Statement of Basis

IBM-Kingston
Town of Ulster, Ulster County
EPA ID No. NYD001359694
Site No. 356002
Statement of Basis
February 2013

Prepared by
Division of Environmental Remediation
New York State Department of Environmental Conservation

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SECTION 1: SUMMARY AND PURPOSE OF THE STATEMENT OF BASIS

This Statement of Basis (SB) has been developed by the New York State Department of Environmental Conservation (the Department) in consultation with the New York State Department of Health (NYSDOH) under the authority of the Solid Waste Disposal Act, as amended, and more commonly referred to as the Resource Conservation and Recovery Act (RCRA), and the authority of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The SB provides background information on the facility, including a summary of investigative findings pertinent to the potential source areas. When available, both soil and groundwater results are summarized and a rationale to support the closure of each SWMU is provided. Various remedial actions proposed throughout the site include No Action, No Further Action, groundwater monitoring, and vapor intrusion evaluation. In accordance with the Order on Consent, environmental easements (EEs) and an Interim Site Management Plan (ISMP) are proposed for all portions of the site.

The purpose of this Statement of Basis (SB) is to inform and provide the public an opportunity to review and comment on the closure of twelve Solid Waste Management Units (SWMUs) and three Areas of Concern (AOCs) at the IBM Kingston site in the Town of Ulster, New York. The releases of hazardous waste or hazardous constituents from regulated units, solid waste management units, and other sources or areas at the facility were addressed by actions known as interim corrective measures (ICMs). An ICM is used whenever possible to achieve the initial goals of controlling the migration of contaminated groundwater and controlling current human and ecological exposure to contaminated media and can be effectively addressed before completion of the RCRA Facility Investigation (RFI) or Corrective Measure Study (CMS).

This SB describes closure conditions identified by various site investigations from the late 1970s to 2012. IBM has conducted these Corrective Action activities with the oversight of the Department from 1988-2011 under a 6 NYCRR Part 373 permit and from July 2011 to present under an Order on Consent.

The Department has issued this document in accordance with the requirements of New York State Environmental Conservation Law and Title 6 of the Official Compilation of

Codes, Rules and Regulations of the State of New York; (6 NYCRR) Part 373 and, where applicable, Part 375 Regulations. This document is a summary of the information that can be found in the site-related reports, the current Order on Consent and documents in the document repository identified below.

The Department welcomes public comment on this SB. Public comments can influence the Department's final approval for a remedial action. If new substantive information and information is presented to the Department through public comments, the Department may integrate these comments and so modify the final decision. Therefore, the public is encouraged to review and provide comments on this SB.

SECTION 2: CITIZEN PARTICIPATION

The Department encourages input from the community on the proposed remedial actions. The Department has set a public comment period from February 28, 2013 to March 29, 2013 to solicit public participation in the remedy selection process.

The administrative record is available at the following locations:

Town of Ulster Public Library
860 Ulster Avenue
Kingston, NY 12401
Phone: 845-338-7881
Fax: 845-338-7884
Email: ulsterdirector@hvc.rr.com

Web site: http://townofulsterlibrary.org/

Monday, Wednesday, and Friday 10:00 am -5:00 pm
Tuesday and Thursday 12:00 pm - 8:00 pm
Saturday 10:00am - 3:00 pm

New York State Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway
Albany, NY 12233-7014

Comments will be summarized and responses provided in the "Response to Comments" document. The Response to Comments will be drafted at the conclusion of the public comment period and incorporated into the administrative record. To send written comments or obtain further information, contact:

Wayne Mizerak, Project Manager
New York State Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway

Albany, NY 12233-7014
wjmizera@gw.dec.state.ny.us

Receive Site Citizen Participation Information by e-mail

Please note that the Department's Division of Environmental Remediation (DER) is "going paperless" relative to citizen participation information. The ultimate goal is to distribute citizen participation information about contaminated sites electronically by way of county email listservs. Information will be distributed for all sites that are being investigated and cleaned up in a particular county under the State Superfund Program, Environmental Restoration Program, Brownfield Cleanup Program, Voluntary Cleanup Program, and Resource Conservation and Recovery Act Program. We encourage the public to sign up for one or more county listservs at http://www.dec.ny.gov/chemical/61092.html

SECTION 3: SITE DESCRIPTION AND HISTORY

Location: The site is located approximately four miles north of the city of Kingston in the Town of Ulster, Ulster County. The site is bounded to the east by retail properties along John M. Clark Drive; to the north by Old Neighborhood Road, to the northwest and southwest by Esopus Creek, to the west by a residential private property, and to the south by residential private properties, a commercial development and Boices Lane. A stand-alone parcel (OU-8) also exists (0.886 acre) between Old Neighborhood Road and U. S. Route 209.

Site Features: The site is located within a 258-acre property owned by Tech City, Inc. The majority of the site is relatively flat, consisting of several buildings and several asphalt parking areas. Constitution Drive runs north-south through the approximate center of the property and along the western boundary of the site. A 60-inch storm water drain cuts along the northern portion of the site and a 42-inch storm water drain cuts along the southern portion of the site. Many of the buildings are vacant. Others are occupied by commercial tenants. The Class 4 site consists of Operable Units 3, 3a, and 5, with a total acreage of 66.3 acres. The 258-acre property is the subject of an Order on Consent to define RCRA Corrective Action and inactive hazardous waste program requirements, where necessary. A Class 4 site is an inactive hazardous waste disposal site that has been properly closed but requires continued site management consisting of operation, maintenance, and monitoring.

Current Zoning/Uses: The site is zoned as the Tech City Redevelopment Overlay District which was implemented by the Town of Ulster to facilitate the redevelopment of Tech City. This specialized zoning precludes certain uses such as heavy industrial. A wide range of businesses operate at the site: general office space, data processing, data warehousing, research and development, light-industry, manufacturing, call centers, internet and e-commerce businesses, and distribution center operations.

Historical Uses: Prior to 1953, the site was used as a farm, including a hanger to house a

plane for crop dusting. After purchases of property by IBM in 1953 and 1980, various uses of the site included a powerhouse building, a sewage disposal facility, warehouse facilities, a salt barn, and temporary storage of hazardous waste. Manufacturing activities included computer and display manufacturing, computer programming, engineering laboratory, communications systems, mainframe computer components, software development, metal plating, electronic card etching, and paint shops. Starting in 1991, IBM began to transfer various activities to other facilities and in 1994, announced its intention to move all remaining personnel and operations and close the facility. In 1989, the site was bought by Tech City, the current owner.

Site Geology and Hydrogeology: Throughout the site, a surficial sand unit overlays a varved clay layer. At various locations throughout the site, a transition zone of intermediate permeability exists between the surficial sand and the varved clay layers. The depth to bedrock varies from a few feet within the vicinity of Constitution Drive to over a hundred feet in the east campus area. The thickness of the sand unit varies from a few feet to approximately 35 feet. The varved clay layer acts as an aquitard and is contiguous throughout the site. The sand unit aquifer and the transition zone have permeabilities which allow those aquifers to be routes of migration for groundwater contamination. The transition zone is not contiguous throughout the site and only has localized impact. In general, overburden groundwater flows towards Esopus Creek.

3.1: Solid Waste Management Units and Areas of Concern

The site is divided into ten operable units (OUs). An OU is an administrative term used to identify a portion of a site that can be addressed by a distinct investigation and/or cleanup approach. See Figure 2 for the boundaries of each operable unit. Seven operable units are referenced in this SB. Three operable units (OUs 2, 4a, and 8) have no areas proposed for closure at this time and are not further referenced in this SB.

A "Solid Waste Management Unit (SWMU)" includes any discernible unit at which solid wastes have been placed at any time, irrespective of whether the unit was intended for the management of hazardous or solid wastes. Such units include any area at the facility at which solid wastes have been routinely and systematically released. These units include certain areas associated with production processes which have potentially become contaminated as a result of routine and systematic releases. See Table 1 for a list of all SWMUs for this site and Figure 1 for the location of each SWMU. Sixteen SWMUs were closed, with public comment, under the October 10, 1996 RCRA Permit No. NYD001359694 (Table 2). No further public comments will be accepted for these SWMUs. Public comment is requested for the 12 of the remaining 16 SWMUs and for the 3 Areas of Concern (AOCs).

An Area of Concern (AOC) is a term used in conjunction with facility-wide corrective action at hazardous waste management facilities. Any area at a facility having a probable release of a hazardous waste or hazardous constituent which may or may not be from a solid waste management unit (SWMU) and is determined by the Department of Environmental Quality to pose a current or potential threat to human health or the

environment. AOCs include areas that have been contaminated by routine and systematic releases of hazardous waste or hazardous constituents, excluding one-time accidental spills that are immediately remediated and cannot be linked to solid waste management activities. AOCs are considered equivalent to SWMUs for the purposes of facility-wide corrective action.

SECTION 4: LAND USE AND PHYSICAL SETTING

The Department may consider the current, intended, and reasonably anticipated future land use of the site and its surroundings when evaluating a remedy for soil remediation. Current use of the land is for mixed industrial and commercial purposes. Under proposed redevelopment plans portions of the site may also be used for restricted residential uses.

SECTION 5: SITE RESPONSIBILITY AND LEGAL INSTRUMENT

The IBM Kingston facility was operated in accordance with a 6NYCRR Part 373 Hazardous Waste Management Permit until 2011. This permit addressed: (1) the storage and management of hazardous waste in containers; (2) the operation and maintenance of the Interim Corrective Measures (ICMs) for contaminated groundwater; (3) the monitoring and maintenance of the groundwater monitoring network used to assess the performance of the interim corrective measures; and (4) financial assurance for closure and corrective action.

In July of 2011 an Order on Consent, which incorporated the requirements of the Part 373 permit, was executed. The Order on Consent addresses: (1) closure requirements for all open Solid Waste Management Units and Areas of Concern; (2) the operation and maintenance of the Interim Corrective Measures (ICMs) for contaminated groundwater; (3) the monitoring and maintenance of the groundwater monitoring network used to assess the performance of the interim corrective measures; (4) requirements for implementation of Institutional and Engineering Controls; and (5) requirements for development and implementation of a Site Management Plan.

SECTION 6: SITE CONTAMINATION

6.1: Summary of the RCRA Facility Investigation

A RCRA Facility Investigation (RFI) has been conducted. The purpose of the RFI was to define the nature and extent of any contamination resulting from previous activities at the site. The field activities and findings of the investigation are described in the RFI Reports.

The following general activities are conducted during an RFI:

- Research of historical information,
- Geophysical survey to determine the lateral extent of wastes,

- Test pits, soil borings, and monitoring well installations,
- Sampling of waste, surface and subsurface soils, groundwater, and soil vapor,
- Sampling of surface water and sediment,
- Ecological and Human Health Exposure Assessments.

The analytical data collected on this site includes data for:

- groundwater
- soil
- soil vapor/indoor air

6.1.1: Standards, Criteria, and Guidance (SCGs)

The remedy must conform to promulgated standards and criteria that are directly applicable or that are relevant and appropriate. The selection of a remedy must also take into consideration guidance, as appropriate. Standards, Criteria and Guidance are hereafter called SCGs.

To determine whether the contaminants identified in various media are present at levels of concern, the data from the RFI were compared to media-specific SCGs. The Department has developed SCGs for groundwater, surface water, sediments, and soil. The NYSDOH has developed SCGs for drinking water and soil vapor intrusion. The tables found in Exhibit A list the applicable SCGs in the footnotes. For a full listing of all SCGs see: http://www.dec.ny.gov/regulations/61794.html

6.1.2: RFI Results

In a number of the SWMUs, tanks and associated, visually contaminated soils were removed and properly disposed. As a general rule, information regarding the level of contaminants which may have been present before removal is not available. After removal, soil samples at all AOCs and all but one of the SWMUs indicate that no residual soil contamination above unrestricted SCGs remains. Residually contaminated soil, above unrestricted SCGs, remains at SWMU AA.

In SWMU AA, five semi-volatile organic compounds (SVOCs) were detected above SCGs for commercial use in subsurface soil: benzo(a)pyrene (1,200 ppb, SCG 61ppb), benz(a)anthracene (1,300 ppb, SCG 224 ppb), benzo(b)fluoranthene, (1,500 ppb, SCG 1,100 ppb), chrysene (1,200 ppb, SCG 1,200 ppb) and dibenzo(a,h)anthracene (200 ppb, SCG 14 ppb). Four chlorinated solvents were detected at levels slightly above SCGs in groundwater: 1,1,1-trichloroethane (8.4 ppb, SCG 5 ppb), 1,1-dichloroethane (9.3 ppb, SCG 5 ppb), trichloroethene (31 ppb, SCG 5 ppb), and total 1,2-dichloroethene (17 ppb, SCG 5 ppb).

There is no reason to suspect that any of these SWMUs are an ongoing source of groundwater contamination at this site. The site monitoring program indicates that the ongoing pumping and treatment of the groundwater continue to effectively control groundwater contamination.

6.2: Interim Corrective Measures

Investigations and monitoring have been ongoing since 1978 to characterize groundwater flow and quality beneath this site. Results of these investigations in the early 1980s indicated that groundwater containing dissolved chemicals might be flowing off the IBM Kingston site to the north and northwest from an area known as the North Parking Lot Area (NPLA). In mid-1985, IBM Kingston installed and began operating a Groundwater Collection System (GWCS) in OU-3a, consisting of a set of groundwater cutoff trenches parallel to Enterprise Drive and Old Neighborhood Road. From December 1986 through the end of June 1994, water recovered from these trenches was passed through the on-site Industrial Waste Treatment Facility (IWTF) for removal of volatile organic compounds using counter-current air stripping towers. During early 1994, upgrades to the GWCS included the installation of new pumps in the associated trench manholes, the construction of a new treatment building and the installation of tray aerator units. On July 8, 1994, these units were put on line and any groundwater collected by the GWCS was conveyed to the treatment building, treated by aeration and discharged to the sanitary sewer. Additionally, the northwest leg of the GWCS was extended approximately 240 feet with three additional trench manholes and one additional pump station installed. The trench extension project was completed in May 1995. Also in 1995, a clay berm was installed to the top of bedrock (varies from 5 to 16 feet deep) within the vicinity of where the industrial and sanitary sewer lines passed through the western border of the East Campus. The purpose of the clay berm was to prevent migration of groundwater contamination along the bedding planes of the industrial waste, storm water, and sanitary sewer lines. On July 10, 1996, the discharge from the aerators was connected to the storm sewer system under a State Pollutant Discharge Elimination System (SPDES) permit.

In April 1987, an additional groundwater extraction operation began at well MW-504S at the southern end of Building 005 (B005) in OU-3. Initially, the extracted groundwater was run through the IWTF. In July 1994, this groundwater extraction point was upgraded to its own dual-tray aerator unit and the treated water was discharged to the sanitary sewer. In 2007, this system was turned off because the building was vacant and unheated and the system was freezing and became inoperable. A significant decrease in localized groundwater contaminant concentrations at MW-504S was achieved and has been maintained since the shutdown of this system.

6.3: Summary of Environmental Assessment

Nature and Extent of contamination: Groundwater is contaminated within the main production area, primarily by volatile organic compounds (VOCs), including chlorinated solvents, their degradation products, and Freon. Investigations dating back to the late

1970s found contravention of groundwater standards. Initially, Freon was a groundwater contaminant that exceeded groundwater SCGs, but has not been detected in the groundwater for several years. To date, two potential source areas in OU-3 (see Appendix A) have yet to be fully characterized because of their inaccessibility.

A localized source of bedrock groundwater contamination is present within the vicinity of Building 202 (located in OU-1) where hydraulic fluid containing polychlorinated biphenyls (PCBs) leaked into the bedrock from an elevator shaft.

A small quantity of waste was stabilized and left in place during closure of the surface impoundment identified as the Industrial Waste Sludge Lagoon (IWSL) (OU-5). Some VOC groundwater contamination has been identified in the adjacent Wastewater Treatment Area; however, this contamination is up gradient of the impoundment and appears to have come from the main campus plume (located in OU-3 and OU-3a) to the east. No significant groundwater contamination is associated with the IWSL.

Vapor intrusion investigations and evaluations for all occupied buildings at this site have been completed. The conclusions and recommended actions are presented in Section 7.

6.4: Summary of Human Exposure Pathways

The intent of the RCRA Corrective Action program is to reduce or eliminate the potential exposure of site contamination to people and the environment. The level of potential exposure reduction to be achieved at any given site should address the protection of human and environmental receptors that currently exist or may exist in the future.

Groundwater at this site is not used for drinking water. Municipal water serves the local residents and the businesses on site. All groundwater contamination is on site. There is a potential for exposure to site-related contaminants through dermal contact with contaminated groundwater by workers installing footings for new-building construction or installing/repairing utilities within the confines of or in close proximity to the areal extent of the groundwater plume. Exposures to workers by vapors potentially released during these invasive activities and exposure to workers or building occupants by vapor intrusion into occupied buildings are also potential threats. Throughout the site, with the exception of OU-4, invasive activities below 1 foot have the potential to result in dermal contact with contaminated soils and in inhalation of contaminated soil particles by the workers. In OU-4, invasive activities below 2 feet have the potential to result in dermal contact with contaminated soil and in inhalation of contaminated soil particles by workers. The site management plan will specify air monitoring protocols and working procedures for all invasive activities to insure the workers and the community are protected.

The groundwater pump and treat system has proven to be effective at reducing and containing the contaminant plume. This system has reduced the potential for human exposure by preventing the contaminated groundwater from flowing off-site.

Some impacted soils have been excavated and removed from the site during or prior to the investigations of the SWMUs. These areas were then backfilled and covered with clean soil, however, some residual contamination may remain. At two locations (SWMUs –S and –T in Appendix A), IBM has identified contaminated subsurface soils that require removal, but has not developed a remedial alternatives report. A third potential source area (SWMU M in Appendix A) requires investigation. To date, this third area has been inaccessible. Accessibility is expected by the summer of 2013. The SWMUs noted in Appendix A are not part of this SB, but will be addressed in a future SB.

Since mid-1985, IBM has treated contaminated groundwater to levels that comply with groundwater standards. All discharges associated with the treatment of contaminated groundwater are effectively controlled and do not present any risk to human health or the environment.

Investigations in January and March of 2012 and in March 2009 evaluated the potential for soil vapor intrusion. The investigations included sampling of indoor air, outdoor air, and sub-slab soil vapor. Based upon these investigations the following buildings have no vapor intrusion impacts that require either mitigation or continued monitoring: B005N, B023, B042, B043, B052, B064, B201, B202, and B203. The following buildings require continued monitoring for at least three years: B021, B022, and B024. Buildings B001, B002, B003, B004, and B025 are unoccupied and require a vapor-intrusion assessment before occupancy.. Based on historical use and the findings of the investigations at this site, Buildings B031, B032, B033, B051 do not have contamination below them or in close proximity. Therefore, these buildings do not require an investigation for vapor intrusion impacts.

6.5: Summary of Remedial Objectives

Cleanup goals have been established for the surface soil, subsurface soil, and groundwater beneath the site. The goals of these remedial actions are to: (1) ensure surface and subsurface soils meet the SCOs for the intended end use of either: (a) restricted residential use, or (2) commercial use, for the corresponding portions of the site identified in the Order on Consent; (2) restore the groundwater at the site to New York State Groundwater Quality Standards.

SECTION 7: SUMMARY OF PROPOSED REMEDY

7.1: Summary of Proposed Remedy

This section describes the environmental conditions and recommended remedial actions for 12 SWMUs and 3 AOCs for which remedial actions were not documented in the 1996 permit. For each of these SWMUs and AOCs, the Department recommends continued site management and placement of Environmental Easements (EE) for the operable units and parcels in which they are located. The ISMP and OU-specific EEs will include provisions for vapor intrusion evaluations and mitigation, specifications for groundwater monitoring and use restrictions, and procedures for invasive activities. The procedures for

invasive activities will be implemented site-wide, for any excavation below 1 foot in those areas designated for commercial use and below 2 feet for those areas designated for restricted residential use. An ISMP is a plan that is developed and implemented for interim remedial measures and/or operable units of a site before a site is fully remediated. As explained below, the Department recommends No Action for four of these SWMUs and two AOCs. For the remaining eight SWMUs and one AOC, IBM or Tech City have implemented ICMs such as a tank removal, soil removal, or a groundwater pump and treat system. For these eight SWMUs and one AOC, the Department recommends No Further Action.

The descriptions of the SWMUs and AOCs are grouped according to the operable units in which they are located.

A. Operable Unit 1(1 SWMU and 1 AOC)

The SWMU and the AOC in OU-1 will be subject to an environmental easement that restricts future property use to commercial, provides a groundwater use restriction, and requires compliance with an ISMP.

In general, the ISMP will include an excavation work plan and provisions for vapor intrusion evaluations for new buildings and when currently vacant buildings are re-occupied and/or renovated for use. Additional information regarding specific requirements of the ISMP can be found in Exhibit C of the Order on Consent and in the first paragraph of Section VI of this SB.

a. SWMU AE - B202 Elevator Shaft

Background: In May 1996, a maintenance crew discovered a loss of hydraulic fluid from Elevator No. 2 in building B202. Subsequent environmental investigations detected hydraulic fluid (0.9 ppm) and PCBs (10.2 ppb) in a downgradient well in close proximity to the elevator shaft. Contamination was not detected in any other downgradient wells.

In October 2000, a maintenance crew discovered a leak in Elevator No. 1 in building B202. Once again, hydraulic fluid (45 ppm) and PCBs (13 ppb) were detected immediately downgradient. The most recent data (November 2006) did not find detectable levels of PCBs in this well.

Recommended Action: No Further Action with placement of an EE and implementation of an ISMP, as described above and required by the Order on Consent, is recommended.

b. AOC - Triangle Plume Area

Background: The Triangle Plume Area is located in southeast corner of OU-1. Low-level groundwater VOC contaminated has been detected within the vicinity

of a 42-inch storm water pipe. Data provided in the 2011 Annual Report indicated that only one well, southwest of the 42-inch drain, contained VOC contamination above SCGs (Trichloroethene 5.5 - 18 ppb).

Recommended Action: No Action with placement of an EE and implementation of an ISMP, as described above and required by the Order on Consent, is recommended.

B. Operable Unit 3 (8 SWMUs and 1 AOC)

All SWMUs and the AOC in OU-3 will be subject to an environmental easement that restricts future property use to commercial, provides a groundwater use restriction, and requires compliance with an ISMP.

In general, the ISMP will include an excavation work plan and provisions for vapor intrusion evaluations for new buildings and when currently vacant buildings are occupied and/or renovated for use. Additional information regarding specific requirements of the ISMP can be found in Exhibit C of the Order on Consent and in the first paragraph of Section VI of this SB.

Some localized portions of OU-3 require further investigation to evaluate the potential for source removal (see Appendix A).

a. SWMU G – Former Waste PCE Tank

Background: SWMU G includes a former tetracholorethene (PCE) waste tank and an associated former PCE supply tank. A PCE release occurred in 1987. Both tanks were decommissioned in 1987 and removed in 1989. IBM also removed an estimated 45 cubic yards of PCE-impacted soil. Historically, PCE has been detected above SCGs in downgradient monitoring wells. Recent groundwater sampling shows continued low-level contamination (PCE 1.8 ppb and TCE 1.4 ppb), which is below the SCG of 5ppb for both PCE and TCE. A 2009 and 2010 MIP investigation did not identify any additional potential source areas associated with this SWMU.

Recommended Action: No Further Action with placement of an EE and implementation of an ISMP, as described above and required by the Order on Consent, is recommended.

b. SWMU R – Building 005 South Former Waste TCA UST

This SWMU consists of a former underground waste tank and a former underground supply tank. The location of these underground storage tanks (USTs) is only approximately known. Soil gas samples indicated no elevated concentrations of trichloroethane (TCA) or its breakdown products. No TCA or its breakdown products were detected in the soil or groundwater at concentrations

above SCGs. A low-level TCA plume (5 ppb) persists in two downgradient wells.

Recommended Action: No Further Action with placement of an EE and implementation of an ISMP, as described above and required by the Order on Consent, is recommended.

c. SWMU U – North Parking Lot Area Plume

Background: A groundwater divide within the confines of the site's groundwater plume causes the northern portion of the site's plume to migrate toward the northwest and the southern portion of the site's plume to migrate toward the south west. SWMU U is the northern portion of the site's plume and is intercepted by the GWTS implemented in 1985 (upgraded in l994 and 1996). Ongoing groundwater extraction, treatment, and monitoring continue.

Recommended Action: No Further Action with placement of an EE and implementation of an ISMP, as described above and required by the Order on Consent, is recommended.

d. SWMU V – Portions of B005 Plume

Background: In 1987, an additional groundwater treatment extraction system began at MW-504S near the southern portion of B005. Extracted groundwater was treated jointly with the water extracted by the GWTS implemented in 1985. In 1994, SWMU V was upgraded with its own aeration system in B005. In 2007, IBM shut down the extraction and treatment system because the water in the aeration system was freezing. Building B005 was unoccupied and has since been demolished. Low-level groundwater contamination (PCE 13 ppb and TCE 1.4 ppb) continues to be detected in downgradient wells.

Recommended Action: No Further Action with placement of an EE and implementation of an ISMP, as described above and required by the Order on Consent, is recommended.

e. SWMU Y – Former Fluoride Wastewater Ejector Tank

Background: This is an underground fiberglass wastewater holding tank. In July 1994, the tank was closed in place by removing the top and filling with gravel. Subsequent groundwater monitoring did not detect fluoride in the groundwater.

Recommended Action: No Further Action with placement of an EE and implementation of an ISMP, as required by the Order on Consent, is recommended.

f. SWMU AA – Inactive Building 031 Septic System

Background: Building 031 was initially served by a septic system before B036 had the capacity to pre-treat sanitary waste. There are no reports of releases of hazardous constituents to the septic system and no known reason to believe that hazardous constituents were discharged to the septic system. When B036 developed the capacity to pre-treat septic wastes, the septic waste from B031 was rerouted to B036.

Recommended Action: No Further Action with placement of an EE and implementation of an ISMP, as described above and required by the Order on Consent, is recommended.

g. SWMU AB – Former Waste TCA Recovery Unit

Background: SWMU AB is a former above-ground TCA recovery unit that was located in B001. The recoverable TCA was piped from an underground tank SWMU S. Most of the pipe used was in the ceiling of B001. In close proximity to SWMU S, the pipe went underground to access the tank. No groundwater contamination is associated with the above-ground structures. All TCA NAPL detected is associated with the underground tank and the underground pipe in close vicinity to the tank and will be addressed under SWMU S. The recovery unit has been removed. Some of the aboveground pipe may be in place. If so, this will be addressed under SWMU S (See Appendix A).

Recommended Action: No Further Action with placement of an EE and implementation of an ISMP, as described above and required by the Order on Consent, is recommended.

h. SWMU AC – Former B005S Solvent Recovery Process Unit

Background: This unit has been removed. This unit processed gaseous waste containing acetone and isopropyl alcohol (IPA). The aqueous waste was piped to two underground tanks SWMU H and SWMU I (both determined to be No Further Action under the 10/24/96 permit). IPA was detected in two soil samples at 84 ppb and 148 ppb. No acetone or IPA was detected in the groundwater.

Recommended Action: No Further Action with placement of an EE and implementation of an ISMP, as described above and required by the Order on Consent, is recommended.

i. AOC - Sanitary Sewer Lines

Background: The sanitary sewer lines run parallel to the industrial waste sewer lines long the boundary between OU-3 and OU-3a. Portions of the sanitary sewer lines lie within the contaminated groundwater that is part of SWMU U – North Parking Lot Area Plume. Historical documentation of infiltration necessitated an assessment of the potential for the sanitary sewer line to act as a conduit for

offsite migration of infiltrated contaminated groundwater. An April 2012 sampling program indicated that the sanitary sewer line is not a transport mechanism for offsite migration of contaminated groundwater.

Recommended Action: No Further Action with placement of an EE and implementation of an ISMP, as described above and required by the Order on Consent, is recommended.

C. Operable Unit 3a (1 SWMU)

The SWMU in OU-3a will be subject to an environmental easement that restricts future property use to commercial, provides a groundwater use restriction, and requires compliance with an ISMP.

In general, the ISMP will include an excavation work plan and provisions for vapor intrusion evaluations for new buildings and when currently vacant buildings are occupied and/or renovated for use. Additional information regarding specific requirements of the ISMP can be found in Exhibit C of the Order on Consent and in the first paragraph of Section VI of this SB.

a. SWMU U – North Parking Lot Area Plume

Background: See SWMU U in OU-3.

Recommended Action: No Further Action with placement of an EE and implementation of an ISMP, as described above and required by the Order on Consent, is recommended.

D. Operable Unit 4 (1 SWMU and 1 AOC)

All SWMUs and the AOC in OU- 4 will be subject to an environmental easement that restricts future property use to restricted residential, provides a groundwater use restriction, and requires compliance with an ISMP. OU-4 is the only portion of this site for which remedial action is evaluated for a future use of restricted residential.

In general, the ISMP will include an excavation work plan and provisions for vapor intrusion evaluations: (1) for new buildings and (2) when currently vacant buildings are reoccupied and/or renovated for use. Additional information regarding specific requirements of the ISMP can be found in Exhibit C of the Order on Consent and in the first paragraph of Section V of this SB.

a. SWMU Z – Building 033 Septic System

Background: Building B033 was constructed in the mid-1950s and at that time a septic system was installed. From the 1950s through the 1980s, a degreaser was

used in the ambulance and fire truck garage area located in the southwest corner of this building

No VOCs, SVOCs, or PCBs were detected in the soil samples above soil cleanup guidance values. In groundwater, four VOCs (trichloroethene at 14 ppb, 1,2-dichloroethene, total, at 16 ppb, 1,1,1-trichloroethane at 6.8 ppb, and 1,1-dichloroethane at 18 ppb) were detected. The resulting groundwater plume is relatively small and appears to extend only a short distance down gradient of this SWMU.

Recommended Action: No Further Action with placement of an EE and implementation of an ISMP, as required by the Order on Consent, is recommended.

b. AOC - MOSF Demolition

Background: The major oil storage facility (MOSF) area consisted of three aboveground tanks for #6 fuel oil: two 500,000-gal tanks, one 150,000-gal tank and a concrete delivery station. The tanks have been removed and the retention berms were leveled. Nine soil samples at three locations show that the top 2 feet meet the soil cleanup objectives for restricted residential use for this operable unit.

Recommended Action: No Further Action with placement of an EE and implementation of an ISMP, as described above and required by the Order on Consent, is recommended.

E. Operable Unit 6 (1 SWMU)

All SWMUs in OU-6 will be subject to an environmental easement, including: restricting future property use to commercial, a groundwater use restriction, and compliance with an ISMP.

In general the ISMP will include an excavation work plan and performance of a vapor intrusion evaluation as appropriate. Additional information regarding specific requires of the ISMP can be found in the Order on Consent and in the first paragraph of Section VI of this SB.

a. SWMU AD – Former Fire Training Area

Background: This unit contained a self-contained concrete structure consisting of a 500-gallon above ground steel tank containing flammable liquid, two steel tray-like burn basins, and a 1,500 gallon underground concrete holding tank for extinguished flammable liquids, water used in the training exercise, and possibly fire fighting chemicals. The base of this holding tank was 6.5 feet below grade. The discharge pipe was reportedly not used and the wastes were periodically

pumped out.

The training area was dismantled in 1985 and the holding tank removed. Four soil gas samples detected no VOCs. Nineteen soil samples were taken from eight borings. Two SVOCs were detected slightly above SCGs. At a depth of 2 feet, benzo(a)anthracene (61 ppb) and benzo(a)pyrene (48 ppb) were detected. In another boring, benzo(a)pyrene (63 ppb) was detected at 12-14 feet. At a third boring, benzo(a)pyrene (59 ppb) was detected at 14-16 feet. No VOCs or PCBs were detected above SCGs.

In groundwater, no SVOCs were detected above the guidance value. Phenol was detected at the guidance value of 1 ppb. No VOCs or PBCs were detected above their respective SCGs.

Recommended Action: No Further Action with placement of an EE and implementation of an ISMP, as described above and required by the Order on Consent, is recommended.

F. Operable Unit 7 (1 SWMU)

The SWMU in OU-7 will be subject to an environmental easement that restricts future property use to commercial, provides a groundwater use restriction, and requires compliance with an ISMP.

In general, the ISMP will include an excavation work plan and provisions for vapor intrusion evaluations for new buildings and when currently vacant buildings are renovated for use. Additional information regarding specific requirements of the ISMP can be found in Exhibit C of the Order on Consent and in the first paragraph of Section VI of this SB.

a. SWMU W – Former B004 Separator Tank

Background: The concrete tank was designed to separate floating material from dissolved material in the Industrial Waste sewer lines. The base of the tank was approximately two feet below the top of groundwater. The tank has been removed. One soil gas sample was taken and no VOCs were detected. Likewise, no VOCs were detected in the soils at concentrations above SCGs. VOCs were detected in the groundwater at levels consistent with the area-wide plume which appears to originate from the northern portion of B005S. Groundwater contamination is being addressed as part of the GWTS described in Section V, B.

Recommended Action: No Further Action with placement of an EE and implementation of an ISMP, as described above and required by the Order on Consent, is recommended.

Table 1 – All SWMUs and AOCs

Operable Unit	Identification	Name
1	SWMU AE	B202 Elevator Shaft
	AOC	Triangle Plume Area
2	SWMU O	Parking Lot Sand Landfill
	SWMU AF	Inactive West Demolition Debris Area
3	SWMU D	Former Waste Acetone Storage Area
	SWMU E	Former Waste IPA Storage Tanks
	SWMU F	Former Waste Side Waste Tanks (2)
	SWMU G	Former Waste PCE Tank
	SWMU H	Former Waste Solvent Recovery Tanks
	SWMU I	Former Waste Solvent Recovery Tank
	SWMU M	Portions of Industrial Waste Sewer Lines
	SWMU P	Building 035 Former Dry Well
	SWMU R	Building 005 South Former Waste TCA UST
	SWMU S	Former Waste TCA Tanks (B001)
	SWMU T	Former Waste Oil Tank
	SWMU U	North Parking Lot Area Plume
	SWMU V	Portions of B005 Plume
	SWMU Y	Former Fluoride Wastewater Ejector Tank
	SWMU AA	Inactive Building 031 Septic System
	SWMU AB	Former Waste TCA Recovery Unit
	SWMU AC	Former B005S Solvent Recovery Process Unit
	AOC	Sanitary Sewer Lines
3a	SWMU U	North Parking Lot Area Plume
4	SWMU C	Former Building 058
	SWMU Q	Building 031 Former Lagoon
	SWMU X	Building 031 Separator Tank
	SWMU Z	Building 033 Septic System
	AOC	MOSF Demolition
4a	none	
5	SWMU L	Former Industrial Waste Sludge Lagoon
6	SWMU B	B-036 Container Storage Area
	SWMU J	Wastewater Treatment Tanks
	SWMU K	Emergency Wastewater Holding Tanks
	SWMU N	Inactive B039 Construction and Debris Landfill
	SWMU AD	Former Fire Training Area
7	SWMU A	B029 Chemical Distribution Center
	SWMU W	Former B004 Separator Tank
8	none	

Table 2 - SWMUs already closed - No Further Action per 10/4/96 Permit**.**

Operable Unit	Identification	Name
1	none	
2	SWMU O	Parking Lot Sand Landfill
	SWMU AF	Inactive West Demolition Debris Area
3	SWMU D	Former Waste Acetone Storage Area
	SWMU E	Former Waste IPA Storage Tanks
	SWMU F	Former Waste Side Waste Tanks (2)
	SWMU H	Former Waste Solvent Recovery Tanks
	SWMU I	Former Waste Solvent Recovery Tank
	SWMU P	Building 035 Former Dry Well
3a	none	
4	SWMU Q	Building 031 Former Lagoon
	SWMU C	Former Building 058
4a	none	
5	SWMU L	Former Industrial Waste Sludge Lagoon
6	SWMU B	B-036 Container Storage Area
	SWMU J	Wastewater Treatment Tanks
	SWMU K	Emergency Wastewater Holding Tanks
	SWMU N	Inactive B039 Construction and Debris Landfill
7	SWMU A	B029 Chemical Distribution Center
8	none	

Appendix A

SWMUs which will be the subject of future Statements of Basis.

a. SWMU M – Portions of the IW Sewer Lines

Not yet fully evaluated because parts of it is inaccessible. The remaining portions of this SWMU will soon be accessible for further investigation.

b. SWMU S – Former Waste TCA Tanks (B001)

SWMU S includes a former 4,000-gallon underground TCA waste storage tank and associated 1,000-gallon underground TCA supply tank. An October 2011 investigation followed by a March 2012 investigation identified a source zone with approximate size of 40 feet by 90 feet (region greater than 50 % solubility).

Source removal/remediation is under consideration. A Focused Remedial Alternatives Report is being developed. In-situ thermal desorption, chemical oxidation, and chemical reduction are among the options being evaluated.

c. SWMU T - Former Waste Oil Tank

A 2,000-gallon waste oil steel underground tank, located near the northwest corner of B003 was used for the collection of waste cutting oil generated during the mid-1950s through the early 1960s. In 1982 the tank failed a pressure test due to leaks at the fill neck. The tank was removed and was reportedly in good condition. The bottom of the tank is reported to have been approximately 6 feet below the water table. Subsequent subsurface soil sample analyses and MIP screening indicate that the fill line to the tank leaked. Maximum detected concentrations for chlorinated solvents were: 1,1,1-trichloroethane (69,000 ppb) 1,1-dichloroethene (440 ppb), tetrachloroethene (25,000 ppb), and trichloroethene (80,000 ppb) . Maximum detected concentrations for BTEX compounds were: toluene (10,000 ppb), ethylbenzene (27,000 ppb), and total xylene (140,000 ppm).

Source removal/remediation is under consideration. Further investigation and the development of a Remedial Alternatives Report will be pursued.

d. SWMU X – Building 031 Separator Tank

This tank was a subsurface oil/water separator. The base of the tank was at approximately the same elevation as the top of the groundwater. No chemicals were known to have been discharged to the separator. All constituents detected in soil and groundwater were detected at levels below SCGs.

The records contain no information concerning closure or removal of this tank. IBM will need to verify that this tank has been properly closed before this SWMU can be closed.

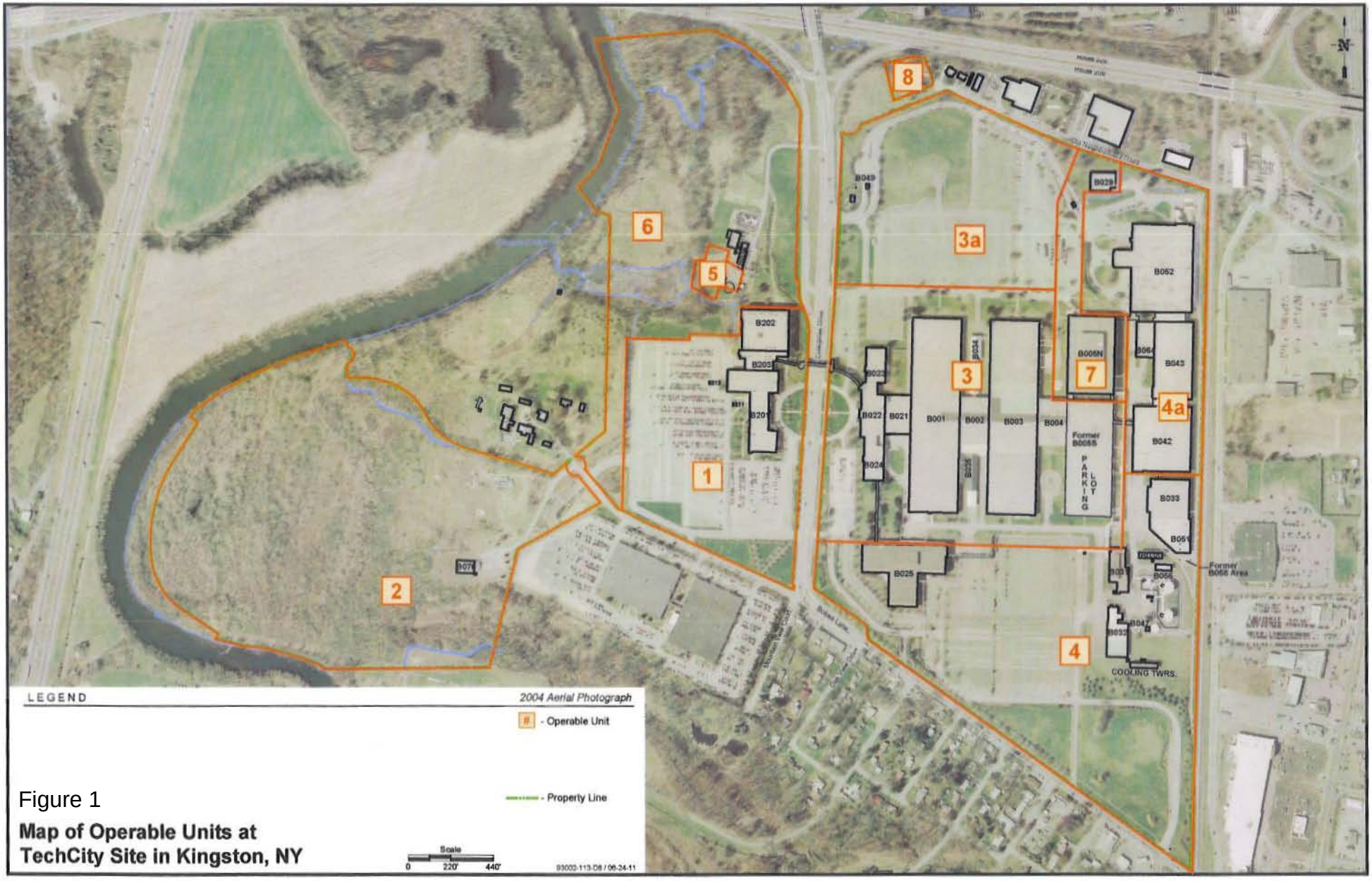

Figure 1

Map of Operable Units at TechCity Site in Kingston, NY

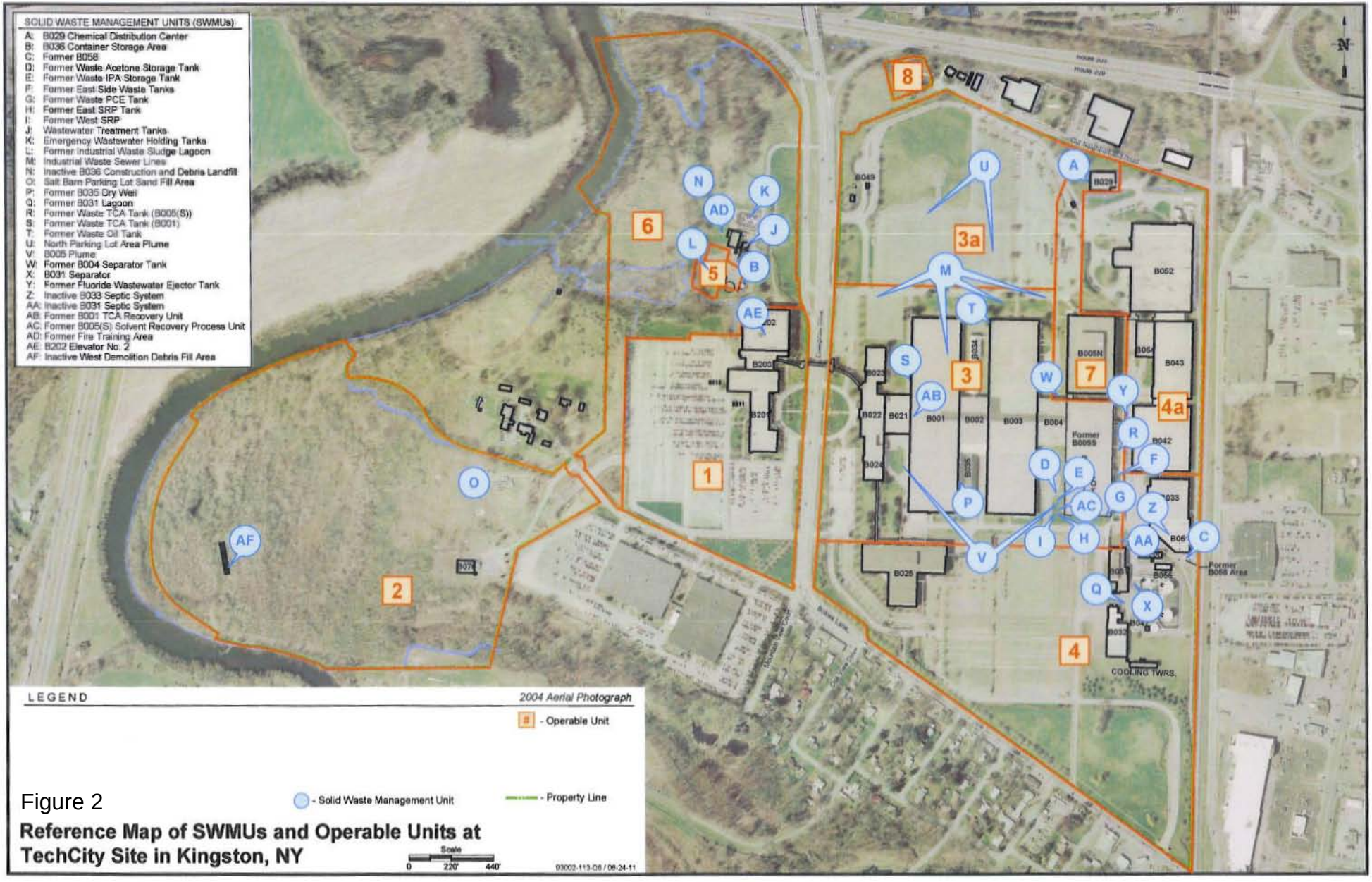

Figure 2

Reference Map of SWMUs and Operable Units at TechCity Site in Kingston, NY