

DECISION DOCUMENT

PolyChrome Manufacturing Site
Brownfield Cleanup Program
Yonkers, Westchester County
Site No. C360098
July 2018



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

DECLARATION STATEMENT - DECISION DOCUMENT

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Statement of Purpose and Basis

This document presents the remedy for the PolyChrome Manufacturing 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 PolyChrome Manufacturing 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. Remedial Design/Green Remediation

A remedial design program will be implemented to provide the details necessary for the construction, operation, maintenance, and monitoring of the remedial program. Design details for the driving of piles where dense non-aqueous phase liquid (DNAPL) exists will be developed and provided to the Department for prior approval to mitigate the potential for DNAPL to further migrate horizontally or vertically during pile installation. 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. Excavation

The existing on-site building(s) will be demolished and materials which cannot be beneficially reused on site will be taken off-site for proper disposal in order to implement the remedy.

Excavation and off-site disposal of contaminant source areas, including:

- grossly contaminated soil, as defined in 6 NYCRR Part 375-1.2(u);
- soil exceeding the 6NYCRR Part 371 hazardous criteria for RCRA metals
- soil containing SVOCs exceeding 500 ppm;
- non-aqueous phase liquids;
- soil with visual waste material or non-aqueous phase liquid;
- soil that create a nuisance condition, as defined in Commissioner Policy (CP) 51, Section G.

Approximately 1,400 cubic yards of contaminated soil will be removed from the site at depths ranging from approximately 3 to 8 feet, to the extent practicable. Any underground storage tanks (USTs), fuel dispensers, underground piping or other structures associated with a source of contamination will also be excavated, removed and properly disposed off-site.

On-site soil which does not exceed the excavation criteria may be used below the cover system described in remedy element 4 to backfill the excavation.

On-site soil which does not exceed the above excavation criteria or the protection of groundwater SCOs for any constituent may be used anywhere beneath the cover system, including below the water table, to backfill the excavation or re-grade the site.

Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be brought in to replace the excavated soil and establish the designed grades at the site.

The site will be re-graded to accommodate installation of a cover system as described in remedial element 4 below.

3. In-Situ Solidification

In-situ solidification (ISS) will be implemented in areas as indicated on Figure 2. The treatment zone will extend from approximately 6 to 10 feet below grade to approximately 18 to 25 feet below grade in areas where coal tar is present in significant thicknesses below the groundwater table. ISS is a process that binds the soil particles in place creating a low permeability mass. The contaminated soil will be mixed in place together with solidifying agents (typically Portland cement) or other binding agents using an excavator or augers. The soil and binding agents are mixed to produce a solidified mass resulting in a low permeability monolith. The solidified mass will then be covered with a cover system as described in element 5 to prevent direct exposure to

the solidified mass. The resulting solid matrix reduces or eliminates mobility of contamination and reduces or eliminates the matrix as a source of groundwater contamination.

4. Cover System

A site cover will be required to allow for restricted-residential use of the site in areas where the upper two feet of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs). Where a soil cover is to be used, it will be a minimum of two feet 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, cement, and paved surface parking areas, sidewalks, building foundations and building slabs.

Where the soil cover is required over the ISS treatment area, it will consist of a minimum of four feet of soil meeting the SCOs for restricted residential use. For areas where solidified material underlies the cover, the solidified material itself will serve as the demarcation layer due to the nature of the material.

5. Coal Tar Recovery

Coal tar recovery wells will be installed and operated in areas where coal tar has been identified but which are not subject to in-situ solidification. Recovery wells will be designed to remove potentially mobile coal tar from the subsurface. The number, depth, type and spacing of the recovery wells will be determined after the shallow soil excavation and the in-situ solidification. The conceptual placement of these wells is shown on Figure 2. Coal tar will be collected periodically from each well; however, if wells are determined by the Department to accumulate large quantities of coal tar over extended time periods, they can be converted to automated collection.

6. Enhanced Bioremediation

In-situ enhanced biodegradation will be employed to treat petroleum contaminants in groundwater in the areas downgradient of the coal tar recovery wells installed in paragraph 5 above. The biological breakdown of contaminants through aerobic respiration will be enhanced by the placement of an oxygen release compound (ORC), or similar material, into the subsurface to promote bioremediation via injection wells screened in the shallow groundwater. If necessary, additional ORC may be added downgradient of excavation areas via injection wells as well as ORC soil mixing in backfill material in order to promote enhancement of this process. Groundwater contamination remaining after active remediation will be addressed with monitored natural attenuation (MNA).

7. Vapor Mitigation

Any on-site buildings will be required to have a sub-slab depressurization system, or other similar engineered system to prevent the migration of vapors into the building from soil and/or groundwater

8. Institutional Control

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 restricted residential 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 Westchester County DOH and
- require compliance with the Department approved Site Management Plan.

9. 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/or engineering controls remain in place and effective:

Institutional Controls: The Environmental Easement discussed in paragraph 7 above.

Engineering Controls: the soil cover discussed in paragraph 5 above, and also a Groundwater Monitoring Plan for the site.

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, and 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 Paragraph 4 above will be placed in any areas where the upper two feet of exposed surface soil exceed the applicable soil cleanup objectives (SCOs);
- 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

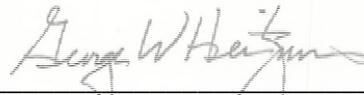
- engineering controls.
- b. a Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but may not be limited to:
- monitoring of groundwater to assess the performance and effectiveness of the remedy;
 - a schedule of monitoring and frequency of submittals to the Department; and
 - monitoring for vapor intrusion systems installed for new buildings developed on the site, as may be required by the Institutional and Engineering Control Plan as discussed above.

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.

July 10, 2018

Date



George Heitzman, Director
Remedial Bureau C

DECISION DOCUMENT

PolyChrome Manufacturing Site
Yonkers, Westchester County
Site No. C360098
July 2018

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 repository:

Yonkers Public Library
Attn: John A. Favareau
One Larkin Center
Yonkers, NY 10701
Phone: 914-337-1500

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: This 2.256-acre Brownfield Cleanup Program (BCP) site is located in an urban area at 80-94 Alexander Street, Yonkers, Westchester County. The site is adjacent to the intersection of Ashburton Avenue and Alexander Street.

Two Brownfield Sites, Halstead-Quinn/ATI Tank Farm (C360090) and PolyChrome R&D Lab Site (C360099) are located directly downgradient of this site. These sites are being remediated and will have institutional controls and engineering controls (IC/ECs) placed on them that includes groundwater monitoring, coal tar recovery, and soil vapor mitigation systems on buildings to be constructed.

Site Features: All buildings located on-site have been demolished to prepare the site for redevelopment. At present the site is vacant and the surface is comprised mostly of the former building slab and pavement with some areas of bare soil. There are a number of exposed underground storage tanks (USTs) which contained fuel oil and gasoline remaining at the site.

Zoning/Current Use: The site is zoned industrial. In May 2009, the City of Yonkers adopted a Master Plan, Urban Renewal Plan and Brownfield Opportunity Area Plan for the entire Alexander Street corridor. These plans permit residential development with a Planned Urban Development (PUR) Special Use Permit. The intended end use for this site is restricted residential and commercial.

Past Use of the Site: The site is one of two former PolyChrome Corporation properties on Alexander Street. The site is also referred to as the East Site. Sun Chemical Corporation, the former site owner, originally developed the site as a manufacturing and warehouse facility for lithographic printing. PolyChrome manufactured coated photosensitive aluminum printing plates from at least 1980 to 1994. Prior to PolyChrome, industrial uses date back to 1898 and include site use by Socony Vacuum Oil and as a beer depot. A petroleum storage tank farm was also located at the site. Four above-ground storage tanks (ASTs) which contained hazardous substances, including sulfuric acid and sodium hydroxide were removed in April 1994 by order of the US EPA. Two underground storage tanks (USTs) were removed in 2014 under an approved work plan, during which a test pit investigation for other USTs was performed.

Site Geology/Hydrogeology: Site soils consist of fill materials, sand, gravel and clay. Groundwater flow is generally toward the northwest. Depth to groundwater at the site varies from approximately 4 1/2 to 7 1/2 feet below ground surface.

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 Applicants under the Brownfield Cleanup Agreement is are Volunteers. The Volunteers do not have an obligation to address off-site contamination. The Department has determined that this site poses a significant threat to human health and the environment and there are potential off-site impacts that require further investigation; accordingly, enforcement actions are necessary.

The Department will seek to identify any parties (other than the Volunteer(s)) known or suspected to be responsible for contamination at or emanating from the site, referred to as Potentially Responsible Parties (PRPs). The Department will bring an enforcement action against the PRPs. If an enforcement action cannot be brought, or does not result in the initiation of a remedial program by any PRPs, the Department will evaluate the off-site contamination for action under the State Superfund. The PRPs are subject to legal actions by the State for recovery of all response costs the State incurs or has incurred.

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
- soil 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:

acenaphthene	phenanthrene
acenaphthylene	pyrene
anthracene	arsenic
benzo(a)anthracene	trichloroethene (TCE)
benzo(a)pyrene	mercury
benzo(b)fluoranthene	copper
benzo(g,h,i)perylene	chromium
benzo[k]fluoranthene	coal tar
chrysene	lead
dibenz[a,h]anthracene	cis-1,2 dichloroethene
naphthalene	m&p-xylene

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

- groundwater

- soil
- 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.

The following IRM has been completed at this site based on conditions observed during the RI.

Building Demolition

All buildings on-site have been demolished to ground level after abatement for lead and asbestos. Approximately 3,000 cubic yards of in-situ concrete slab materials (e.g., concrete slab on grade and above grade concrete/brick walls) are present at the site and are proposed for crushing and beneficial reuse during redevelopment of the site. Five predesign investigation soil borings are proposed that could not be completed during the remedial investigation because of existing buildings. A Beneficial Use Determination (BUD) was approved by the Department for on-site placement of this material after samples of walls and slabs contained acceptable levels of PCBs, metals, volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs) for use beneath the final cover.

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: Based upon the investigations conducted to date, the primary contaminants of concern (COCs) for the site include metals, volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOC) in on-site soil, soil vapor, and groundwater. Off-site impacts to groundwater and soil vapor from SVOCs and VOCs were noted in the downgradient and adjacent PolyChrome West and ATI Tank Farm BCP sites that are also undergoing remediation and redevelopment at this time.

Soil - Dense non-aqueous phase liquid (DNAPL) has been identified on-site in the deeper zones. The DNAPL on-site has been characterized as coal tar based on forensic analysis. DNAPL has been found on top of the historic Hudson River sediments just below the anthropogenic fill material (about 10 to 18 feet below ground surface (bgs)) in the northern and southern portions of the site. The DNAPL is not believed to be site-related, and the source of the DNAPL has not been conclusively determined, although a former manufactured gas plant (MGP) site is located approximately 500 yards upgradient of the site. The MGP site is being investigated by Con Edison of New York. The DNAPL extends off-site under the adjacent PolyChrome West BCP Site.

Mercury was detected at levels up to 370 parts per million (ppm) compared to the restricted residential soil cleanup objective (RR SCO) of 0.81 ppm. Two VOCs were detected in subsurface soil above the guidance values, trichloroethene at 66 ppm (RR SCO 21 ppm) and 1,2-dichloroethane at 3.1 ppm (RR SCO 3.1 ppm). Benzo(a)anthracene at 140 ppm (RR SCO of 1 ppm), benzo(b)fluoranthene at 160 ppm (RR SCO of 1 ppm), benzo(a)pyrene at 84 ppm (RR SCO of 1 ppm), benzo(k)fluoranthene at 38 (RR SCO of 3.9 ppm), and benzo(g,h,i) perylene at 110 ppm (RR SCO of 100 ppm). These exceedances of metals, VOCs and SVOCs were found beneath and near the buildings' foundations. Some of these soils are currently exposed due to the recent removal of these buildings. At present the site is vacant and the surface is mostly the former building slabs and pavement with some areas of bare soil. Soil contamination is not migrating off-site.

Groundwater - Cis-1,2 dichloroethylene (DCE) was detected in groundwater at 2.1 parts per billion (ppb), above the groundwater standard of 0.6 ppb and TCE exceeded groundwater standards at 17 ppb above the standard of 5 ppb from a groundwater monitoring well in the center of the site. Benzene exceeded its groundwater standard at 1.9 ppb (SCG of 1 ppb). Lead exceeded its groundwater standard at 3,400 ppb (SCG of 25 ppb), mercury was detected at 11 ppb (SCG of 0.7 ppb), and arsenic was detected at 36 ppb (SCG of 25 ppb). Groundwater contamination extends off-site under the adjacent PolyChrome West BCP Site.

Soil Vapor - Prior to the building demolition, four sub-slab and two soil gas samples were collected. No indoor air samples were collected as the buildings were vacant and not maintained at that time. Trichloroethylene (TCE), toluene, cis-1,2 DCE, and m&p-xylene were present in soil vapor. TCE was found at concentrations up to 670 micrograms per cubic meter (ug/m³), toluene up to 31 ug/m³, cis-1,2 DCE up to 40 ug/m³, and m&p-xylene up to 21 ug/m³. The TCE and cis-1,2 DCE are associated with past facility operations. Toluene and xylene are indicative of past petroleum spills and 1,2,4-tetramethylbenzene is possibly associated with coal tar DNAPL. On-site, the potential exists for vapor intrusion of site-related contaminants and off-site VOCs were found in the downgradient and adjacent PolyChrome West and ATI Tank Farm BCP sites that are also undergoing remediation and redevelopment at this time.

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 who enter the site could contact contaminants in soil by walking on the soil or digging below the ground surface. People are not drinking the contaminated groundwater because the area is served by a public water supply that is not affected by this contamination. 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 the buildings is referred to as soil vapor intrusion. Because the site is vacant, the inhalation of site-related contaminants due to soil vapor intrusion does not represent a current concern. The potential exists for the inhalation of site-related contaminants due to soil vapor intrusion in any future on-site

redevelopment. Additional sampling is recommended to determine if soil vapor intrusion is a potential concern for off-site buildings.

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.
- Remove the source of ground or surface water contamination.

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 or surface water contamination.
- Prevent impacts to biota from ingestion/direct contact with soil causing toxicity or impacts from bioaccumulation through the terrestrial food chain.

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 Track 4: Restricted use with site-specific soil cleanup objectives remedy.

The selected remedy is referred to as the Excavation, ISS, Coal Tar Recovery, Enhanced Bioremediation & Site Management remedy.

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

1. Remedial Design/Green Remediation

A remedial design program will be implemented to provide the details necessary for the construction, operation, maintenance, and monitoring of the remedial program. Design details for the driving of piles where dense non-aqueous phase liquid (DNAPL) exists will be developed and provided to the Department for prior approval to mitigate the potential for DNAPL to further migrate horizontally or vertically during pile installation. 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;

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- Reducing direct and indirect greenhouse gas and other emissions;
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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.

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Excavation and off-site disposal of contaminant source areas, including:

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- soil containing SVOCs exceeding 500 ppm;
- non-aqueous phase liquids;
- soil with visual waste material or non-aqueous phase liquid;
- soil that create a nuisance condition, as defined in Commissioner Policy (CP) 51, Section G.

Approximately 1,400 cubic yards of contaminated soil will be removed from the site at depths ranging from approximately 3 to 8 feet, to the extent practicable. Any underground storage tanks (USTs), fuel dispensers, underground piping or other structures associated with a source of contamination will also be excavated, removed and properly disposed off-site.

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underlies the cover, the solidified material itself will serve as the demarcation layer due to the nature of the material.

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7. Vapor Mitigation

Any on-site buildings will be required to have a sub-slab depressurization system, or other similar engineered system to prevent the migration of vapors into the building from soil and/or groundwater

8. Institutional Control

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 restricted residential 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 Westchester County DOH and
- require compliance with the Department approved Site Management Plan.

9. 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/or engineering controls remain in place and effective:

Institutional Controls: The Environmental Easement discussed in paragraph 7 above.

Engineering Controls: the soil cover discussed in paragraph 5 above, and also a Groundwater Monitoring Plan for the site.

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, and groundwater use restrictions;

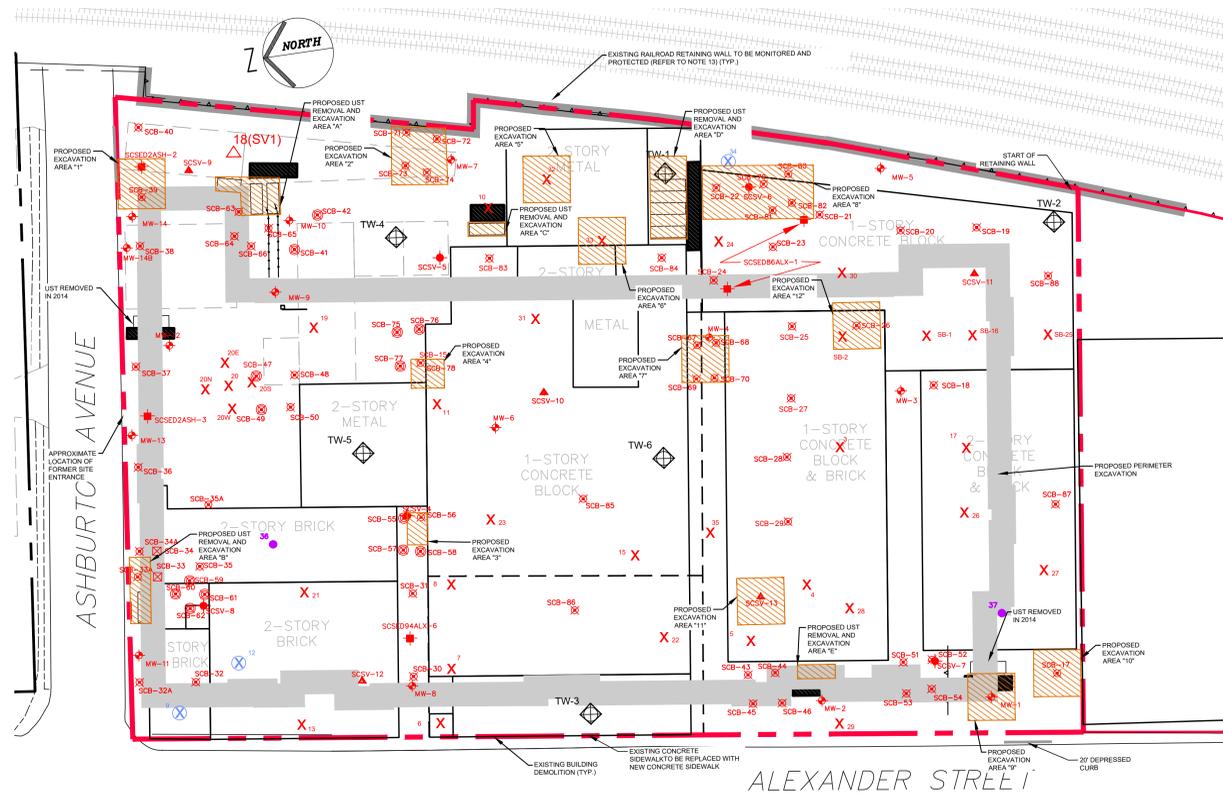
 - a provision that should a building foundation or building slab be removed in the future, a cover system consistent with that described in Paragraph 4 above will be placed in any areas where the upper two feet of exposed surface soil exceed the applicable soil cleanup objectives (SCOs);
 - provisions 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; and
 - monitoring for vapor intrusion systems installed for new buildings developed on the site, as may be required by the Institutional and Engineering Control Plan as discussed above.



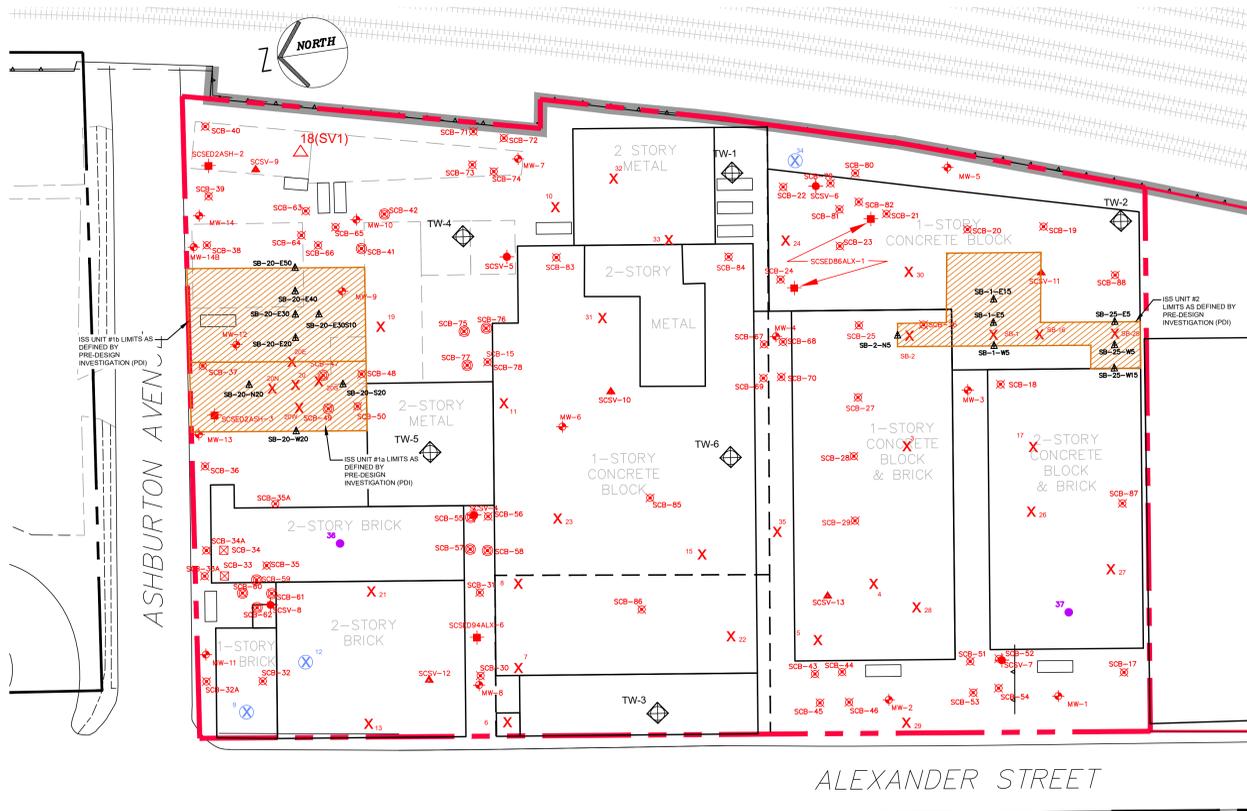
Site Boundary

C360098 PolyChrome Manufacturing Site





INSET A:
PROPOSED UST REMOVAL / CSA EXCAVATION AREAS



INSET B:
PROPOSED ISS TREATMENT AREAS AND PROPOSED PDI SAMPLE LOCATION PLAN

- LEGEND**
- 2015-2016 RI MONITORING WELL LOCATION
 - 2015-2016 PHASE II SOIL BORING GROUNDWATER AND/OR SOIL VAPOR INTRUSION LOCATION
 - 2015-2016 PHASE II SEDIMENT SAMPLE LOCATION
 - SITE BOUNDARY
 - 2015-2016 RI SOIL VAPOR POINT
 - 2015-2016 & 2017 RI SOIL BORING NOT INSTALLED DUE TO SHALLOW REFUSAL/ACCESS LIMITATIONS
 - 2015-2016 RI SOIL BORING LOCATION
 - 2015-2016 RI SOIL BORING NOT INSTALLED DUE TO ACCESS LIMITATIONS
 - 2017 SI SOIL BORING AND MONITORING WELL LOCATION
 - 2017 SI SOIL BORING LOCATION
 - 2017 SI SOIL BORING NOT INSTALLED DUE TO ACCESS LIMITATIONS
 - 2017 SI SOIL BORING AND SOIL VAPOR POINT LOCATION
 - OBSERVED FLOOR DRAIN/CATCH BASIN/UTILITY FEATURE
 - PROPOSED UST REMOVAL / CSA EXCAVATION AREA / ISS UNIT
 - 2013 IRM TEST PIT PROGRAM LOCATIONS
 - PROPOSED ASPHALT DRIVEWAY
 - 2018 PROPOSED PDI SOIL BORING LOCATIONS
 - PDI BORING

REV / ISSUE	DATE	DESCRIPTION
0	6/20/2018	ISSUED FOR REGULATORY REVIEW



CLIENT

AVALON YONKERS SUN SITES, LLC

PAULUS, SOKOLOWSKI AND SARTOR ENGINEERING, P.C.

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JANOS M. SZEMAN
PROFESSIONAL ENGINEER
NY LIC. NO. 084542-1

SIGNATURE _____ DATE _____

PROJECT

SHEET TITLE

PROPOSED REMEDIAL ACTION SITE PLAN

PROJECT NO.: _____ DRAWN BY: ES
SCALE: 1"=30' CHECKED BY: JS
DATE: 06-20-2018 SHEET 1 OF
SHEET NO. _____

