# DECISION DOCUMENT

IBM Gun Club, Burn Pit
Brownfield Cleanup Program
Union, Broome County
Site No. C704044
December 2012

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

# DECLARATION STATEMENT - DECISION DOCUMENT

IBM Gun Club, Burn Pit
Brownfield Cleanup Program
Union, Broome County
Site No. C704044
December 2012

**Statement of Purpose and Basis**

This document presents the remedy for the IBM Gun Club, Burn Pit site, a brownfield cleanup site. The remedial program was chosen in accordance with the 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 375.

This decision is based on the Administrative Record of the New York State Department of Environmental Conservation (the Department) for the IBM Gun Club, Burn Pit site and the public's input to the proposed remedy presented by the Department.

**Description of Selected Remedy**

The elements of the selected remedy are as follows:

1. A remedial design program will be implemented to provide the details necessary for the construction, operation, maintenance, and monitoring of the remedial program. Green remediation principles and techniques will be implemented to the extent feasible in the design, implementation, and site management of the remedy as per DER-31. The major green remediation components are as follows;

- Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;

- Reducing direct and indirect greenhouse gas and other emissions;

- Increasing energy efficiency and minimizing use of non-renewable energy;

- Conserving and efficiently managing resources and materials;

- Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste;

- Maximizing habitat value and creating habitat when possible;

- Fostering green and healthy communities and working landscapes which balance

ecological, economic and social goals; and

- Integrating the remedy with the end use where possible and encouraging green and sustainable re-development.

2. A site cover will be required to allow for restricted residential use within the Track 4 Cleanup area (see figure 2 for proposed boundary). The cover will consist either of the structures such as buildings, pavement, sidewalks comprising the site development or a soil cover in areas where the upper two feet of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs). Where the soil cover is required it will be a minimum of two feet of soil, meeting the SCOs for cover material as set forth in 6 NYCRR Part 375-6.7(d) for residential use. The soil cover will be placed over a demarcation layer, with the upper six inches of the soil of sufficient quality to maintain a vegetation layer. Any fill material brought to the site will meet the requirements for the identified site use as set forth in 6 NYCRR Part 375-6.7(d).

3. Implementation of an Enhanced Biological Degradation (EBD) program to treat groundwater at the site. EBD is performed through a series of injections of an engineered amendment into the groundwater. The amendment (e.g., a substance such as molasses or soy bean oil) promotes microbial growth, and the microbes in turn aid in the breakdown of contaminants in the groundwater.

4. Planting of select species of trees and grasses to promote plant uptake of contaminated water, a process known as phytoremediation.

5. Imposition of an institutional control in the form of an environmental easement for the controlled property that:

- requires the remedial party or site owner to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8 (h)(3);

- allows the use and development of the controlled property within the Track 4 Cleanup area (see figure 2 for proposed boundary) for restricted residential, commercial and industrial uses as defined by Part 375-1.8(g); and for Residential, restricted residential, commercial and industrial uses as defined by Part 375-1.8(g) throughout the remainder of the site, although land use is subject to local zoning laws;

- restricts the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or County DOH;

- requires compliance with the Department approved Site Management Plan.

6. A Site Management Plan is required, which includes the following:

a. an Institutional and Engineering Control Plan that identifies all use restrictions and engineering controls for the site and details the steps and media-specific requirements necessary

to ensure the following institutional and/or engineering controls remain in place and effective:

Institutional Controls: The Environmental Easement discussed in Paragraph 5, above.

Engineering Controls: The soil cover discussed in Paragraph 2, above.

This plan includes, but may not be limited to:

- an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;

- descriptions of the provisions of the environmental easement including any land use, groundwater use restrictions;

- a provision for evaluation of the potential for soil vapor intrusion for any buildings constructed on-site, as well as for those constructed off-site within the plume area; including a provision for implementing actions recommended to address exposures related to soil vapor intrusion;

- provisions for the management and inspection of the identified engineering controls;

- maintaining site access controls and Department notification; and

- the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls;

b. a Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but may not be limited to:

- monitoring of groundwater to assess the performance and effectiveness of the remedy;

- a schedule of monitoring and frequency of submittals to the Department;

- monitoring for vapor intrusion for any buildings occupied or developed on the site, as well as for those constructed off-site within the plume area, as may be required by the Institutional and Engineering Control Plan discussed in item 2, above.

- requirements for the monitoring of the adequacy of any ICs being relied upon to control potential exposures to contaminants off-site.

c. an Operation and Maintenance (O&M) Plan to ensure continued operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical components of the remedy. The plan includes, but is not limited to:

- compliance monitoring of treatment systems to ensure proper O&M as well as providing the data for any necessary permit or permit equivalent reporting;

- maintaining site access controls and Department notification; and

- providing the Department access to the site and O&M records.

7. The operation of the components of the remedy will continue until the remedial objectives have been achieved, or until the Department determines that continued operation is technically impracticable or not feasible.

**Declaration**

The remedy conforms with promulgated standards and criteria that are directly applicable, or that are relevant and appropriate and takes into consideration Department guidance, as appropriate. The remedy is protective of public health and the environment.

December 18, 2012
Date

Robert Cozzy, Director
Remedial Bureau B

# DECISION DOCUMENT

IBM Gun Club, Burn Pit
Union, Broome County
Site No. C704044
December 2012

## SECTION 1: SUMMARY AND PURPOSE

The New York State Department of Environmental Conservation (the Department), in consultation with the New York State Department of Health (NYSDOH), has selected a remedy for the above referenced site. The disposal of contaminants at the site has resulted in threats to public health and the environment that would be addressed by the remedy. The disposal or release of contaminants at this site, as more fully described in this document, has contaminated various environmental media. Contaminants include hazardous waste and/or petroleum.

The New York State Brownfield Cleanup Program (BCP) is a voluntary program. The goal of the BCP is to enhance private-sector cleanups of brownfields and to reduce development pressure on "greenfields." A brownfield site is real property, the redevelopment or reuse of which may be complicated by the presence or potential presence of a contaminant.

The Department has issued this document in accordance with the requirements of New York State Environmental Conservation Law and 6 NYCRR Part 375. This document is a summary of the information that can be found in the site-related reports and documents.

## SECTION 2: CITIZEN PARTICIPATION

The Department seeks input from the community on all remedies. A public comment period was held, during which the public was encouraged to submit comment on the proposed remedy. All comments on the remedy received during the comment period were considered by the Department in selecting a remedy for the site. Site-related reports and documents were made available for review by the public at the following document repositories:

Village of Johnson City Library
Attn: Mr. Steven Bachman
107 Main Street
Johnson City, NY 13790
Phone: (607) 797-4816

George F. Johnson Memorial Library
Attn: Mr. Ed Dunscombe
1001 Park Street
Endicott, NY 13760
Phone: (607) 757-5350

**Receive Site Citizen Participation Information By Email**

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 IBM Gun Club Burn Pit site is located on Robinson Hill Road, in the Town of Union, N.Y. The site is on the western side of the road, approximately one mile north of the intersection of Country Club Rd. and Robinson Hill Rd. Once on the IBM Gun Club property, one must proceed south on a dirt road to a fenced area. Inside the fenced area is an electronics testing facility and the former burn pit.

Site Features:
The main site features include a one story unoccupied building formerly used for electronics testing. The former burn pit is located on the southeastern corner of the fenced property, in a grassy area.

Current Zoning/Use:
The site is zoned as Planned Unit Development, a category which allows for residential use of the property, but restricts the property from being used for agricultural purposes.

Except for the on-going environmental investigation, the site is no longer used by IBM.

The immediately surrounding area includes unused property also owned by IBM, as well as the former IBM Gun Club skeet and rifle range. Beyond the IBM-owned property, there are residential areas, a golf course and a hiking area.

Historic Use:
The site was the home to a small electronics testing laboratory. The burn pit, which appears to have been unrelated to other site activities, was used for several years as a disposal area for waste chemicals generated at the IBM Endicott facility. These chemicals included chlorinated solvents.

Site Geology and Hydrogeology:
Site soils range from inches to several feet in thickness, and overlay shale bedrock. Groundwater occurs between five and ten feet below ground surface, and flow is generally to the south.

A site location map is attached as Figure 1.

## 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. For this site, alternatives (or an alternative) that restrict(s) the use of the site to restricted-residential use (which allows for commercial use and industrial use) as described in Part 375-1.8(g) were/was evaluated in addition to an alternative which would allow for unrestricted use of the site.

A comparison of the results of the Remedial Investigation (RI) to the appropriate standards, criteria and guidance values (SCGs) for the identified land use and the unrestricted use SCGs for the site contaminants is available in the RI Report.

## SECTION 5: ENFORCEMENT STATUS

The Applicant under the Brownfield Cleanup Agreement is a Participant. The Applicant has an obligation to address on-site and off-site contamination. Accordingly, no enforcement actions are necessary.

## SECTION 6: SITE CONTAMINATION

### 6.1: Summary of the Remedial Investigation

A remedial investigation (RI) serves as the mechanism for collecting data to:

- characterize site conditions;
- determine the nature of the contamination; and
- assess risk to human health and the environment.

The RI is intended to identify the nature (or type) of contamination which may be present at a site and the extent of that contamination in the environment on the site, or leaving the site. The RI reports on data gathered to determine if the soil, groundwater, soil vapor, indoor air, surface water or sediments may have been contaminated. Monitoring wells are installed to assess groundwater and soil borings or test pits are installed to sample soil and/or waste(s) identified. If other natural resources are present, such as surface water bodies or wetlands, the water and sediment may be sampled as well. Based on the presence of contaminants in soil and groundwater, soil vapor will also be sampled for the presence of contamination. Data collected in the RI influence the development of remedial alternatives. The RI report is available for review in the site document repository and the results are summarized in section 6.3.

The analytical data collected on this site includes data for:

- groundwater
- surface water
- soil
- soil vapor
- sub-slab vapor

### 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 RI 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. For a full listing of all SCGs see: http://www.dec.ny.gov/regulations/61794.html

### 6.1.2: RI Results

The data have identified contaminants of concern. A "contaminant of concern" is a contaminant that is sufficiently present in frequency and concentration in the environment to require evaluation for remedial action. Not all contaminants identified on the property are contaminants of concern. The nature and extent of contamination and environmental media requiring action are summarized below. Additionally, the RI Report contains a full discussion of the data. The contaminant(s) of concern identified at this site is/are:

| | |
|---|---|
| TRICHLOROETHENE (TCE) | DICHLOROETHYLENE |
| ARSENIC | LEAD |

The contaminant(s) of concern exceed the applicable SCGs for:

- groundwater
- soil

## 6.2: Interim Remedial Measures

An interim remedial measure (IRM) is conducted at a site when a source of contamination or exposure pathway can be effectively addressed before issuance of the Decision Document.

The following IRM(s) has/have been completed at this site based on conditions observed during the RI.

IRM Lead and Arsenic Soil Removal

• Trees and brush were cleared as necessary from a 1.5 acre area.

• Soils were pretreated with a binding agent prior to excavation in order to reduce the leachability of lead and arsenic.

• On-site soils within the 1.5 acre area which exceeded residential use soil cleanup objectives (SCOs) for lead and arsenic were excavated and transported off-site for disposal. Approximately 910 cubic yards of soil were removed. Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) was brought in as necessary to replace the excavated soil and establish the designed grades at the site.

## 6.3: Summary of Environmental Assessment

This section summarizes the assessment of existing and potential future environmental impacts presented by the site. Environmental impacts may include existing and potential future exposure pathways to fish and wildlife receptors, wetlands, groundwater resources, and surface water. The RI report presents a detailed discussion of any existing and potential impacts from the site to fish and wildlife receptors.

Nature and Extent of Contamination:
Over a period of years, waste solvents (primarily TCE) and petroleum products were poured into a pit and burned as a means of disposal. This process resulted in contamination of soils and groundwater at, and downgradient of, the site.

A soil removal was performed in 1979 which has resulted in there now being only low concentrations (generally meeting residential cleanup goals) of contaminants in on-site soils; however, recent studies indicate a significant amount of contamination remains bound-up within bedrock in the vicinity of the former burn pit. This bound-up contamination is released to groundwater through a process called diffusion, and results in localized groundwater contamination as high as 13,000 parts per billion (ppb) of DCE (a breakdown product of TCE) and TCE concentrations as high as 7,000 ppb near the property boundary. This plume of groundwater contamination extends downgradient onto the Broome County Country Club golf course; however, concentrations fall off dramatically with distance from the source, and groundwater standards are generally attained before the contaminant plume leaves the adjoining golf course facility.

Some groundwater breaks out in small seeps in several discrete areas downgradient of the property, and some of these seeps contain detectable concentrations of TCE/DCE, though at relatively low levels (e.g., a high of 40 ppb, but generally less than 15 ppb).

Nearby residences have been tested for the presence of soil vapors and no impacts were found. Nonetheless, it is assumed that soil vapors may contain levels of contaminants that could present a concern if houses were to be constructed immediately above the contaminant plume.

Significant Threat:
A significant solvent source appears to be present in bedrock beneath the former Burn Pit facility, and that source continues to cause degradation of environmental media both on-site and off-site at levels that significantly exceed established standards. This site presents a significant threat to the environment.

## 6.4: Summary of Human Exposure Pathways

This human exposure assessment identifies ways in which people may be exposed to site-related contaminants. Chemicals can enter the body through three major pathways (breathing, touching or swallowing). This is referred to as *exposure.*

People are not likely to come into contact with site-related contamination in on-site soils or groundwater because access to the site is restricted via fencing. There is potential for people to come into contact with site-related contaminants in off-site surface water; however, this is unlikely given the present use of the Gun Club and adjacent properties. Private drinking water wells surrounding the site have been tested and no site-related contaminants were detected above drinking water standards. Volatile organic compounds in the groundwater may move into the soil vapor (air spaces within the soil), which in turn may move into overlying buildings and affect the indoor air quality. This process, which is similar to the movement of radon gas from the subsurface into the indoor air of buildings, is referred to as soil vapor intrusion. Testing of homes near the site indicates that actions are not needed to address soil vapor intrusion. Actions may be needed if new structures are constructed over the contaminant plume.

## 6.5: Summary of the Remediation Objectives

The objectives for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375. The goal for the remedial program is to restore the site to pre-disposal conditions to the extent feasible. At a minimum, the remedy shall eliminate or mitigate all significant threats to public health and the environment presented by the contamination identified at the site through the proper application of scientific and engineering principles.

The remedial action objectives for this site are:

**Groundwater**

**RAOs for Public Health Protection**

- Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards.
- Prevent contact with, or inhalation of volatiles, from contaminated groundwater.

**RAOs for Environmental Protection**

- Restore ground water aquifer to pre-disposal/pre-release conditions, to the extent practicable.
- Prevent the discharge of contaminants to surface water.

**Soil**

**RAOs for Public Health Protection**

- Prevent ingestion/direct contact with contaminated soil.

**RAOs for Environmental Protection**

- Prevent migration of contaminants that would result in groundwater or surface water contamination.

**Soil Vapor**

**RAOs for Public Health Protection**

- Mitigate impacts to public health resulting from existing, or the potential for, soil vapor intrusion into buildings at a site.

## SECTION 7: ELEMENTS OF THE SELECTED REMEDY

The alternatives developed for the site and evaluation of the remedial criteria are presented in the Alternatives Analysis. The remedy is selected pursuant to the remedy selection criteria set forth in DER-10, Technical Guidance for Site Investigation and Remediation and 6 NYCRR Part 375.

The remedy selected is a dual-track cleanup, consisting of both a Track 2 "Residential:" Restricted use with generic cleanup objectives area, and a Track 4 "Restricted Residential:" Restricted use with site-specific soil cleanup objectives area.

The selected remedy is referred to as the Cover Source Area and Enhanced Bio Degradation for Groundwater remedy.

The elements of the selected remedy, as shown in Figure 2, are as follows:

1. A remedial design program will be implemented to provide the details necessary for the construction, operation, maintenance, and monitoring of the remedial program. Green remediation principles and techniques will be implemented to the extent feasible in the design, implementation, and site management of the remedy as per DER-31. The major green remediation components are as follows;

- Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;

- Reducing direct and indirect greenhouse gas and other emissions;

- Increasing energy efficiency and minimizing use of non-renewable energy;

- Conserving and efficiently managing resources and materials;

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- Maximizing habitat value and creating habitat when possible;

- Fostering green and healthy communities and working landscapes which balance ecological, economic and social goals; and

- Integrating the remedy with the end use where possible and encouraging green and sustainable re-development.

2. A site cover will be required to allow for restricted residential use within the Track 4 Cleanup area (see figure 2 for proposed boundary). The cover will consist either of the structures such as

buildings, pavement, sidewalks comprising the site development or a soil cover in areas where the upper two feet of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs). Where the soil cover is required it will be a minimum of two feet of soil, meeting the SCOs for cover material as set forth in 6 NYCRR Part 375-6.7(d) for residential use. The soil cover will be placed over a demarcation layer, with the upper six inches of the soil of sufficient quality to maintain a vegetation layer. Any fill material brought to the site will meet the requirements for the identified site use as set forth in 6 NYCRR Part 375-6.7(d).

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4. Planting of select species of trees and grasses to promote plant uptake of contaminated water, a process known as phytoremediation.

5. Imposition of an institutional control in the form of an environmental easement for the controlled property that:

- requires the remedial party or site owner to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8 (h)(3);

- allows the use and development of the controlled property within the Track 4 Cleanup area (see figure 2 for proposed boundary) for restricted residential, commercial and industrial uses as defined by Part 375-1.8(g); and for Residential, restricted residential, commercial and industrial uses as defined by Part 375-1.8(g) throughout the remainder of the site, although land use is subject to local zoning laws;

- restricts the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or County DOH;

- requires compliance with the Department approved Site Management Plan.

6. A Site Management Plan is required, which includes the following:

a. an Institutional and Engineering Control Plan that identifies all use restrictions and engineering controls for the site and details the steps and media-specific requirements necessary to ensure the following institutional and/or engineering controls remain in place and effective:

Institutional Controls: The Environmental Easement discussed in Paragraph 5, above.

Engineering Controls: The soil cover discussed in Paragraph 2, above.
This plan includes, but may not be limited to:

• an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;

• descriptions of the provisions of the environmental easement including any land use, groundwater use restrictions;

• a provision for evaluation of the potential for soil vapor intrusion for any buildings constructed on-site, as well as for those constructed off-site within the plume area; including a provision for implementing actions recommended to address exposures related to soil vapor intrusion;

• provisions for the management and inspection of the identified engineering controls;

• maintaining site access controls and Department notification; and

• the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls;

b. a Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but may not be limited to:

• monitoring of groundwater to assess the performance and effectiveness of the remedy;

• a schedule of monitoring and frequency of submittals to the Department;

• monitoring for vapor intrusion for any buildings occupied or developed on the site, as well as for those constructed off-site within the plume area, as may be required by the Institutional and Engineering Control Plan discussed in item 2, above.

• requirements for the monitoring of the adequacy of any ICs being relied upon to control potential exposures to contaminants off-site.

c. an Operation and Maintenance (O&M) Plan to ensure continued operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical components of the remedy. The plan includes, but is not limited to:

• compliance monitoring of treatment systems to ensure proper O&M as well as providing the data for any necessary permit or permit equivalent reporting;

• maintaining site access controls and Department notification; and

• providing the Department access to the site and O&M records.

7. The operation of the components of the remedy will continue until the remedial objectives have been achieved, or until the Department determines that continued operation is technically impracticable or not feasible.

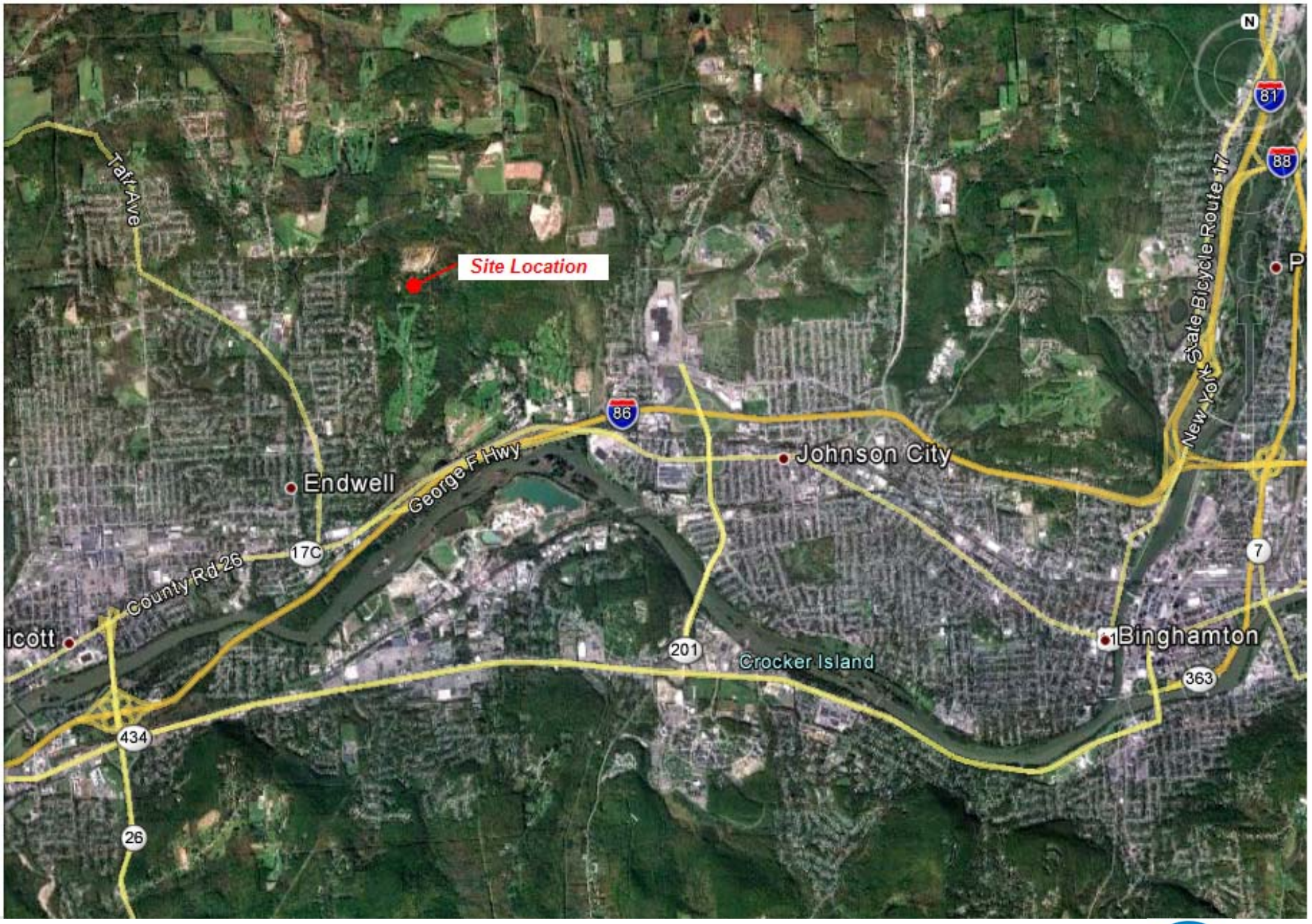
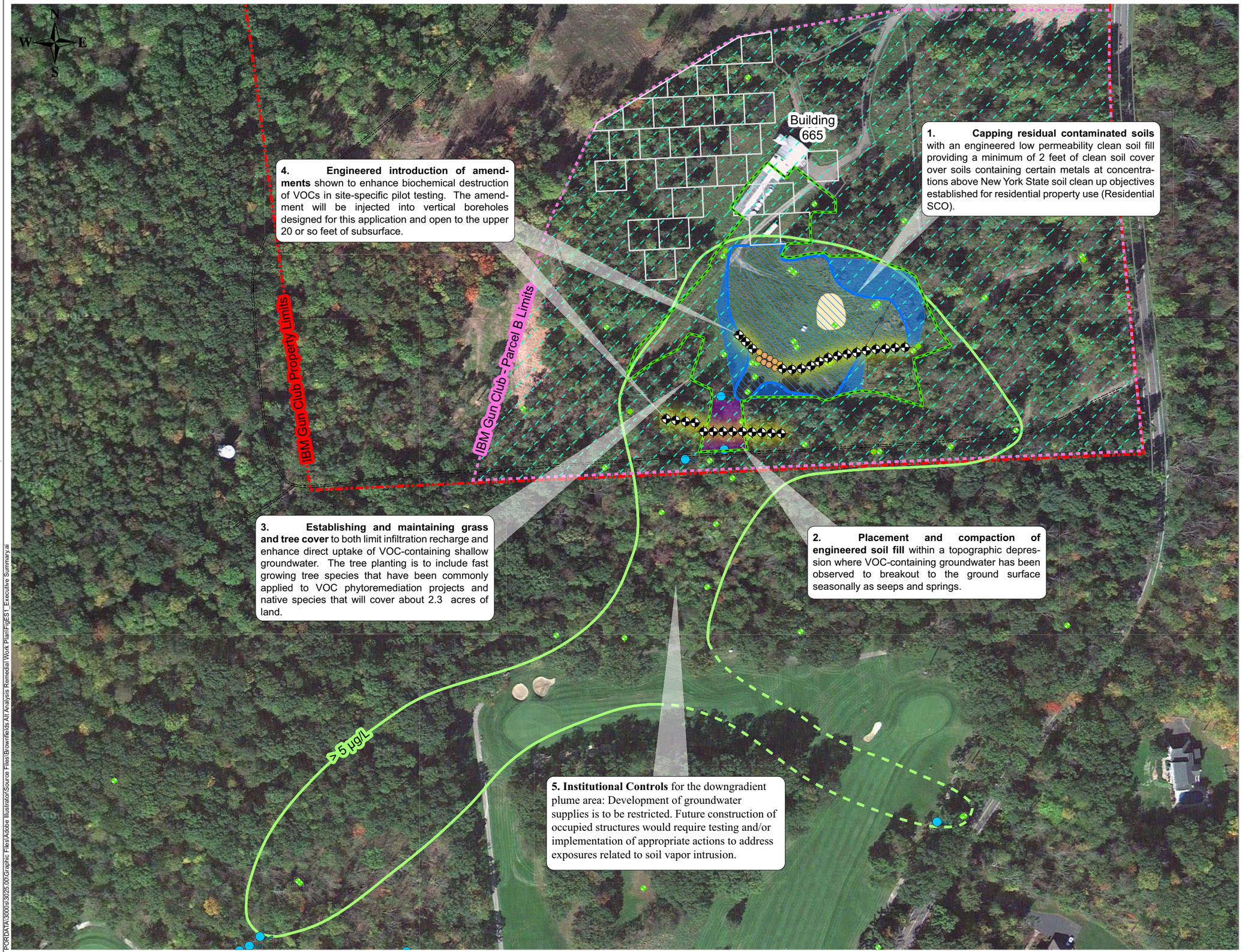



Figure 1: IBM Gun Club Former Burn Pit Site Location: Robinson Hill Rd., Union N.Y.

New York State Brownfield Cleanup Program Site ID No. C704044

Figure 2

# Site Features and Remedial Components




DEPARTMENT OF ENVIRONMENTAL CONSERVATION • NEW YORK STATE •

## Legend

- Proposed Injection Boring Location
- Former Burn Pit Disposal Area
- Surveyed boundaries of Burn Pit Property (Parcel B). Entire parcel to be subject to deed restrictions associated with groundwater development/use, and construction of human occupied structures relative to the potential for vapor intrusion.
- Area of property to meet Track 2 residential SCOs
- Inferred limits of groundwater TCE concentrations exceeding New York Standards (>5 µg/L)
- Proposed limits of Tree Planting
- Approximate Limit of Soil Cap Extension - resulting from proposed final grading of imported soils meeting residential SCO.
- Approximate limit of additional fill, meeting Residential SCOs, required for filling topographic depression
- Track 4 Surficial Soil Remedy Area - Propsed 1.28-Acre area requiring two-feet of Soil Fill Cap meeting soils standards for residential use (Residential Soil Cleanup Objectives or SCO)
- Surveyed limits of soil removal conducted under Interim Remedial Measure (IRM) in May 2012 to meet residential SCO

75 37.5 0 75 150 Feet

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