DECISION DOCUMENT

Betlem
Brownfield Cleanup Program
Hamburg, Erie County
Site No. C915348
October 2022

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

DECLARATION STATEMENT - DECISION DOCUMENT

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Site No. C915348
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Statement of Purpose and Basis

This document presents the remedy for the Betlem 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 Betlem site and the public's input to the proposed remedy presented by the Department.

Description of Selected Remedy

1. Remedial Design

A remedial design program will be implemented to provide the details necessary for the construction, operation, optimization, 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 gases 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;
- Integrating the remedy with the end use where possible and encouraging green and sustainable re-development; and
- Additionally, to incorporate green remediation principles and techniques to the extent feasible in the future development at this site, any future on-site buildings will include, at

a minimum, a vapor barrier/waterproofing membrane on the foundation to improve energy efficiency as an element of construction.

2. Excavation, and "Hotspot" Soil Removal, and Offsite Disposal of Inactive Transformers

Excavation and off-site disposal of on-site soils which exceed commercial SCOs, as defined by 6 NYCRR Part 375-6.8, identified hotspot sources, and site-specific action levels (SSAL) for Total PAHs (> 500 ppm), Total Arsenic (> 60 ppm), Total Lead (>3,900 ppm), and Total Mercury (>5.7 ppm). All soils in the upper foot which exceed the commercial SCOs will be excavated and transported off-site for disposal. Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be brought in to complete the backfilling of the excavation (as needed) and establish design grades at the site. On-site soil which does not exceed the above excavation criteria may be used below the cover system described in remedy element 3 to backfill the excavation to the extent that a sufficient volume of on-site soil is available. The site will be regraded to accommodate installation of a cover system as described in remedy element 3. A site management plan will be implemented during the remedial and redevelopment activities.

3. Cover System

A site cover will be required to allow for commercial use of the site in areas where the upper one foot of exposed surface soil will exceed the applicable soil clean up objectives (SCOs). Where a soil cover is to be used it will be a minimum of one foot of soil placed over a demarcation layer, with the upper six inches of soil of sufficient quality to maintain a vegetative layer. Soil cover material, including any fill material brought to the site, will meet the SCOs for cover material for the use of the site as set forth in 6 NYCRR Part 375-6.7(d). Substitution of other materials and components may be allowed where such components already exist or are a component of the tangible property to be placed as part of site redevelopment. Such components may include, but are not necessarily limited to: pavement, concrete, paved surface parking areas, sidewalks, building foundations and building slabs.

4. In-Situ Enhanced Biodegradation

In-situ enhanced biodegradation will be employed to treat VOCs in groundwater within the vicinity of soil borings SB-21W and SB-22W. The biological breakdown of contaminants will be performed through a site-specific remedial program The objective of the groundwater remedial program will involve injecting an enhanced biodegradation regent into groundwater/saturated soils to facilitate a reduction in groundwater VOCs and reduce the potential for soil vapor intrusion within the building. Following implementation of remedial element 5 a soil vapor intrusion (SVI) assessment will be performed to determine if SVI remains a concern within the site building. Mitigation measures may be warranted, based on the subsequent data.
Additional details of planned injection activities will be more fully described in the Remedial Action Workplan. Additionally, an SVI monitoring program will be included within the site management plan (SMP) to evaluate site conditions and evaluate the effectiveness of the remedy.

5. Engineering and Institutional Controls
Imposition of an institutional control in the form of an environmental easement and a Site

Management Plan, as described below, will be required. The remedy will achieve a Track 4 commercial cleanup at a minimum.

Institutional Controls

Imposition of an institutional control in the form of an environmental easement for the controlled property which will:

- require 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);
- allow the use and development of the controlled property for commercial or industrial use as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
- restrict the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or County Department of Health; and
- require compliance with the Department approved Site Management Plan.

6. Site Management Plan

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 engineering controls remain in place and effective:

- Institutional Controls: the environmental easement discussed in the "Institutional Controls" section of remedy element 5.

- Engineering Controls: the site cover system discussed in remedial element 3.

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 or groundwater use restrictions;
- a provision that should a building foundation or building slab be removed in the future, a cover system consistent with that described in remedial element 3 above will be placed in any areas where the upper one foot of exposed surface soil exceed the applicable soil cleanup objectives (SCOs);
- a provision for evaluation of the potential for soil vapor intrusion for any new buildings developed on the site, including provisions 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 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 the site cover, soil vapor conditions, indoor air and groundwater to assess the performance and effectiveness of the remedy;
- a schedule of monitoring and frequency of submittals to the Department;

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.

10/14/2022
Date

Michael Cruden
Michael Cruden, Director
Remedial Bureau E

DECISION DOCUMENT

Betlem
Hamburg, Erie County
Site No. C915348
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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, where a contaminant is present at levels exceeding the soil cleanup objectives or other health-based or environmental standards, criteria or guidance, based on the reasonably anticipated use of the property.

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:

DECInfo Locator - Web Application
https://gisservices.dec.ny.gov/gis/dil/index.html?rs=C915348

Buffalo & Erie County Public Library
Attn: Mary Jean Jakubowski
1 Lafayette Square
Buffalo, NY 14203
Phone: (716) 858-8900

Lackawanna Public Library
Attn: Jennifer Johnson
560 Ridge Road
Lackawanna, NY 14218
Phone: (716) 823-0630

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 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 3.54-acre site is located at 250 Lake Avenue in a highly industrial area in the Village of Blasdell, Town of Hamburg, Erie County. The site is bordered by an industrial facility to the north, an access road, industrial facilities, and railroad tracks to the south and east, and an industrial facility to the west.

Site Features:
The site is improved with one large industrial building. The remainder of the site includes gravel areas with minimal green space on the western and southern portions of the site.

Zoning and Land Use:
The current zoning for the site and adjacent properties is industrial. The site is currently vacant. Planned reuse of the site as an industrial metal fabrication and distribution facility is consistent with the current zoning.

Past Use of the Site:
The site was historically used for steel manufacturing/fabrication with storage of bar steel and bar mill, a wire shop, railroad tracks, machine/construction equipment warehousing and general warehousing from at least 1909 until approximately 1986. Historic owners/operators include Kalman Steel from 1928 to about 1944, and Bethlehem Steel from 1944 through about 1950. The site has been used as a storage and distribution facility from 1986 to present.

Site Geology and Hydrogeology:
The site is located within the Lake Erie-Niagara River major drainage basin, which is typified by little topographic relief that gently slopes westward towards Lake Erie and the Niagara River, except in the immediate vicinity of major drainage ways. According to the United States Department of Agriculture (USDA) Web soil survey, site soils are characterized as Urban Land (Ud). Soils characterized as urban land (Ud) are covered by asphalt, concrete, buildings, or other

impervious structures, typical of an urban environment.

Previous investigations have identified the site geology as non-native fill consisting of mixtures of silt, slag and gravel to depths ranging between 3 feet below ground surface (fbgs) and 8 fbgs overlying native sandy clay or lean clay to a depth of at least 16 fbgs. Brick and ash were noted at certain boring locations. Groundwater was encountered at certain borings at depths ranging between 2 fbgs and 5 fbgs. Groundwater levels measured in monitoring wells with a water level indicator ranged between 2.4 fbgs and 8.5 fbgs.

Regional groundwater flows west or northwest towards Lake Erie or consistent with topography in the area of the site. However, local groundwater flow may be influenced by subsurface features, such as excavations, utilities, and localized fill-conditions.

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, an alternative that restricts the use of the site to commercial use (which allows for industrial use) as described in Part 375-1.8(g) 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 Volunteer. The Applicant does not have an obligation to address off-site contamination. However, the Department has determined that this site does not pose a significant threat to public health or the environment; 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
- soil
- indoor air
- 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 contaminants of concern identified at this site are:

benzo(a)anthracene
benzo(a)pyrene
benz(c)acridine
dibenz[a,h]anthracene
dibenzofuran
fluoranthene
fluorene
indeno(1,2,3-cd)pyrene
naphthalene
phenanthrene
pyrene
arsenic
lead
mercury
1,2,4-trimethylbenzene
1,3,5-trimethylbenzene
benzene
isopropylbenzene

n-propylbenzene
toluene
xylene (mixed)
1,1 dichloroethene
chloroethane
methylene chloride
vinyl chloride
1,1,1-trichloroethane (TCA)
1,4-dioxane

The contaminants of concern exceed the applicable SCGs for:

- Soil
- Groundwater
- Soil vapor intrusion

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.

There were no IRMs performed at this site during the RI.

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.

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The RI report presents a detailed discussion of any existing and potential impacts from the site to fish and wildlife receptors.

The RI for the site was conducted in 2020 and included the sampling of surface soil, subsurface soil/fill, groundwater, soil vapor, former transformer casings, and a radiological assessment of the site. The data collected during the RI and prior site investigations identified Volatile Organic Compounds (VOCs), Semi-Volatile Organic Compounds (SVOCs), metals, and pesticides/herbicides above commercial soil cleanup objectives (CSCOs), applicable action levels, or their respective New York State Ground Water Quality Standards (GWQS). Emergent contaminants (1,4-dioxane and per/polyfluoroalkyl substances (PFAS)) were analyzed within soil and groundwater samples. These compounds were evaluated against current New York State action levels and proposed guidance values.

Nature and Extent of Contamination:

Soil:

Surface Soils:
Six surface soil samples were collected and analyzed for VOCs, SVOCs, metals, herbicides/pesticides, PCBs, and emergent contaminants. Of the samples analyzed, no exceedances of the CSCOs were identified for VOCs, pesticides/herbicides, PCBs, or emergent contaminants.

SVOCs detected in surface soil included benzo(a)anthracene at concentrations up to 120 parts per million (ppm) (CSCO 5.60 ppm), benzo(a)pyrene up to 120 (CSCO 1.0 ppm), benzo(b)fluoranthene up to 160 ppm (CSCO 5.6 ppm), benzo(k)fluoranthene up to 68 ppm (CSCO 56 ppm), chrysene up to 130 ppm (CSCO 56 ppm), dibenzo(a,h)anthracene up to 27 ppm (CSCO 0.56), and indeno(1,2,3,-cd)pyrene up to 79 ppm (CSCO 5.6 ppm).

Metals detected in surface soil included arsenic at concentrations up to 18.2 ppm (CSCO 16 ppm).

Subsurface Soils:
Nineteen subsurface soil samples were collected and analyzed for VOCs, SVOCs, metals, herbicides/pesticides, PCBs, and emergent contaminants. Of the samples analyzed, no exceedances of the CSCOs were identified for VOCs, pesticides/herbicides, or emergent contaminants.

SVOCs detected in subsurface soil included benzo(a)anthracene at concentrations up to 110 ppm (CSCO 5.6 ppm), benzo(a)pyrene up to 90 ppm (CSCO 1.0), benzo(b)fluoranthene up to 110 ppm (CSCO 5.6 ppm), chrysene up to 110 ppm (CSCO 56 ppm), dibenzo(a,h,)anthracene up to 16 ppm (CSCO 0.56 ppm), and indeno(1,2,3-cd)pyrene up to 41 ppm (CSCO 5.6 ppm).

Metals detected in subsurface soil included arsenic up to 188 ppm (CSCO 16 ppm), barium up to 2,400 ppm (CSCO 400 ppm), cadmium up to 28.6 ppm (CSCO 9.3 ppm), lead up to 6,440 ppm (CSCO 1,000 ppm), and mercury up to 52.3 ppm (CSCO 2.8 ppm).

PCBs were detected in one subsurface sample location. Total PCBs were detected at concentrations up to 2.7 ppm (CSCO 1 ppm).

Groundwater:

On-site groundwater quality was sampled and analyzed through 5 groundwater monitoring wells. Samples were evaluated against the New York State Groundwater Quality Standards (GWQS). Groundwater was analyzed for VOCs, SVOCs, metals, herbicides/pesticides, PCBs, and emergent contaminants. Of the samples analyzed, no exceedances of the GWQS were identified for pesticides/herbicides and PCBs.

VOCs detected in groundwater included 1,1,1 trichloroethane at concentrations up to 810 parts per billion (ppb) (GWQS 5 ppb), 1,1,1 dichloroethane up to 300 ppb (GWQS 5 ppb), 1,1 dichloroethene up to 480 ppb (GWQS 5 ppb), 1,2,4 trimethylbenzene up to 140 (GWQS 5 ppb), 1,2 dichloroethane up to 6.5 ppb (GWQS 0.6 ppb), 1,3,5 trimethylbenzene up to 39 ppb (GWQS

5 ppb), benzene up to 2.7 ppb (GWQS 1 ppb), chloroethane up to 60 ppb (GWQS 5 ppb), ethylbenzene up to 14 ppb (GWQS 5 ppb), isopropylbenzene up to 11 ppb (GWQS 5 ppb), naphthalene up to 40 ppb (GWQS 10 ppb), n-propylbenzene up to 10 ppb (GWQS 5 ppb), toluene up to 10 ppb (GWQS 5 ppb), vinyl chloride up to 21 ppb (GWQS 2 ppb), total xylenes up to 130 ppb (GWQS 5 ppb).

SVOCs detected in groundwater included benzo(a)anthracene up to 0.55 ppb (GWQS 0.002 ppb), benzo(b)fluoranthene up to 0.7 ppb (GWQS 0.002 ppb), chrysene up to 0.56 ppb (GWQS 0.002 ppb), naphthalene up to 21 ppb (GWQS 10 ppb), pentachlorophenol up to 11 ppb (GWQS1.0 ppb), and phenol up to 6.4 ppb (GWQS 1 ppb).

Metals detected in groundwater included arsenic at concentrations up to 300 ppb (GWQS 25 ppb), barium up to 2,900 ppb (GWQS 1,000 ppb), beryllium up to 26 ppb (GWQS 3 ppb), cobalt up to 270 ppb (GWQS 50 ppb) and lead up to 3,500 ppb (GWQS 25 ppb).

Groundwater Emergent Contaminants:
1,4-Dioxane was detected in four groundwater monitoring wells at concentrations up to 73 ppb (New York State Maximum Contaminant Level (MCL) 1 ppb). PFAS substances were identified in three monitoring wells, but at concentrations below NYSDEC applicable drinking water standards (NYS MCL 10 ppt) in each instance. Total PFAS substances identified within the groundwater monitoring wells ranged between 2.53 parts per trillion (ppt) and 28.71 ppt.

Soil Vapor:

Soil vapor studies included the collection and testing of sub-slab soil vapor and indoor air samples from 3 locations within the site building. Samples were analyzed for VOCs and compared to the NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York (October 2006, rev. May 2017).

Several VOCs were detected in the sub-slab soil vapor samples. Of the samples analyzed, only 1,1,1-trichloroethane was detected at a concentration which indicates that actions to address potential exposures is required. 1,1,1-trichloroethane was detected in sub-slab vapor in the southern portion of the building at a concentration of 1,000 ug/m^3. 1,1,1-trichloroethane was not detected in the sample's corresponding indoor air sample.

Transformer Oil Sample:

The site building contains a transformer room housing three inactive pad-mounted transformers. Each transformer was sampled and analyzed for PCBs. Analytical results did not detect PCB compounds in any of the transformer samples obtained. Therefore, the transformers are considered to be non-PCB containing units.

Radiological Screening:

A radiological screening of the site was performed concurrently with the subsurface soil/fill investigation from slag material found during the investigation. The slag material was analyzed

to determine background gamma concentrations of the site and to compare site conditions to regional background levels. The site's radiological survey results ranged between 7,000 counts per minute (cpm) and 8,721 cpm. Regional background levels for nearby properties ranged from 7,000 cpm and 9,000 cpm. Therefore, it was concluded that the radiological conditions at the site were within regional background levels.

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*.

The majority of the site is covered with buildings and pavement, it is unlikely that people will come into direct contact with contaminated soils unless they disturb the ground surface. Contaminated groundwater at the site is not used for potable purposes because the area is served by a public water supply that is not affected by this contamination. Based on the current use of the on-site building, the inhalation of site contaminants does not present a current concern. The potential exists for the inhalation of site contaminants due to soil vapor intrusion for any future on-site redevelopment and occupancy and/or if the current use of the on-site building changes. Environmental sampling indicates that contamination is not migrating off-site.

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:

Soil

RAOs for Public Health Protection

- Prevent ingestion/direct contact with contaminated soil.
- Prevent inhalation of or exposure from contaminants volatilizing from contaminants in soil.

RAOs for Environmental Protection

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

Ground Water

RAOs for Public Health Protection

- Prevent ingestion of water impacted by contaminants.

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 the evaluation of the remedial criteria are presented in the Alternative 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 selected remedy is a Commercial Use (Track 4) Cleanup.

The selected remedy is referred to as the Commercial Use (Track 4) Cleanup and described as containing: excavation of hotspot soils, in-situ enhanced biodegradation, transformer removal, cover system implementation and SMP.

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

1. Remedial Design

A remedial design program will be implemented to provide the details necessary for the construction, operation, optimization, 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 gases 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;
- Integrating the remedy with the end use where possible and encouraging green and sustainable re-development; and
- Additionally, to incorporate green remediation principles and techniques to the extent feasible in the future development at this site, any future on-site buildings will include, at a minimum, a vapor barrier/waterproofing membrane on the foundation to improve energy efficiency as an element of construction.

2. Excavation, and "Hotspot" Soil Removal, and Offsite Disposal of Inactive Transformers

Excavation and off-site disposal of on-site soils which exceed commercial SCOs, as defined by 6 NYCRR Part 375-6.8, identified hotspot sources, and site-specific action levels (SSAL) for Total

PAHs (> 500 ppm), Total Arsenic (> 60 ppm), Total Lead (>3,900 ppm), and Total Mercury (>5.7 ppm). All soils in the upper foot which exceed the commercial SCOs will be excavated and transported off-site for disposal. Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be brought in to complete the backfilling of the excavation (as needed) and establish design grades at the site. On-site soil which does not exceed the above excavation criteria may be used below the cover system described in remedy element 3 to backfill the excavation to the extent that a sufficient volume of on-site soil is available. The site will be regraded to accommodate installation of a cover system as described in remedy element 3. A site management plan will be implemented during the remedial and redevelopment activities.

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4. In-Situ Enhanced Biodegradation

In-situ enhanced biodegradation will be employed to treat VOCs in groundwater within the vicinity of soil borings SB-21W and SB-22W. The biological breakdown of contaminants will be performed through a site-specific remedial program The objective of the groundwater remedial program will involve injecting an enhanced biodegradation regent into groundwater/saturated soils to facilitate a reduction in groundwater VOCs and reduce the potential for soil vapor intrusion within the building. Following implementation of remedial element 5 a soil vapor intrusion (SVI) assessment will be performed to determine if SVI remains a concern within the site building. Mitigation measures may be warranted, based on the subsequent data.
Additional details of planned injection activities will be more fully described in the Remedial Action Workplan. Additionally, an SVI monitoring program will be included within the site management plan (SMP) to evaluate site conditions and evaluate the effectiveness of the remedy.

5. Engineering and Institutional Controls
Imposition of an institutional control in the form of an environmental easement and a Site Management Plan, as described below, will be required. The remedy will achieve a Track 4 commercial cleanup at a minimum.

Institutional Controls

Imposition of an institutional control in the form of an environmental easement for the controlled property which will:

- require 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);
- allow the use and development of the controlled property for commercial or industrial use as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
- restrict the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or County Department of Health; and
- require compliance with the Department approved Site Management Plan.

6. Site Management Plan

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 engineering controls remain in place and effective:

- Institutional Controls: the environmental easement discussed in the "Institutional Controls" section of remedy element 5.

- Engineering Controls: the site cover system discussed in remedial element 3.

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 or groundwater use restrictions;
- a provision that should a building foundation or building slab be removed in the future, a cover system consistent with that described in remedial element 3 above will be placed in any areas where the upper one foot of exposed surface soil exceed the applicable soil cleanup objectives (SCOs);
- a provision for evaluation of the potential for soil vapor intrusion for any new buildings developed on the site, including provisions 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 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 the site cover, soil vapor conditions, indoor air and groundwater to assess the performance and effectiveness of the remedy;

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

Figure 1 – Site Location Map

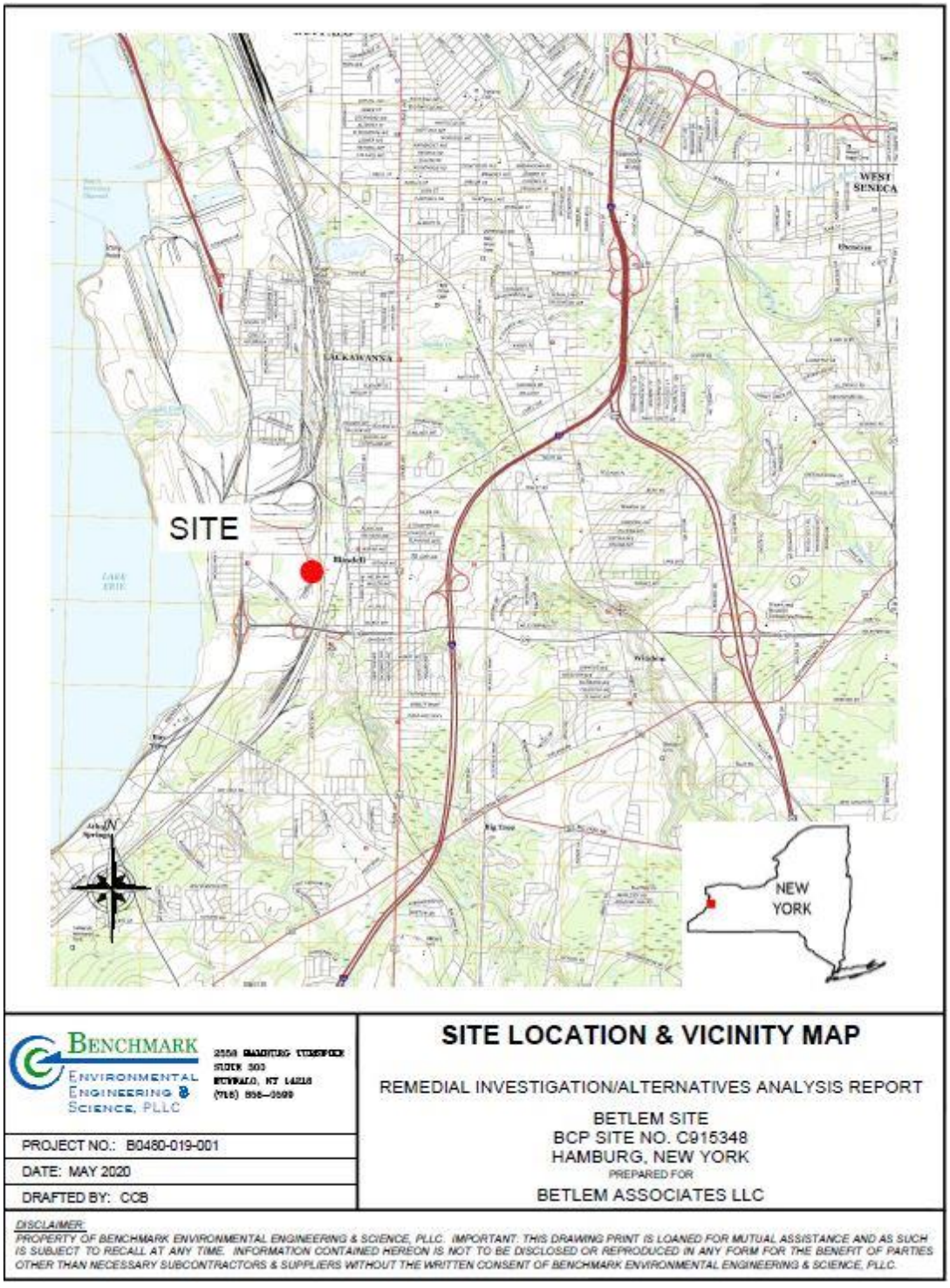

Figure 2 – Site Plan

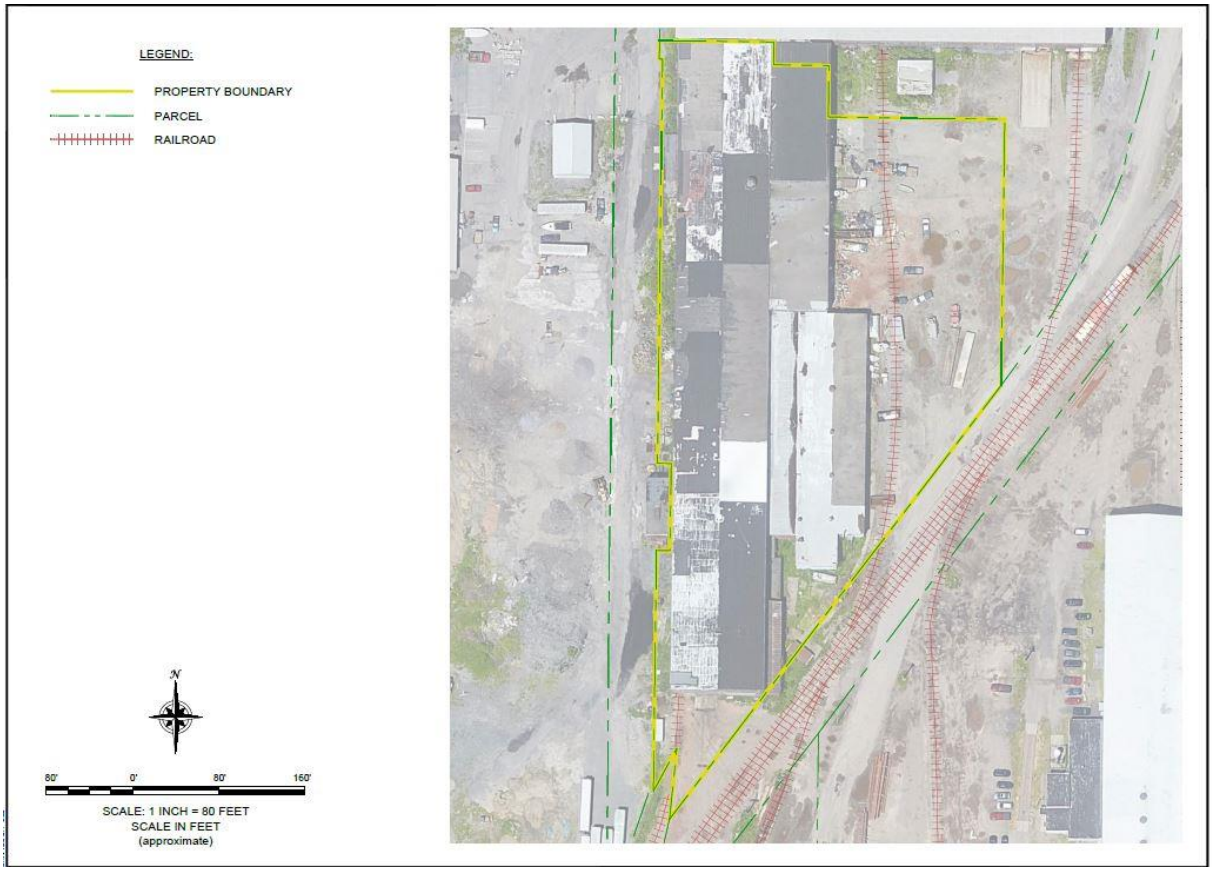

Figure 3 – Selected Remedy (Excavation Location/Limits)