCs) were first discovered in the soil and groundwater at the former IBM Endicott facility in 1979. The presence of VOCs is attributed to historical storage and handling of solvents and petroleum products used by IBM and others in the area. These contaminants are commonly associated with historic commercial and industrial uses across New York State. The primary contaminants of concern associated with IBM's Endicott operations are 1,1,1-trichloroethane (TCA), trichloroethene (TCE), cis-1,2-dichloroethene, trans-1,2-dichloroethene, and vinyl chloride.

The Former IBM Endicott site is divided into seven Operable Units (OUs) and cleanup work at the OUs is performed by IBM with oversight by DEC. An OU represents a portion of a cleanup program for a site that, for technical or administrative reasons, can be addressed separately to investigate, eliminate, or

mitigate a release, threat of release or exposure pathway resulting from contamination.

The seven OUs are described below and are shown on the Area Designations figure on page 6.

- OU1 (Railroad Corridor Source Area) and OU2 (North Street Area) are located on the IBM property in the central portion of the current Huron Plant.
- OU3 (Southern Area and Off-Site Capture Zone A) extends in a southerly direction from the central portion of the Site toward the Susquehanna River.
- OU4 (former Ideal Cleaners area) is located at 1900 North Street.
- OU5 (Building 57 Area) is located on-site on the eastern portion of the Huron Plant area and off-site beneath the automobile dealership.
- OU6 (Plume Control in bedrock groundwater) is located primarily beneath the south-central portion of the Huron Plant area.
- OU7 (Northwest Area) is the western portion of the Huron Plant.

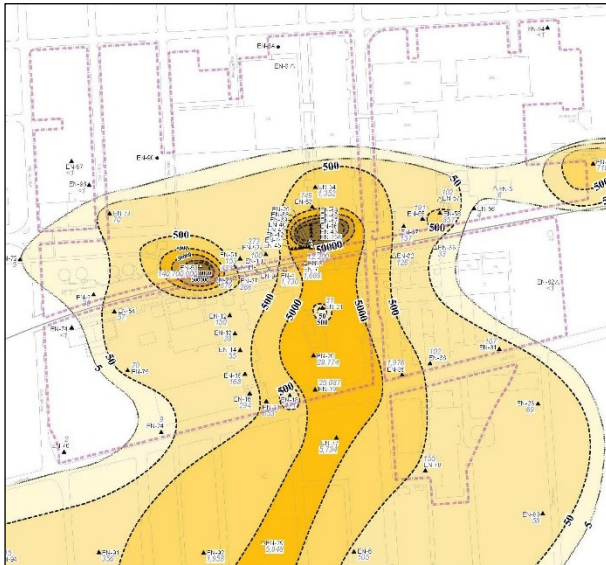
OU1, OU2 and OU3 - Update on Groundwater Contamination

In the early 1980s, IBM conducted a soil excavation and began contaminant recovery after it discovered an underground storage tank had leaked solvents and impacted the underlying groundwater. TCA is the predominant VOC in OU1 and OU2 and TCE is the predominant VOC in OU3. To clean up and control the migration of both groundwater plumes, IBM relied on a series of extraction wells and treatment plants which have been in operation since the early 1980s.

Beginning in 2004, IBM enhanced this system by installing an additional nine extraction wells and seven clean water injection wells in OU3. The clean water injections continued for more than 10 years and were discontinued when the plume south of North Street was reduced by more than 90 percent. (*see page 2 for figures comparing TCE concentration maps from 1980 and 2023*).

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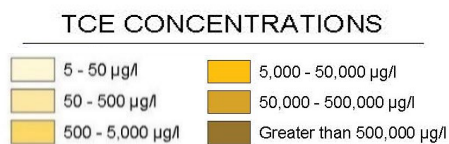
OU1 and OU2 - Groundwater



TCE Concentrations – September 1980



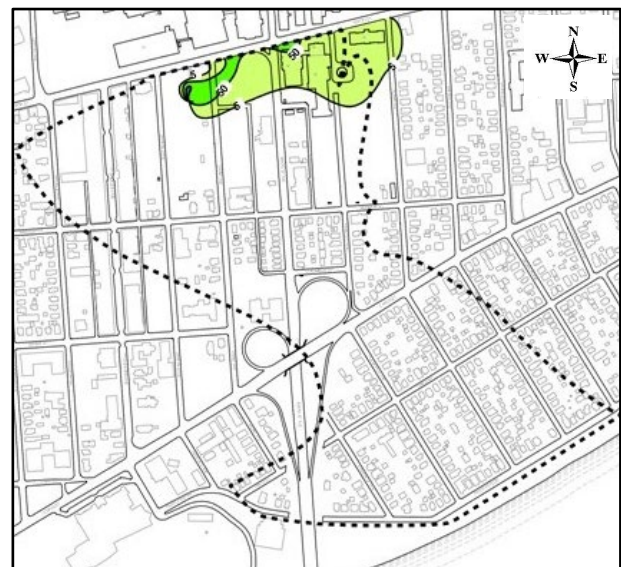
TCE Concentrations – August 2023



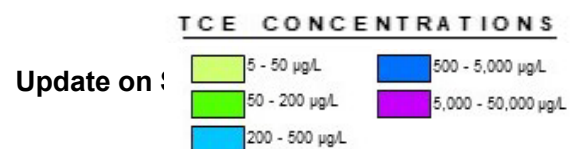
OU3 - Groundwater



TCE Concentrations – April 2004



TCE Concentrations – August 2023



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OU3 – Update on Soil Vapor and Indoor Air

In the early 2000s, the process of vapor intrusion and associated exposure pathways became an environmental concern across the state (*see inset figure showing the process of soil vapor intrusion on page 3*). Endicott was one of the first and largest soil vapor intrusion (SVI) studies and mitigation efforts undertaken in New York State.

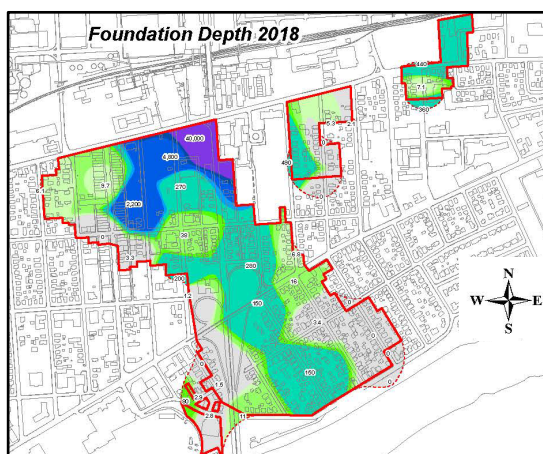
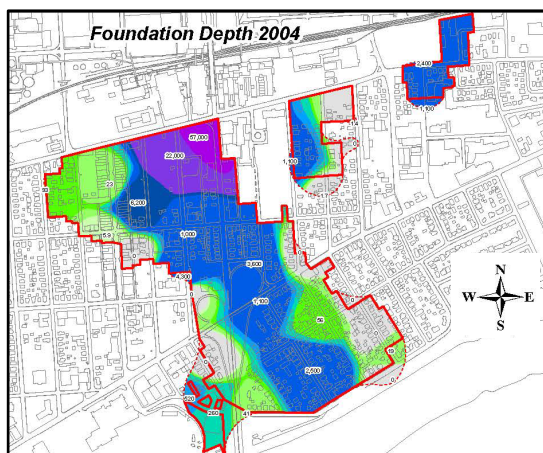
With DEC oversight, IBM began indoor air sampling of structures during the 2002/2003 heating season. In lieu of sampling every single home, IBM conducted a comprehensive soil vapor sampling program in 2004, referred to as the Groundwater Vapor Project (GVP). Data collected during the GVP was used to define the “ventilation area”. This precautionary approach that prioritized public safety by providing mitigation systems to a larger area than would have been anticipated if each individual house was sampled. This process also allowed IBM to install mitigation systems within a short timeframe. The GVP involved completion of a foundation-level (samples collected at a depth similar to a typical basement foundation) soil vapor survey across and outside of areas where VOCs were historically detected in groundwater around the former IBM facility. The sampling program included simultaneous collection and analysis of indoor air, ambient air, and substructure soil vapor.

When the investigation started, there were no national standards or New York State standards or criteria for residential indoor air. As such, DEC and DOH used a highly protective “no discernible impact” approach, meaning the presence of TCE in soil vapor samples would be used to determine where ventilation would be offered in nearby homes and businesses. DEC and DOH viewed this as a very conservative approach to ensure all exposure pathways were addressed and public protected. Structures just outside of the ventilation area were further sampled to confirm the limits of the ventilation area were accurate.

All homes and businesses within the ventilation area were offered subslab depressurization systems

(SSDS), which are nearly identical to systems installed on homes to address naturally occurring radon gas.

Comparison of Soil Vapor Concentrations –Non-Heating Seasons (2004 and 2018)



Legend

150
Soil Vapor Monitoring Location -
TCE concentrations
Limits of Ventilation
Vapor Limit (Estimated)

TCE Concentrations in micrograms per
cubic meter ($\mu\text{g}/\text{m}^3$)

0 - 5	500 - 1,000
5 - 10	1,000 - 5,000
10 - 50	5,000 - 10,000
50 - 100	10,000 - 50,000
100 - 500	50,000 - 100,000

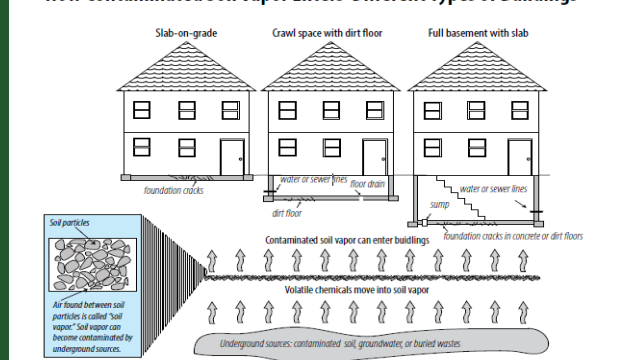
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As of March 2024, there are approximately 500 ventilation systems installed at 452 properties. IBM maintains the systems and performs annual inspections to ensure they are operating properly. The onsite Huron campus buildings have a combination of ventilation systems and HVAC controls to successfully mitigate vapor intrusion potential.

What is Soil Vapor Intrusion (SVI)?

Soil vapor intrusion is a process by which chemicals in the subsurface can enter the indoor air of a building through the basement, crawlspace, or slab, as depicted in the below graphic.

How Contaminated Soil Vapor Enters Different Types of Buildings



OU4 – Update on Ideal Cleaners

To address PCE contamination, IBM performed groundwater extraction and treatment to control the VOC plume originating at the former Ideal Cleaners property, installed ventilations systems in structures, and implemented an in-situ thermal treatment to remove the VOC source within the footprint of the property and two neighboring properties. Post-thermal treatment sampling showed the VOC source area was eliminated, soils met DEC unrestricted use soil cleanup objectives, and the groundwater plume was reduced significantly. DEC approved terminating the groundwater extraction and treatment operations for the Ideal Cleaners in 2014.

OU5 – Update on Building 57 Area

IBM installed ventilation systems, identified four VOC source areas, applied in-situ thermal treatment techniques in these four areas, performed soil excavation, and installed a groundwater extraction and treatment system to address the localized presence of VOCs. IBM eliminated the source areas in soil and post-cleanup sampling confirmed the soils met DEC unrestricted use soil cleanup objectives. Groundwater extraction and treatment operations continue to address residual VOC contamination in the groundwater and IBM continues to operate the ventilation systems.

OU6 – Update on the Plume Control in Bedrock Groundwater

IBM conducted investigation activities to delineate the bedrock groundwater VOC plume area. Once the extent of the contamination was fully defined, IBM installed a groundwater extraction and treatment system to maintain control of the bedrock groundwater plume area. This system continues to operate and, during 2023 alone, successfully removed and treated 12.4 million gallons of contaminated groundwater from the bedrock system.

OU7 – Update on the Northwest Area

IBM conducted soil excavation in 1984 to remove VOC source material associated with the former Endicott Johnson shoe manufacturing property. In addition, to address VOC groundwater contamination, a groundwater extraction and treatment system operated for nearly three decades. Significant reductions in VOC levels in groundwater were achieved, leading DEC and DOH to determine that continued groundwater extraction and treatment was no longer necessary. IBM continues to monitor the area and residual contamination is being addressed by natural attenuation processes, such as biodegradation where the microorganisms break down the remaining contaminants.

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DOH Exposure Assessment

Direct contact with contaminants in soil is unlikely since the majority of the site is an active industrial facility that is covered with buildings and pavement. In addition, access is restricted by a fence, further limiting the potential for contact exposures. The Community Air Monitoring Plan is in place for building demolition work to monitor for dust and particulates and VOCs during the demolition work that will impact soils. The CAMP requires that specific actions and safeguards be followed to ensure that the community is protected from potential airborne contaminant releases as a direct result of work activities. The air monitoring results from the CAMP will be used to confirm that work activities did not spread contamination off-site through the air.

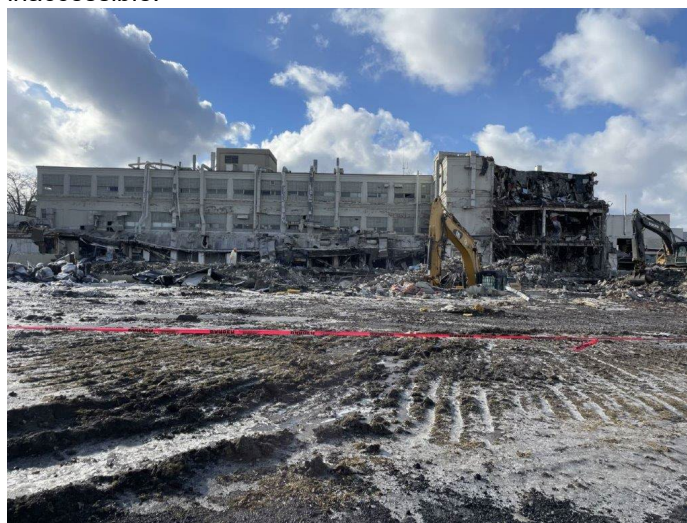
People are not drinking contaminated groundwater because the area is served by a public water supply that is routinely tested per the DOH drinking water requirements to ensure it meets drinking water standards. VOCs in the groundwater may move into the soil vapor (air spaces within the soil), which may move into overlying buildings and affect indoor air quality. This process—like the movement of radon gas from the subsurface into the overlying buildings—is referred to as SVI. Soil vapor intrusion and the potential for soil vapor intrusion was identified in both on- and off-site buildings. The on-site indoor air results for most buildings indicate that the indoor air levels are not of concern. Levels are below DOH air guidelines and consistent with background indoor air levels.

A few on-site buildings indicate indoor air concentrations slightly above DOH guidelines. However, the possibility of health effects in workers exposed to these levels is low, and monitoring within the on-site occupied buildings is ongoing. DOH recommended that reasonable and practical actions be taken to reduce indoor air concentrations within the on-site buildings to the extent that is possible. Any newly occupied on-site buildings are also evaluated for SVI prior to occupancy and if needed, actions are taken to address the potential for exposures. Mitigation systems (systems that ventilate/remove the air beneath

the building to prevent entry into the overlying building) have been and will be installed in all buildings within the off-site defined SVI mitigation area. The mitigation systems prevent the indoor air quality from being affected by possible soil vapor contamination present beneath the buildings. IBM will also continue to evaluate properties within the SVI mitigation area to identify new or modified buildings that might require mitigation systems and monitor and maintain the existing mitigation systems to confirm effectiveness.

Ongoing and Planned Activities

- Continued operation and maintenance of three groundwater extraction and treatment systems.
- Continued sampling of an extensive network of groundwater monitoring wells to assess performance of the cleanup actions.
- Continued operation and maintenance of ventilation systems in structures that reside over the former VOC plume limits.
- Demolition of the Old Buildings Group in OU2 is currently underway. This includes implementing a Community Air Monitoring Program (CAMP) for particulates and VOCs.
- Following demolition of the Old Buildings Group, soil sampling beneath the former building will assess soil quality in areas that were previously inaccessible.



Demolition of Old Buildings Group (OU7) began in 2025.

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Receive Site Fact Sheets by Email

Have site information such as this community update and fact sheet sent right to your email inbox. DEC invites you to sign up with one or more contaminated site email listservs at:

www.dec.ny.gov/chemical/61092.html

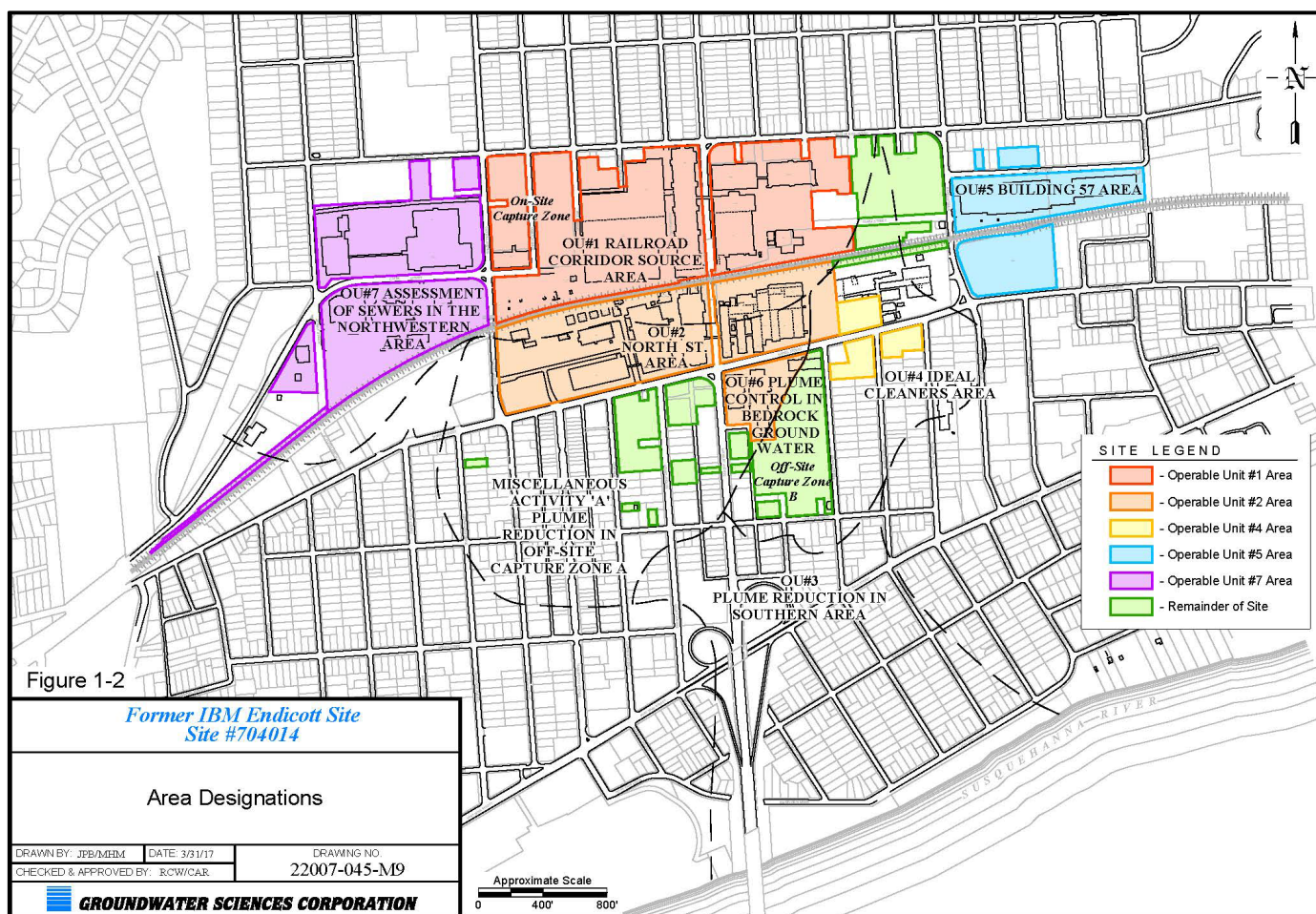
It's quick, it's free, and it will help keep you better informed. As a listserv member, you will periodically receive site-related information and announcements for all contaminated sites in the county(ies) you select.

For more information on New York's environmental investigation and cleanup actions at the former IBM Endicott site, visit

<https://www.dec.ny.gov/chemical/8439.html>

LISTSERV: SIGN UP TO STAY INFORMED

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