PROPOSED REMEDIAL ACTION PLAN

Batavia Iron and Metal Company, Inc.
Environmental Restoration Project
Batavia, Genesee County
Site No. E819018
February 2013

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

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SECTION 1: SUMMARY AND PURPOSE OF THE PROPOSED PLAN

The New York State Department of Environmental Conservation (the Department), in consultation with the New York State Department of Health (NYSDOH), is proposing 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 proposed by this Proposed Remedial Action Plan (PRAP). The disposal of contaminants at this site, as more fully described in Section 6 of this document, has contaminated various environmental media. Contaminants include hazardous waste and/or petroleum. The proposed remedy is intended to attain the remedial action objectives identified for this site for the protection of public health and the environment. This PRAP identifies the preferred remedy, summarizes the other alternatives considered, and discusses the reasons for the preferred remedy.

The 1996 Clean Water/ Clean Air Bond Act provides funding to municipalities for the investigation and cleanup of brownfields. Brownfields are abandoned, idled, or under-used properties where redevelopment is complicated by real or perceived environmental contamination. They typically are former industrial or commercial properties where operations may have resulted in environmental contamination. Brownfields often pose not only environmental, but legal and financial burdens on communities. Under the Environmental Restoration Program, the state provides grants to municipalities to reimburse up to 90 percent of eligible costs for site investigation and remediation activities. Once remediated, the property can then be reused.

The Department has issued this document in accordance with the requirements of New York State Environmental Conservation Law and Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York; (6 NYCRR) Part 375. This document is a summary of the information that can be found in the site-related reports and documents in the document repository identified below.

SECTION 2: CITIZEN PARTICIPATION

The Department seeks input from the community on all PRAPs. This is an opportunity for public participation in the remedy selection process. The public is encouraged to review the reports and documents, which are available at the following repository:

Richmond Memorial Library
19 Ross Street
Batavia, NY 14020
Phone: 585-343-9350

A public comment period has been set from:

February 15, 2013 to March 31, 2013

A public meeting is scheduled for the following date: March 20, 2013 at 6:30 pm.

Public meeting location:

City Hall
One Batavia City Centre
Batavia, New York 14020

At the meeting, the findings of the remedial investigation (RI) and the alternatives analyses (AA) will be presented along with a summary of the proposed remedy. After the presentation, a question-and-answer period will be held, during which verbal or written comments may be submitted on the PRAP.

Written comments may also be sent to:

Todd Caffoe
NYS Department of Environmental Conservation
Division of Environmental Remediation
6274 East Avon-Lima Road
Avon, NY 14414
tmcaffoe@gw.dec.state.ny.us

The Department may modify the proposed remedy or select another of the alternatives presented in this PRAP based on new information or public comments. Therefore, the public is encouraged to review and comment on the proposed remedy identified herein. Comments will be summarized and addressed in the responsiveness summary section of the Record of Decision (ROD). The ROD is the Department's final selection of the remedy for this site.

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 Batavia Iron and Metal site is a 6.8-acre property at 301-305 Bank Street in the City of Batavia. The site is located in a residential area adjacent to the northern City municipal boundary.

Site Features:
The site contains an 8,000 square foot building located on the southern portion adjacent to Bank Street. The remaining portions of the property are unpaved and consist of gravel or overgrown vegetation. Assorted debris (i.e., concrete block, scrap metal, wood crates, rubber tires, propane tanks, steel drums, storage tanks, etc.) is scattered throughout the site. The site topography gently slopes to the north to an adjacent Federal Wetland.

Current Zoning/Use:
The site is currently inactive and it is zoned residential. A gated chain link fence is located along the southern portion of the property and along portions of the eastern and western property boundaries. Adjacent properties include a baseball stadium, Batavia High School and several residential homes. The area is served by a public water supply.

Past Use of the Site:
The property was operated as a metal recycling facility from 1951 to 1999. Batavia Iron and Metal Company filed for bankruptcy in February 2000. Reportedly, the site was used to reclaim iron, metal and wire materials for sale to recycling and manufacturing firms. Maintenance files indicated that in addition to recycling metal, Batavia Metals also purchased and handled electrical transformers on the property; maintained a number of above ground and underground storage tanks on the property that were used to store gasoline, diesel fuel, and numbers 1,2 and 4 fuel oil; and stored used oils in 55-gallon drums at the facility.

Two furnaces were operated on the facility for reclaiming wire and smelting white metals from the early 1970s until 1994. Prior to the use of the furnaces, the facility utilized open burning in dumpsters in the yard to remove the insulation from the wiring.

Site Geology and Hydrogeology:
The overburden deposits encountered at the site generally consist of fill material and glacial tills. In general, fill material depths range in thickness from approximately 0.5 to 8 feet below ground surface (bgs). The native soil encountered at the site appears to be a glacial till generally consisting of a mix of sand, silts, clay, gravel and large cobbles. Groundwater depth is generally 3 feet or less bgs and flows in a southerly direction. The depth to bedrock ranges from 8 to 15 feet below ground surface.

A majority of the site is unpaved and it is expected that surface water infiltrates into the ground, resulting in a limited amount of surface water runoff. Site surface water typically infiltrates into

the subsurface or ponds in low lying areas caused by unlevel filled areas.

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 residential use (which allows for restricted-residential use, commercial use, and industrial use) as described in Part 375-1.8(g) are/is being evaluated in addition to an alternative which would allow for unrestricted use of the site.

A comparison of the results of the investigation to the appropriate standards, criteria and guidance values (SCGs) for the identified land use and the unrestricted use SCGs for the site contaminants is included in the Tables for the media being evaluated in Exhibit A.

SECTION 5: ENFORCEMENT STATUS

Potentially Responsible Parties (PRPs) are those who may be legally liable for contamination at a site. This may include past or present owners and operators, waste generators, and haulers.

No PRPs have been documented to date.

Since no viable PRPs have been identified, there are currently no ongoing enforcement actions. However, legal action may be initiated at a future date by the state to recover state response costs should PRPs be identified. City of Batavia will assist the state in its efforts by providing all information to the state which identifies PRPs. City of Batavia will also not enter into any agreement regarding response costs without the approval of the Department.

SECTION 6: SITE CONTAMINATION

6.1: Summary of the Remedial Investigation

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

The following general activities are conducted during an RI:

- Research of historical information,
- Geophysical survey to determine the lateral extent of wastes,
- Test pits, soil borings, and monitoring well installations,

- Sampling of waste, surface and subsurface soils, groundwater, and soil vapor,
- Sampling of surface water and sediment,
- Ecological and Human Health Exposure Assessments.

The analytical data collected on this site includes data for:

- groundwater
- surface water
- soil
- sediment
- soil vapor
- 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. The tables found in Exhibit A list the applicable SCGs in the footnotes. For a full listing of all SCGs see: http://www.dec.ny.gov/regulations/61794.html

6.1.2: 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 in Exhibit A. Additionally, the RI Report contains a full discussion of the data. The contaminant(s) of concern identified at this site is/are:

Polychlorinated Biphenyls (PCB)	Arsenic
Polycyclic Aromatic Hydrocarbons (PAHs)	Nickel
Cadmium	Copper
Chromium	Trichloroethene (TCE)
Lead	Tetrachloroethylene (PCE)
Mercury	Dichloroethylene

As illustrated in Exhibit A, 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 Record of Decision.

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

2006 Soil Removal

Stained soils located in a former drum storage area in the southeastern portion of the site were contaminated with PCBs and lead. Approximately 41 tons of PCB and lead contaminated soils were excavated and stockpiled on-site. Waste characterization samples failed TCLP for lead. Levels of PCBs and pesticides did not meet land disposal restrictions. The stockpiled soils were shipped off-site and incinerated at a permitted disposal facility. The area of soil removal was roughly 55' x 15' and it was backfilled with 1 foot of stone. Further remedial actions will be required in this area of 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.

Based upon the resources and pathways identified and the toxicity of the contaminants of ecological concern at this site, a Fish and Wildlife Resources Impact Analysis (FWRIA) was deemed not necessary for OU 01.

Large amounts of non-native fill cover the entire site from depths ranging from 0.5 to 8 feet. Fill material extends beyond the property lines onto adjacent properties in the northern portion of the site. Fill extends into the Federal Wetland to the north. Approximately 75 sub-surface soil and fill material sample were analyzed for various contaminants.

On-site:
Soil/Fill - The primary contaminants in soil are PAHs, PCBs, cadmium, lead, chromium, copper, mercury, nickel, barium, and arsenic. Pesticides (β-BHC, γ-chorodane, 4,4[1]-DDE, 4,4[1]-DDT and endrine ketone) were encountered in soils in the vicinity of the IRM area exceeding residential soil cleanup objectives (SCOs). Concentrations of PCBs range from 0.56 to 480 ppm and concentrations of PAHs range from 0.167 to 798 ppm. Lead, mercury, cadmium, and chromium exceed the residential standards in nearly one-third of the samples. Soils are also contaminated with petroleum-related volatile organic compounds; however, contaminant levels are below the

residential SCOs. Sample results also indicate that native soils beneath the fill are not significantly impacted by site-related contaminants.

Groundwater - Groundwater is contaminated with low levels of chlorinated volatile organic compounds (VOCs). The highest levels of total VOCs (307 ppb) are in the central portion of the site. Groundwater flows south towards the adjacent residential properties. The total VOCs detected in the on-site wells closest to the residential properties range from 5 to 27 ppb.

Off-site:
Soil – Soil samples were obtained on the residential property immediately adjacent to the IRM area. Sample results indicate concentrations of cadmium (ND to 9.4 ppm), mercury(one location at 3.2 ppm) and lead (ND to 1,960 ppm) are above the residential soil cleanup objects. PCB concentrations were less than 1 ppm. Contaminants were mainly limited to the upper 6 inches of soil.

Sediment – Sediment/fill samples from submerged areas of the site exceed the residential SCOs for arsenic, cadmium, chromium, copper, lead, nickel, zinc, PCBs, and DDT. Site-related fill material was observed at all sediment sample locations. Sediments off-site and beyond the limits of fill do not appear to be impacted by site-related contaminants.

Soil vapor – Soil vapor intrusion (SVI) sampling was conducted on three nearby residential properties to the south of the site. Tetrachloroethene (PCE) was detected in sub-slab soil vapor at all three properties; however, PCE was not detected in any of the indoor air samples.

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 coming into contact with the contaminated groundwater because the area is served by a public water supply that is not affected by this contamination. The site is partially fenced and persons who enter the site could contact contaminants in the soil by walking on the soil, digging or otherwise disturbing the soil. Volatile organic compounds in the groundwater may move into the soil vapor (air between soil particles), 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. The potential for soil vapor intrusion to occur on-site will be evaluated should the on-site building become re-occupied and/or if new construction occurs. Environmental sampling indicates soil vapor intrusion is a 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 contact with, or inhalation of volatiles, from contaminated groundwater.

RAOs for Environmental Protection

- Remove the source of ground or surface water contamination.

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.
- 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: SUMMARY OF THE PROPOSED REMEDY

To be selected, the remedy must be protective of human health and the environment, be cost-effective, comply with other statutory requirements, and utilize permanent solutions, alternative technologies or resource recovery technologies to the maximum extent practicable. The remedy must also attain the remedial action objectives identified for the site, which are presented in Section 6.5. Potential remedial alternatives for the Site were identified, screened and evaluated in the AA report.

A summary of the remedial alternatives that were considered for this site is presented in Exhibit B. Cost information is presented in the form of present worth, which represents the amount of money invested in the current year that would be sufficient to cover all present and future costs associated with the alternative. This enables the costs of remedial alternatives to be compared on a common basis. As a convention, a time frame of 30 years is used to evaluate present worth costs for alternatives with an indefinite duration. This does not imply that operation,

maintenance, or monitoring would cease after 30 years if remediation goals are not achieved. A summary of the Remedial Alternatives Costs is included as Exhibit C.

The basis for the Department's proposed remedy is set forth at Exhibit D.

The proposed remedy is referred to as the Excavation and off-site disposal with groundwater treatment.

The estimated present worth cost to implement the remedy is $$8,177,000. The cost to construct the remedy is estimated to be $8,100,000 and the estimated average annual cost is $5,000.

The elements of the proposed remedy 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. A design-phase investigation will be conducted to determine the limits of excavation to meet residential SCOs and any impacts to the adjacent wetland will be further assessed. The remedial design will include provisions for excavation and off-site disposal of any contaminated sediments in the wetland above the ecological resources SCO as necessary, and include restoration of the impacted wetland area. 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; and
- Integrating the remedy with the end use where possible and encouraging green and sustainable re-development.

2. Excavation
Soil and fill exceeding the residential SCOs from area of concern (AOC)#1, AOC #2, and AOC #3will be excavated and disposed of off-site at a permitted facility. Soils exceeding the unrestricted use SCOs for PCBs, copper, lead, cadmium, and mercury will be excavated and disposed of off-site at a permitted facility. The AOCs are described below:

The following is a description of the AOCs that will be addressed by this remedy:

AOC #1 – Consists of impacted fill material and soil contaminated with PCBs, pesticides, and lead present in the area where the previous IRM was conducted. It is an area of approximately 2,800 square feet. Depth of contaminants that exceed SCOs is approximately 3 feet which results in approximately 300 cubic yards to be removed.

AOC #2 – Consists of impacted fill material in the northern and western portions of the site. Contaminated fill extends off-site along the northwestern property line. Approximately 1,900 cubic yards of contaminated soil and fill are in the off-site portion and approximately 9,100 cubic yards of contaminated fill and soil are on-site. Soils and fill are contaminated with PCBs, SVOCs and metals.

AOC #3 – Consists of non-hazardous solid waste debris and soil which is present on the surface of the entire site. The estimated volume of soil and solid waste to be removed is approximately 4,100 cubic yards.

AOC #4 – Consists of impacted surface soil at the off-site residential property located at 303 Bank Street. These soils are impacted by PCBs, cadmium, copper, lead and mercury and exceed unrestricted use soil cleanup objectives. Impacted soils are in a 3,300 square feet area to a thickness of 6 to 12 inches. Approximately 100 cubic yards of soil are impacted above residential SCOs .

On-site soil which does not exceed SCOs for the use of the site and/or the protection of groundwater may be used to backfill the excavation to the extent that a sufficient volume of on-site soil is available. Clean fill meeting the requirements of DER-10, Appendix 5 will be brought in to complete the backfilling of the excavation and establish the designed grades at the site. The site will be re-graded to shed water and covered with top soil and seeded . Soil derived from the re-grading may be used to backfill the excavation.

Clean fill meeting the requirements of DER-10, Appendix 5 will be brought in to backfill the off-site excavations in AOC #4.

3. Enhanced Bioremediation

In-situ enhanced bioremediation will be employed to treat volatile organic contaminants in groundwater in the area downgradient of AOC #2. The biological breakdown of contaminants through anaerobic reductive dechlorination will be enhanced by injection of an electron donor material such as hydrogen release compound (HRC) or an enhanced reductive dechlorination product. It is estimated that three linear treatment walls of the electron donor material will be injected via direct push technology in successive rows downgradient of the waste disposal area. A groundwater monitoring plan would be instituted after the injection to monitor the effectiveness of the remedy.

4. Off-site Vapor Mitigation and Soil Vapor Intrusion Investigation

Installation of sub-slab depressurization systems, or similar engineered systems, to prevent the migration of vapors into the three off-site residential buildings from contaminated groundwater. Conduct additional off-site soil vapor intrusion investigation as necessary.

5. Institutional Control

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 for residential, restricted residential, commercial and industrial uses as defined by Part 375-1.8(g), 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; and
- requires 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/or engineering controls remain in place and effective:

   Institutional Controls: Impose an Environmental Easement as discussed in paragraph 6 above.

   Engineering Controls: Maintain any potential future sub-slab ventilation system(s) and maintain groundwater monitoring wells. The Site Management 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 for evaluation of the potential for soil vapor intrusion for any buildings developed on the site, including 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 may be required by the Institutional and Engineering Control Plan discussed in item a above.

c. An Operation and Maintenance (O&M) Plan to ensure continued operation, maintenance, optimization, 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.

Exhibit A

Nature and Extent of Contamination

This section describes the findings of the Remedial Investigation for all environmental media that were evaluated. As described in Section 6.1, samples were collected from various environmental media to characterize the nature and extent of contamination.

For each medium for which contamination was identified, a table summarizes the findings of the investigation. The tables present the range of contamination found at the site in the media and compares the data with the applicable SCGs for the site. The contaminants are arranged into four categories; volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs) inorganics (metals and cyanide), and pesticides/ polychlorinated biphenyls (PCBs). For comparison purposes, the SCGs are provided for each medium that allows for unrestricted use. For soil, if applicable, the Restricted Use SCGs identified in Section 4 and Section 6.1.1 are also presented.

The Remedial Investigation and Remedial Alternatives Report (RI/RAR) identified four Areas of Concern (AOCs) that were the focus of the site investigation.

AOC #1 – Consists of remaining contaminated soils that were not addressed by the excavation and off-site disposal IRM. This portion of the site had a drum storage area where leaking drums of oil and sludge were previously stored.

AOC #2 – This area consists of the bulk of fill material located in the northern portion of the site. Landfill operations and other activities associated with the metal recycling operations extended off-site along the northwestern property line. The depth of fill varies from 3 to 8 feet deep and extends below the water table in portions of the site.

AOC #3 – Consists of non-hazardous solid waste debris and soil which is present on the surface of the entire site.

AOC #4 – Consists of impacted surface soil at the off-site residential property located at 303 Bank Street.

Waste/Source Areas

As described in the RI/RAR report, waste/source materials were identified at the site and are impacting soil. Groundwater and soil vapor are being impacted by chlorinated VOCs, but a source area of these VOCs was not identified.

Wastes are defined in 6 NYCRR Part 375-1.2 (aw) and include solid, industrial and/or hazardous wastes. Source Areas are defined in 6 NYCRR Part 375 (au). Source areas are areas of concern at a site were substantial quantities of contaminants are found which can migrate and release significant levels of contaminants to another environmental medium. Wastes and Source areas were identified at the site include,

AOC #1 and AOC#2 are the predominant source areas of contamination at the site. The fill materials in these areas are heavily impacted with PCBs, and SVOCs. Dioxins and furans were detected in two on-site locations within AOC #2. The depth of fill varies throughout the site from 0.5 to 8 feet below ground surface. Data

generated during the RI indicate that the majority of contamination is limited to the fill material. Sample results presented in the RI/RAR show concentrations of contaminants decrease significantly within the native soils. Landfill operations, metal recycling operations and poor housekeeping practices are the likely causes of contaminant release.

The waste/source areas identified will be addressed in the remedy selection process.

Groundwater

Groundwater sample were collected from on-site overburden monitoring wells to assess contaminants leaving the site. Groundwater is contaminated with chlorinated VOCs exceeding SCGs with one detection of PCBs exceeding SCGs. Groundwater flow is to the south, and the highest levels of contamination were found in the central portion of the site near well SP-10 (Please refer to Figure 3). VOC contaminant levels near the southern property line are at or near SCGs. A source of VOCs in groundwater was not identified; however, the levels of contamination are low and a distinct source area may not exist. PCBs were detected in well MW-6. This well is within the area having the highest levels of PCB contamination in soil. PCBs were not detected in any downgradient wells, and PCBs do not appear to be a migrating within the groundwater. The entire area is served by public water; however, there is a potential for vapor migration of VOCs both on-site and off-site

Table #1 - Groundwater

Detected Constituents	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)	Frequency Exceeding SCG
VOCs			
Acetone	100	50	1 of 11
Methyl tert-butyl ether	8 to 27	10	1 of 11
cis-1,2-Dichloroethene	5 to 120	5	3 of 11
Trichloroethene	2 to 72	5	2 of 11
Toluene	6	5	1 of 11
Tetrachloroethene	1 to 81	5	1 of 11
1,4-dichlorobenzene	1 to 5	3	1 of 11
PCBs			
Aroclor-1248	1.2	0.09	1 of 5
Aroclor-1260	3.2	0.09	1 of 5
Total PCBs	4.4	0.09	1 of 5

a - ppb: parts per billion, which is equivalent to micrograms per liter, ug/L, in water.
b- SCG: Standard Criteria or Guidance - Ambient Water Quality Standards and Guidance Values (TOGs 1.1.1), 6 NYCRR Part 703, Surface water and Groundwater Quality Standards, and Part 5 of the New York State Sanitary Code (10 NYCRR Part 5).

The primary groundwater contaminants are tetrachloroethene, trichloroethene, and cis-1,2-dichloroethene. The PCBs detected in groundwater appear to be localized to the source area and will be addressed by any soil remediation

Based on the findings of the RI, the presence of chlorinated VOCs has resulted in the contamination of groundwater. The site contaminants that are considered to be the primary contaminants of concern which will drive the remediation of groundwater to be addressed by the remedy selection process are: chlorinated VOCs.

Soil

Surface and subsurface soil samples both on-site and off-site were collected during the RI. Surface soil samples were collected from a depth of 0-2 inches to assess direct human exposure and potential impacts to surface water. Subsurface soil samples were collected from depths ranging from one to eight feet below ground surface to assess the extent of soil contamination and potential impacts to groundwater. Please refer to Figures 4, 5 and 6 for sample results.

AOC #1 – Sample results indicted contamination with PCBs, lead and some pesticides exceeding residential SCOs to a depth of approximately 3 feet.

AOC #2 – Sample results indicate significant contamination with PCBs, metals, and SVOCs above the residential SCOs. Total dioxins and furans were detected in two on-site samples. Total concentrations of dioxins and furans are less than 1 ppb, but the total equivalency factors were above the ATSDR guidance value of 50.

AOC #3 – Sample results indicated contamination with metals, SVOCs and some pesticides.

AOC #4 – The upper foot on this off-site property is contaminated with cadmium, copper, lead, and mercury above the residential SCOs. PCBs were detected; however, sample results were below the residential SCOs.

Table 2 Soil

Detected Constituents	Concentration Range Detected (ppm)[a]	Unrestricted SCG[b] (ppm)	Frequency Exceeding Unrestricted SCG	Residential Use SCG[c] (ppm)	Frequency Exceeding Restricted SCG
SVOCs					
Benzo(a)anthracene	0.096 to 67	1	4 of 12	1	4 of 12
Benzo(a)pyrene	0.1 to 46	1	4 of 12	1	4 of 12
Benzo(b)fluoranthene	0.036 to 58	1	4 of 12	1	4 of 12
Benzo(k)fluoranthene	0.045 to 29	0.8	2 of 12	1	2 of 12
Chrysene	0.15 to 58	1	4 of 12	1	4 of 12
Dibenzo(a,h)anthracene	0.051 to 7.5	0.33	1 of 12	0.33	1 of 12
Fluoranthene	0.043 to 130	100	1 of 12	100	1 of 12
Indeno(1,2,3-cd)Pyrene	0.076 to 20	0.5	4 of 12	0.5	4 of 12
Phenanthrene	0.055 to 110	100	1 of 12	100	1 of 12

Detected Constituents	Concentration Range Detected (ppm)[a]	Unrestricted SCG[b] (ppm)	Frequency Exceeding Unrestricted SCG	Residential Use SCG[c] (ppm)	Frequency Exceeding Restricted SCG
Phenol	0.058 to 0.71	0.33	1 of 12	100	0 of 12
Inorganics					
Arsenic	1.1 to 42.6	13	8 of 48	16	5 of 48
Barium	7.6 to 1,310	350	4 of 48	350	4 of 48
Cadmium	0.13 to 50	2.5	13 of 48	2.5	13 of 48
Total Chromium	3.1 to 2,660	30	8 of 48	36	8 of 48
Copper	10.3 to 12,400	50	29 of 48	270	12 of 48
Lead	4.7 to 5,690	63	26 of 48	400	9 of 48
Manganese	123 to 3,960	1600	2 of 48	2,000	2 of 48
Mercury	0.012 to 21.5	0.18	25 of 48	0.81	8 of 48
Nickel	5.8 to 318	30	8 of 48	140	5 of 48
Zinc	27.3 to 6320	109	27 of 48	2,200	8 of 48
PCB/Pesticides					
Aroclor – 1242	0.29 to 11	0.1	5 of 52	1	4 of 52
Aroclor – 1248	6 to 20	0.1	8 of 52	1	8 of 52
Aroclor – 1254	0.056 to 480	0.1	19 of 52	1	12 of 52
Aroclor – 1260	0.069 to 120	0.1	17 of 52	1	11 of 52
Total PCBs	0.056 to 480	0.1	35 of 52	1	23 of 52
β-BHC	0.0057 to 5.8	0.036	3 of 36	0.072	3 of 36
4,4[1]-DDE	0.008 to 5.9	0.0033	8 of 36	1.8	1 of 36
4,4[1]-DDT	0.00051 to 16	0.0033	23 of 36	1.7	5 of 36
Endrin Ketone	0.0078 to 0.012	ND**	2 of 36	ND**	2 of 36
γ-Chlordane	0.0048 to 0.053	0.018**	1 of 36	0.018**	1 of 36

a - ppm: parts per million, which is equivalent to milligrams per kilogram, mg/kg, in soil;
b - SCG: Part 375-6.8(a), Unrestricted Soil Cleanup Objectives.
c - SCG: Part 375-6.8(b), Restricted Use Soil Cleanup Objectives for the Protection of Public Health for Residential Use, unless otherwise noted.
d - SCG: Part 375-6.8(b), Restricted Use Soil Cleanup Objectives for the Protection of Groundwater.
** - Site Background established in the RI/RAR Report

The primary soil contaminants are PCBs, metals, and polycyclic aromatic hydrocarbons (PAHs) associated with previous metal salvaging/recycling operations. The primary contamination is associated with the fill material

located in AOC #2 and the former drum storage area (AOC #1). Pesticides were detected in surface soils above the residential SCOs and appear to be localized on-site. The source of pesticides was either previous use or on-site disposal of small amounts of pesticides. Background samples were used to determine the SCGs for Endrin Ketone and γ-Chlordane using procedures outlined in DER-10. Dioxins and furans are most likely present due to previous site operations. It was common practice to utilize open burning in dumpsters to remove insulation from copper wiring. Any remedial program that addresses the PCB contamination would address the dioxins and furans too.

Based on the findings of the Remedial Investigation, the past disposal of hazardous waste has resulted in the contamination of soil. The site contaminants identified in soil which are considered to be the primary contaminants of concern, to be addressed by the remedy selection process are, PCBs, arsenic, cadmium, chromium, copper, lead, mercury, nickel, zinc and PAHs.

Surface Water/Sediment

Surface water samples were collect during the RI from the submerged fill areas on-site associated with the adjacent wetland. The samples were collected to assess site run-off on surface water quality. The results indicate that contaminants in surface water at the site exceed the Department's SCGs for copper, iron and zinc. Submerged fill material was located at all sample locations and maybe the source of these contaminants.

Table 3 - Surface Water

Detected Constituents	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)	Frequency Exceeding SCG
Inorganics			
Copper	16.4 to 180	13.4	5 of 5
Iron	183 to 816	300	3 of 5
Zinc	63 to 755	117	4 of 5

a - ppb: parts per billion, which is equivalent to micrograms per liter, ug/L, in water.
b-SCG: Ambient Water Quality Standards and Guidance Values (TOGs 1.1.1) and 6 NYCRR Part 703: Surface Water and Groundwater Quality Standards.

The primary surface water contaminants are copper and zinc associated with contaminants detected in on-site fill material. Sediment/fill samples obtained at these locations are also impacted by metals PCBs, pesticides, and SVOCs. Due to the presence of fill material in these samples, they are not true sediment samples as defined by the Technical Guidance for Screening Contaminated Sediments (NYSDEC); therefore, these samples will not be evaluated as sediments. Contamination in these samples will be addressed by any site-wide soil remedy for AOC #2.

Based on the findings of the Site Investigation, the presence of metals has resulted in the contamination of surface water. The site contaminants that are considered to be the primary contaminants of concern which will drive the remediation of surface water to be addressed by the remedy selection process are: Zinc and Copper.

Soil Vapor

The evaluation of the potential for soil vapor intrusion resulting from the presence of site related soil or groundwater contamination was evaluated by the off-site sampling of sub-slab soil vapor under structures, and indoor air inside structures. Due to the presence of adjacent residential buildings to the impacted area a full suite of samples were collected to evaluate whether soil vapor intrusion was occurring.
Sub-slab soil vapor and indoor air samples were obtained at three adjacent residential building during the RI. Outdoor air samples were also collected during the sampling time. The samples were collected to assess the potential for soil vapor intrusion into these residential structures. Tetrachloroethene (PCE) was detected in the sub-slab soil vapor at all three locations. Corresponding indoor air samples did not indicate the presence of TCE.
The primary soil vapor contaminant is PCE which was detected in upgradient overburden groundwater wells. Based on the concentration detected, and in comparison with the NYSDOH Soil Vapor Intrusion Guidance, mitigation is necessary.

Based on the findings of the Remedial Investigation, the presence of tetrachloroethene has resulted in the contamination of soil vapor. The site contaminants that are considered to be the primary contaminants of concern which will drive the remediation of soil vapor to be addressed by the remedy selection process are, chlorinated VOCs.

Exhibit B

Description of Remedial Alternatives

The following alternatives were considered based on the remedial action objectives (see Section 6.5) to address the contaminated media identified at the site as described in Exhibit A.

Alternative 1: No Further Action

The No Action Alternative is evaluated as a procedural requirement and as a basis for comparison. This alternative leaves the site in its present condition and does not provide any additional protection to public health and the environment.

Alternative #2: Restoration to Pre-Disposal or Unrestricted Conditions

This alternative achieves all of the SCGs discussed in Section 6.1.1 and Exhibit A and soil meets the unrestricted soil clean objectives listed in Part 375-6.8 (a). This alternative would include: Excavation and off-site disposal of all waste, contaminated soils and contaminated sediment above the unrestricted use cleanup objectives. All contaminated groundwater would be collected from the excavation and disposed of at an off-site facility.

Capital Cost:.....*$9,800,000*

Alternative #3: Consolidate, Engineered Cover, and Groundwater Treatment

This alternative would include, consolidation of soil and fill material exceeding the residential SCO in an on-site landfill. Consolidated wastes will be capped with an engineered cover. Groundwater will be treated by injection of an electron donor material such as hydrogen release compound (HRC) or an enhanced reductive dechlorination product and subsequently monitored. A design-phase investigation will be conducted to determine the limits of excavation to meet residential SCOs and any impacts to the adjacent wetland will be further assessed. The remedial design will include provisions for excavation and consolidation of any contaminated sediments in the wetland above the ecological resources SCO as necessary, and include restoration of the impacted wetland area. The site will be fenced and any development within the area of capped wastes will. Upon completion of the remedy, a site management plan (SMP) will be developed which includes: imposition of an environmental easement; restricts development within the area of capped wastes; restricts site use to residential, restricted residential, commercial and industrial uses; restricts groundwater use; includes provisions to evaluate soil vapor intrusion for any building developed on-site; includes a long-term monitoring and maintenance plan; and includes the steps necessary for periodic inspection. Soil vapor mitigation systems will be installed at the three off-site residential properties, and additional off-site soil vapor intrusion assessment will be conducted as necessary.

Present Worth:.....*$2,010,000*
Capital Cost:.....*$1,470,000*
Annual Costs:.....*$35,000*

Alternative #4: Consolidation, vitrification, Engineered Cover, and Groundwater Treatment

This alternative would include, consolidation and vitrification of soil and fill material exceeding the residential SCOs in an on-site landfill. Vitrified wastes will be capped with an engineered cover. Groundwater will be treated by injection of an electron donor material such as hydrogen release compound (HRC) or an enhanced reductive dechlorination product and subsequently monitored. A design-phase investigation will be conducted to determine the limits of excavation to meet residential SCOs and any impacts to the adjacent wetland will be further assessed. The remedial design will include provisions for excavation, consolidation and vitrification of any contaminated sediments in the wetland above the ecological resources SCO as necessary, and include restoration of the impacted wetland area. The site will be fenced and any development within the area of capped wastes will be prohibited. Upon completion of the remedy, a site management plan (SMP) will be developed which includes: imposition of an environmental easement; restricts development within the area of capped wastes; restricts site use to residential, restricted residential, commercial and industrial uses; restricts groundwater use; includes provisions to evaluate soil vapor intrusion for any building developed on-site; includes a long-term monitoring and maintenance plan; and includes the steps necessary for periodic inspection. Soil vapor mitigation systems will be installed at the three off-site residential properties, and additional off-site soil vapor intrusion assessment will be conducted as necessary.

Present Worth: *$14,900,000*
Capital Cost: *$14,370,000*
Annual Costs: *$35,000*

Alternative #5: Excavation and Off-site Disposal and Groundwater Treatment

This alternative would include, excavation and off-site disposal of approximately 15,000 cubic yards of soil and fill exceeding the residential SCOs from AOC #1, AOC #2 and AOC #3. Approximately 100 cubic yards of soil exceeding the unrestricted SCOs for PCBs, Copper, Lead, Mercury, and Cadmium will be excavated from AOC #4 and disposed of off-site. Groundwater will be treated by injection of an electron donor material such as hydrogen release compound (HRC) or an enhanced reductive dechlorination product and subsequently monitored. A design-phase investigation will be conducted to determine the limits of excavation to meet residential SCOs and any impacts to the adjacent wetland will be further assessed. The remedial design will include provisions for excavation and off-site disposal of any contaminated sediments in the wetland above the ecological resources SCO as necessary, and include restoration of the impacted wetland area. On-site soil which does not exceed SCOs for the use of the site and/or the protection of groundwater may be used to backfill the excavation to the extent that a sufficient volume of on-site soil is available. Clean fill meeting the requirements of DER-10, Appendix 5 will be brought in to complete the backfilling of the excavation and establish the designed grades at the site. The site will be re-graded to shed water and covered with top soil and seeded. Soil derived from the re-grading may be used to backfill the excavation. Upon completion of the remedy, a site management plan (SMP) will be developed which includes: imposition of an environmental easement; restricts site use to residential, restricted residential, commercial and industrial uses; restricts groundwater use; includes provisions to evaluate soil vapor intrusion for any building developed on-site; includes a long-term groundwater

monitoring plan; and includes the steps necessary for periodic inspection. Soil vapor mitigation systems will be installed at the three off-site residential properties, and additional off-site soil vapor intrusion assessment will be conducted as necessary.

Present Worth: *$8,177,000*
Capital Cost: *$8,100,000*
Annual Costs: *$5,000*

Exhibit C

Remedial Alternative Costs

Remedial Alternative	Capital Cost ($)	Annual Costs ($)	Total Present Worth ($)
#1 No Further Action	$0	$0	$0
#2 Restoration to Pre-Disposal or Unrestricted Conditions	$9,810,000	$0	$9,810,000
#3 Consolidate Engineered Cover, and Groundwater Treatment	$1,470,000	$35,000	$2,010,000
#4 Consolidate, vitrification, Engineered Cover, andGroundwater Treatment	$14,370,000	$35,000	$14,900,000
#5 Excavation and Off-site Disposal andGroundwater Treatment	$8,100,000	$5,000	$8,177,000

Exhibit D

SUMMARY OF THE PROPOSED REMEDY

The Department is proposing Alternative 5, Excavation and Off-site Disposal and with Groundwater Treatment as the remedy for this site. Alternative #5 would achieve the remediation goals for the site by Excavation and off-site disposal of contaminated soils and fill exceeding residential SCOs with groundwater treatment. The elements of this remedy are described in Section 7.

Basis for Selection

The proposed remedy is based on the results of the RI and the evaluation of alternatives. The criteria to which potential remedial alternatives are compared are defined in 6 NYCRR Part 375. A detailed discussion of the evaluation criteria and comparative analysis is included in the RI/RAR report.

The first two evaluation criteria are termed "threshold criteria" and must be satisfied in order for an alternative to be considered for selection.

1. Protection of Human Health and the Environment. This criterion is an overall evaluation of each alternative's ability to protect public health and the environment.

The proposed remedy (Alternative #5*)* would satisfy this criterion by *removing the contaminated soils from the site above residential SCOs and treating residual contamination in groundwater. Alternative 4 satisfies this criterion by treating and capping contaminated soil and treating residual groundwater contamination; however, the waste will still remain on-site. Alternative 3 also isolates and caps the contaminated soils, but does not provide any treatment and the waste will remain on-site. Alternative 2, by removing all soil contaminated above the "Unrestricted" soil cleanup objective and collecting all contaminated groundwater, meets the threshold criteria. Alternatives 3 and 4 also comply with this criterion but to a lesser degree because the wastes will remain on-site. Alternatives 3, 4, and 5 rely on a restriction of groundwater use at the site to protect human health. Since groundwater treatment is part of Alternatives 3, 4, and 5, it is expected that groundwater restrictions will be able to be removed after contaminant levels decrease to below the groundwater standard. The potential for soil vapor intrusion will be significantly reduced by Alternatives 3, 4 and 5 because groundwater will be treated and Alternative #2 relies on removal and off-site disposal of contaminated groundwater to eliminate groundwater contamination. Under Alternatives 2, 3, 4, and 5 the need for off-site soil vapor mitigation should decrease with time.*

2. Compliance with New York State Standards, Criteria, and Guidance (SCGs). Compliance with SCGs addresses whether a remedy will meet environmental laws, regulations, and other standards and criteria. In addition, this criterion includes the consideration of guidance which the Department has determined to be applicable on a case-specific basis.

Alternative 3 provides for isolation of wastes under a cap, none of the PCB wastes would be treated so this criterion would not be met. Alternatives 4 and 5 comply with SCGs to the extent practicable. The source areas are either treated or removed; however, Alternative 4 relies on a cover system and wastes will remain on site. These alternatives also create the conditions necessary to restore groundwater quality to the extent practicable. Alternatives 2 satisfies this criterion because all contaminated soils are disposed of off-site and contaminated

groundwater is collected and disposed of off-site. Because Alternatives 2, 4, and 5 satisfy the threshold criteria, the remaining criteria are particularly important in selecting a final remedy for the site

The next six "primary balancing criteria" are used to compare the positive and negative aspects of each of the remedial strategies.

3. Long-term Effectiveness and Permanence. This criterion evaluates the long-term effectiveness of the remedial alternatives after implementation. If wastes or treated residuals remain on-site after the selected remedy has been implemented, the following items are evaluated: 1) the magnitude of the remaining risks, 2) the adequacy of the engineering and/or institutional controls intended to limit the risk, and 3) the reliability of these controls.

Long-term effectiveness is best accomplished by those alternatives involving excavation of the contaminated overburden soils (Alternatives 2 and 5). Alternative 2 restores the site to pre-release conditions and Alternative 5 provides for cleanup to residential SCOs. Alternative 4 would treat soils and isolated them under a cap; however, the waste will remain on-site in perpetuity and would leave a portion of the site restricted from any use. Alternatives 2, 4, and 5 address groundwater contamination and the future potential for soil vapor intrusion. Alternative 2 will provide for removal of contaminated groundwater and achieve groundwater cleanup goals much faster.

4. Reduction of Toxicity, Mobility or Volume. Preference is given to alternatives that permanently and significantly reduce the toxicity, mobility or volume of the wastes at the site.

Alternative 2 removes contaminants to pre-release condition and provide the greatest reduction in toxicity, mobility and volume of contaminants. Alternative 4 reduce the mobility and toxicity of contaminants, but the waste would remain on-site. Alternative 5 removes soil contamination above residential SCOs and treats contaminated groundwater over time, but to a lesser degree than Alternative 2.

5. Short-term Impacts and Effectiveness. The potential short-term adverse impacts of the remedial action upon the community, the workers, and the environment during the construction and/or implementation are evaluated. The length of time needed to achieve the remedial objectives is also estimated and compared against the other alternatives.

Alternatives 2, 4, and 5 all have short-term impacts which could easily be controlled, however, Alternative 2 would have the smallest impact. The time needed to achieve the remediation goals is the shortest for Alternative 2 and longer for Alternative 4. Alternative 4 permanently impacts the site because wastes will remain on-site.

6. Implementability. The technical and administrative feasibility of implementing each alternative are evaluated. Technical feasibility includes the difficulties associated with the construction of the remedy and the ability to monitor its effectiveness. For administrative feasibility, the availability of the necessary personnel and materials is evaluated along with potential difficulties in obtaining specific operating approvals, access for construction, institutional controls, and so forth.

Alternatives 2 and 5 are favorable in that they are readily implementable. Alternative 2 would require additional soil removal and would require off-site shipping of groundwater for treatment and disposal, and require more material to be imported to the site for backfill. Alternative 4 is also implementable but

vitrification of soil requires large electrical power requirements and electrical service may not be adequate to handle the load.

7. Cost-Effectiveness. Capital costs and annual operation, maintenance, and monitoring costs are estimated for each alternative and compared on a present worth basis. Although cost-effectiveness is the last balancing criterion evaluated, where two or more alternatives have met the requirements of the other criteria, it can be used as the basis for the final decision.

The costs of the alternatives vary significantly. Alternative 5 has the lowest cost, and addresses soil and groundwater contamination through active remediation and institutional controls. Alternative 4 is the most expensive and results in a hazardous waste landfill on-site and a portion of the site is unusable. Both groundwater and soil contamination are addressed through active remediation and institutional controls. Alternative 2 is $1.6 million more to implement and addresses soil and groundwater contamination through active remediation. No institutional controls or restrictions are required for Alternative 2, but Alternative 5 allows of residential use of the entire site which is the desired option

8. Land Use. When cleanup to pre-disposal conditions is determined to be infeasible, the Department may consider the current, intended, and reasonable anticipated future land use of the site and its surroundings in the selection of the soil remedy.

Since the anticipated use of the site is residential, Alternative 4 would be less desirable because all the waste will remain on-site and a portion of the site will not be able to be used. Also, the area is residential and adjacent to a school campus, a hazardous waste landfill would not be appropriate for this area or meet local zoning laws. Alternative 2 and 5 would remove the contaminated soil permanently. However, the residual contamination with Alternative 5 would be controllable with implementation of a Site Management Plan. With Alternative 2, removing all of the overburden from the western yard and removing the soil to the water table in the east yard, most of the unsaturated overburden would be removed and restrictions on the site use would not be necessary.

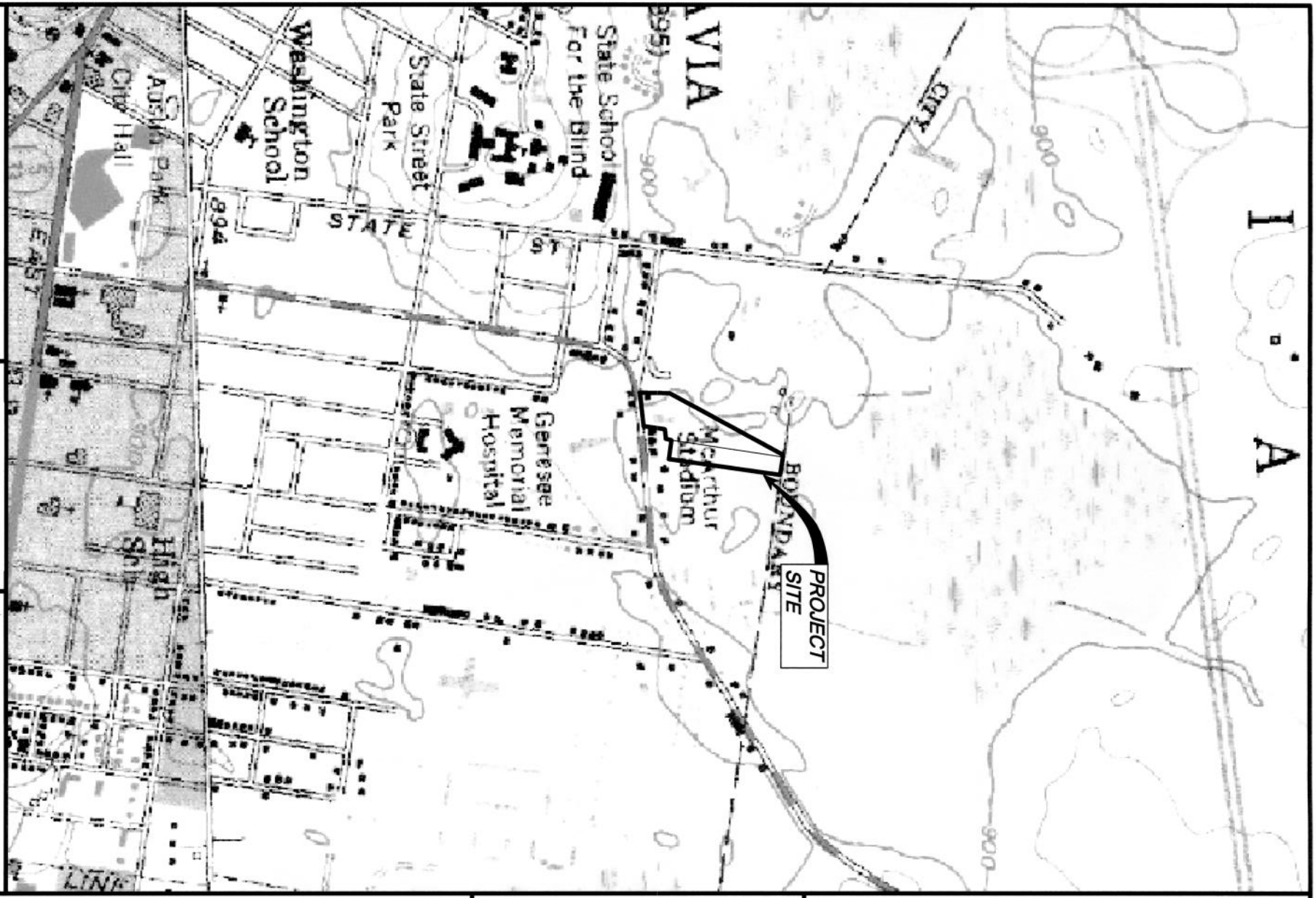
The final criterion, Community Acceptance, is considered a "modifying criterion" and is taken into account after evaluating those above. It is evaluated after public comments on the Proposed Remedial Action Plan have been received.

9. Community Acceptance. Concerns of the community regarding the investigation, the evaluation of alternatives, and the PRAP are evaluated. A responsiveness summary will be prepared that describes public comments received and the manner in which the Department will address the concerns raised. If the selected remedy differs significantly from the proposed remedy, notices to the public will be issued describing the differences and reasons for the changes.

Alternative 5 is being proposed because, as described above, it satisfies the threshold criteria and provides the best balance of the balancing criterion.

 GZA–T:\PROJECTS\56100s\56118 301–305 bank street batavia\ANALYTICAL FIGURES\Figure 1.dwg [Figure 1] March 11, 2011 – 3:04pm daniel.wulf

NOTE:
BASE MAP ADAPTED FROM U.S.G.S. TOPOGRAPHIC MAPS DOWNLOADED FROM TERRASERVER.MICROSOFT.COM



CITY OF BATAVIA
BATAVIA IRON & METAL COMPANY, INC. SITE
301 & 305 BANK STREET
BATAVIA, NEW YORK
SITE INVESTIGATION/
REMEDIAL ALTERNATIVE REPORT

LOCUS PLAN

SCALE IN FEET
0 500 1000 2000

DRAWN BY: **DEW**
DATE: **MARCH 2011**

GZA GeoEnvironmental of New York

PROJECT No. **21.0056118.00**
FIGURE No. **1**

NOTES:

1. 2005 AERIAL PHOTOGRAPH DOWNLOADED FROM http://www.nysgis.state.ny.us/gateway/ mg/interactive_main.html.

2. SITE PROPERTY BOUNDARY ADAPTED FROM A PLAN ENTITLED, "BATAVIA WASTE MATERIAL CORP., INC.", PROVIDED BY KING CONSULTING ENGINEERS, P.C. IN AUTOCAD FORMAT, DATED JUNE 2006.

DRAWN BY: DEW

DATE: MARCH 2011

GZA GeoEnvironmental of New York

APPROXIMATE SCALE IN FEET

0 50 100 200

CITY OF BATAVIA

BATAVIA IRON & METAL COMPANY, INC. SITE

301 & 305 BANK STREET

BATAVIA, NEW YORK

Preliminary Remedial Action Plan

Site Plan

FIGURE No.

2

SP-1	
Volatile Organics (ug/L)	
Total VOC's	**5**
Semi-Volatile Organics (ug/L)	
PCB (ug/L)	
Aroclor-1248	NT
Pesticides ug/L)	
	NT
Inorganics (ug/L)	
Sodium	60,700

MW-4	
Volatile Organics (ug/L)	
cis-1,2-Dichloroethene	11
Total VOC's	**13**
Semi-Volatile Organics (ug/L)	
PCB (ug/L)	
	NT
Pesticides ug/L)	
Inorganics (ug/L)	
Iron	426
Magnesium	37,600
Manganese	501
Sodium	66,600

SP-8	
Volatile Organics (ug/L)	
Trichloroethene	6
Total VOC's	**7**
Semi-Volatile Organics (ug/L)	
PCB (ug/L)	
	NT
Pesticides ug/L)	
	NT
Inorganics (ug/L)	
Iron	725

SP-26	
Volatile Organics (ug/L)	
Total VOC's	**1**
Semi-Volatile Organics (ug/L)	
	NT
PCB (ug/L)	
	NT
Pesticides ug/L)	
	NT
Inorganics (ug/L)	
	NT

SP-38	
Volatile Organics (ug/L)	
Semi-Volatile Organics (ug/L)	
	NT
PCB (ug/L)	
	NT
Pesticides ug/L)	
	NT
Aroclor-1254	
Inorganics (ug/L)	
	NT

MW-6	
Volatile Organics (ug/L)	
Acetone	100
Toluene	6
1,4-Dichlorobenzene	5
Total VOC's	**204**
Semi-Volatile Organics (ug/L)	
Phenol	40
Total SVOC's	**72**
PCB (ug/L)	
Total PCBs	**4.4**
Pesticides ug/L)	
	NT
Inorganics (ug/L)	
Antimony	10.8
Iron	1,910
Lead	41
Sodium	97,300

MW-3	
Volatile Organics (ug/L)	
Semi-Volatile Organics (ug/L)	
PCB (ug/L)	
Pesticides ug/L)	
Inorganics (ug/L)	
Antimony	4.1
Iron	8,040
Sodium	114,000

MW-9	
Volatile Organics (ug/L)	
cis-1,2-Dichloroethene	7.1
Total VOC's	**12**
Semi-Volatile Organics (ug/L)	
	NT
PCB (ug/L)	
	NT
Pesticides ug/L)	
	NT
Inorganics (ug/L)	
	NT

MW-10	
Volatile Organics (ug/L)	
cis-1,2-Dichloroethene	22
Total VOC's	**26**
Semi-Volatile Organics (ug/L)	
	NT
PCB (ug/L)	
	NT
Pesticides ug/L)	
	NT
Inorganics (ug/L)	
	NT

MW-8	
Volatile Organics (ug/L)	
cis-1,2-Dichloroethene	18
Total VOC's	**27**
Semi-Volatile Organics (ug/L)	
PCB (ug/L)	
Pesticides ug/L)	
	NT
Inorganics (ug/L)	
Iron	6,540
Magnesium	43,500
Manganese	570
Sodium	92,700

SP-10	
Volatile Organics (ug/L)	
Methyl tert-butyl ether	27
cis-1,2-Dichloroethene	120
Trichloroethene	72
Tetrachloroethene	81
Total VOC's	**302**
Semi-Volatile Organics (ug/L)	
Total SVOC's	**2**
PCB (ug/L)	
Pesticides ug/L)	
	NT
Inorganics (ug/L)	
Iron	7,230
Magnesium	36,300
Manganese	416
Sodium	50,800

MW-5	
Volatile Organics (ug/L)	
Semi-Volatile Organics (ug/L)	
PCB (ug/L)	
Pesticides ug/L)	
Inorganics (ug/L)	
Iron	5,000
Magnesium	35,400
Sodium	30,600
Thallium	1.6

SP-15	
Volatile Organics (ug/L)	
Trichlorofluoromethane	8
Total VOC's	**8**
Semi-Volatile Organics (ug/L)	
PCB (ug/L)	
	NT
Pesticides ug/L)	
	NT
Inorganics (ug/L)	
Iron	1,530
Magnesium	55,400
Manganese	399

MW-1	
Volatile Organics (ug/L)	
Semi-Volatile Organics (ug/L)	
Total SVOC's	**2**
PCB (ug/L)	
Pesticides ug/L)	
	NT
Inorganics (ug/L)	
Iron	15,500
Manganese	329
Sodium	101,000

MW-7	
Volatile Organics (ug/L)	
Semi-Volatile Organics (ug/L)	
PCB (ug/L)	
Pesticides ug/L)	
	NT
Inorganics (ug/L)	
Iron	8,870
Magnesium	68,700
Manganese	482

MW-2	
Volatile Organics (ug/L)	
Semi-Volatile Organics (ug/L)	
bis(2-Ethylhexyl)phthalate	88
Total SVOC's	**88**
PCB (ug/L)	
	NT
Pesticides ug/L)	
	NT
Inorganics (ug/L)	
Iron	19,700
Magnesium	47,800
Manganese	573
Sodium	225,000

STAINED AREA

SITE PROPERTY BOUNDARY

BANK STREET

NORTH

LEGEND:

APPROXIMATE AREA OF IMPACTED GROUNDWATER

MW-1 — APPROXIMATE LOCATION AND DESIGNATION OF MONITORING WELL INSTALLATION

SP-1 — APPROXIMATE LOCATION AND DESIGNATION OF SOIL PROBE EXPLORATION

NOTES:

1. 2005 AERIAL PHOTOGRAPH DOWNLOADED FROM http://www.nysgis.state.ny.us/gateway/ mg/interactive_main.html.

2. SITE PROPERTY BOUNDARY AND EXPLORATION LOCATIONS ADAPTED FROM A PLAN ENTITLED, "BATAVIA WASTE MATERIAL CORP., INC.", PROVIDED BY KING CONSULTING ENGINEERS, P.C. IN AUTOCAD FORMAT, DATED JUNE 2006

3. ANALYTICAL DATA PROVIDED ON THIS FIGURE FOR AN INDIVIDUAL COMPOUND REPRESENTS COMPOUNDS ABOVE THEIR RESPECTIVE NYSDEC AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES AND GROUNDWATER EFFLUENT LIMITATIONS, CLASS GA CRITERIA (NYSDEC TOGS 1.1.1). OTHERWISE ONLY THE TOTAL CONCENTRATION OF A CHEMICAL CLASS IS SHOWN.

4. BLANK CELLS INDICATE THAT NO COMPOUNDS WERE DETECTED ABOVE RESPECTIVE GROUNDWATER CRITERIA.

5. FOR A COMPLETE SUMMARY OF ANALYTICAL RESULTS REFER TO TABLE 6.

DRAWN BY: DEW

DATE: MARCH 2011

GZA GeoEnvironmental of New York

APPROXIMATE SCALE IN FEET

0 75 150 300

CITY OF BATAVIA

BATAVIA IRON & METAL COMPANY, INC. SITE

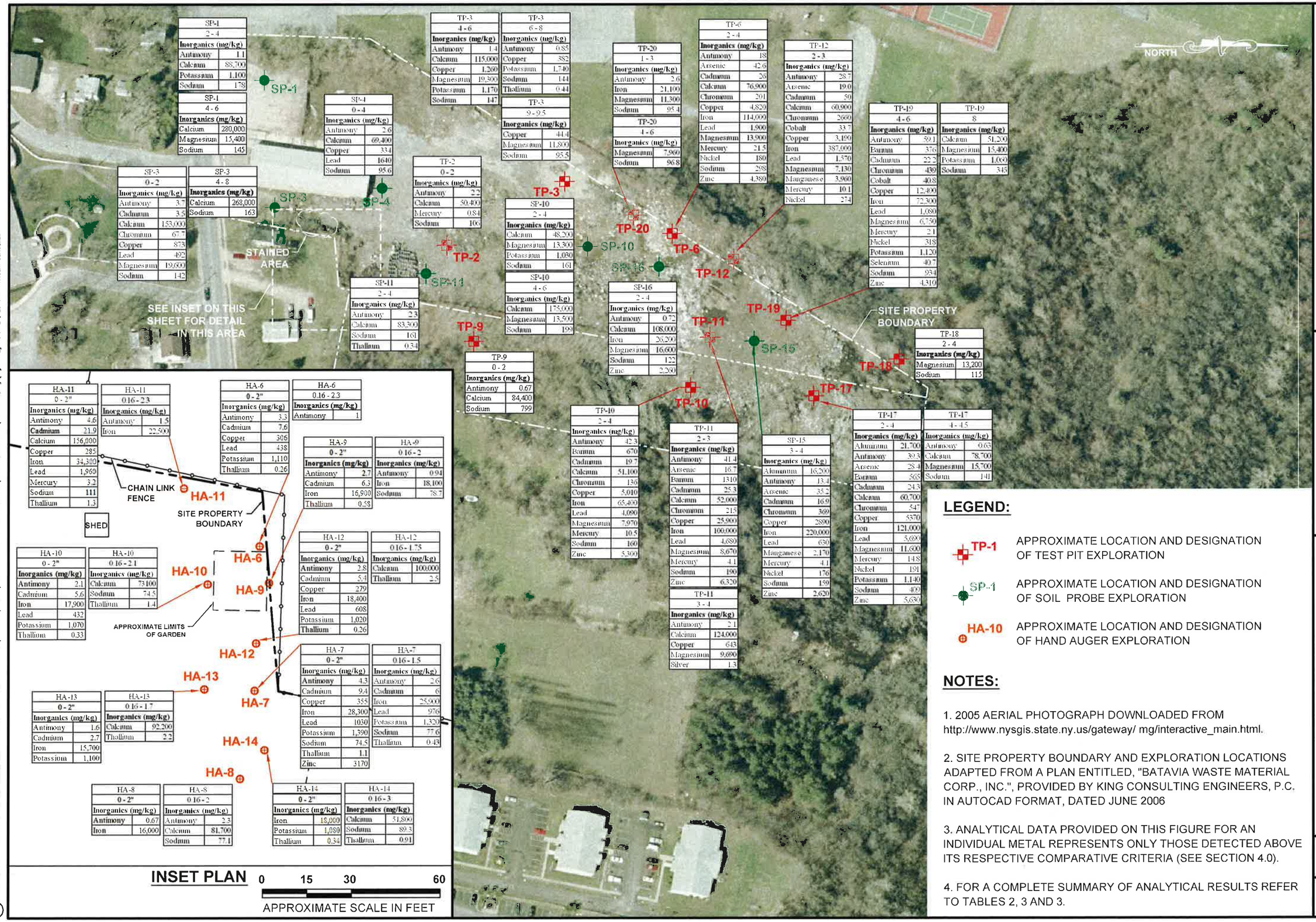
301 & 305 BANK STREET, BATAVIA, NEW YORK

Preliminary Remedial Action Plan

Figure 3

Groundwater Data

G:\Z-T:\PROJECTS\56150s\56116 301~305 bank street batavia\ANALYTICAL FIGURES\FIGURE 22.dwg [Figure 22] March 11, 2011 - 3:56pm daniel.wulf



LEGEND:

- TP-1 — APPROXIMATE LOCATION AND DESIGNATION OF TEST PIT EXPLORATION
- SP-1 — APPROXIMATE LOCATION AND DESIGNATION OF SOIL PROBE EXPLORATION
- HA-10 — APPROXIMATE LOCATION AND DESIGNATION OF HAND AUGER EXPLORATION

NOTES:

1. 2005 AERIAL PHOTOGRAPH DOWNLOADED FROM http://www.nysgis.state.ny.us/gateway/ mg/interactive_main.html.
2. SITE PROPERTY BOUNDARY AND EXPLORATION LOCATIONS ADAPTED FROM A PLAN ENTITLED, "BATAVIA WASTE MATERIAL CORP., INC.", PROVIDED BY KING CONSULTING ENGINEERS, P.C. IN AUTOCAD FORMAT, DATED JUNE 2006
3. ANALYTICAL DATA PROVIDED ON THIS FIGURE FOR AN INDIVIDUAL METAL REPRESENTS ONLY THOSE DETECTED ABOVE ITS RESPECTIVE COMPARATIVE CRITERIA (SEE SECTION 4.0).
4. FOR A COMPLETE SUMMARY OF ANALYTICAL RESULTS REFER TO TABLES 2, 3 AND 3.

APPROXIMATE SCALE IN FEET
0 60 120 240

DRAWN BY: DEW

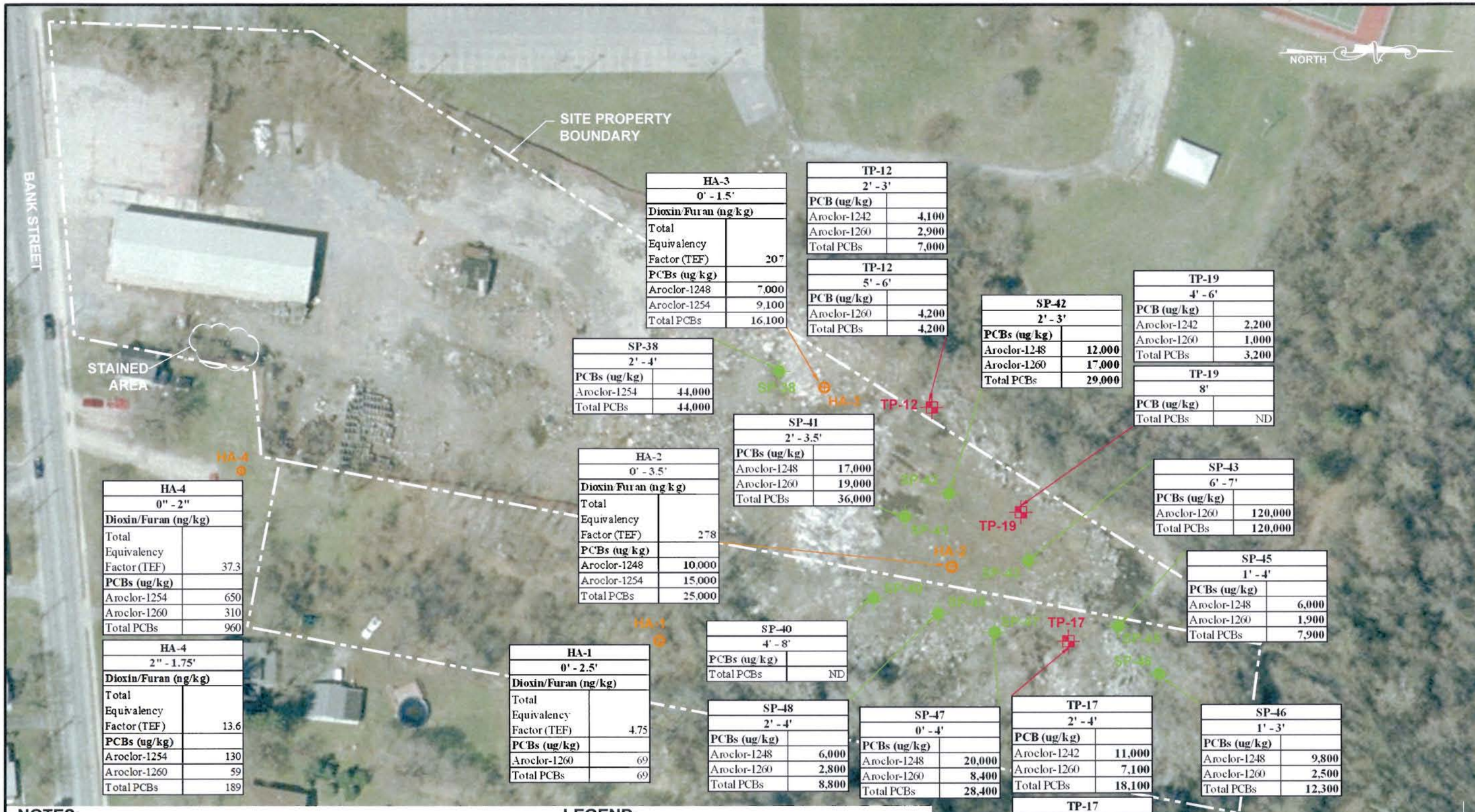
DATE: MARCH 2011

GZA GeoEnvironmental of New York

CITY OF BATAVIA
BATAVIA IRON & METAL COMPANY, INC. SITE
301 & 305 BANK STREET, BATAVIA, NEW YORK
SITE INVESTIGATION/
REMEDIAL ALTERNATIVE REPORT
METALS CONCENTRATIONS DETECTED IN SOIL
LOCATION PLAN

PROJECT No. 21.0056118.0(

FIGURE No. 4



HA-4	
0" - 2"	
Dioxin/Furan (ng/kg)	
Total Equivalency Factor (TEF)	37.3
PCBs (ug/kg)	
Aroclor-1254	650
Aroclor-1260	310
Total PCBs	960

HA-4	
2" - 1.75'	
Dioxin/Furan (ng/kg)	
Total Equivalency Factor (TEF)	13.6
PCBs (ug/kg)	
Aroclor-1254	130
Aroclor-1260	59
Total PCBs	189

HA-2	
0' - 3.5'	
Dioxin/Furan (ng/kg)	
Total Equivalency Factor (TEF)	278
PCBs (ug/kg)	
Aroclor-1248	10,000
Aroclor-1254	15,000
Total PCBs	25,000

HA-3	
0' - 1.5'	
Dioxin/Furan (ng/kg)	
Total Equivalency Factor (TEF)	207
PCBs (ug/kg)	
Aroclor-1248	7,000
Aroclor-1254	9,100
Total PCBs	16,100

HA-1	
0' - 2.5'	
Dioxin/Furan (ng/kg)	
Total Equivalency Factor (TEF)	4.75
PCBs (ug/kg)	
Aroclor-1260	69
Total PCBs	69

TP-12	
2' - 3'	
PCB (ug/kg)	
Aroclor-1242	4,100
Aroclor-1260	2,900
Total PCBs	7,000

TP-12	
5' - 6'	
PCB (ug/kg)	
Aroclor-1260	4,200
Total PCBs	4,200

SP-38	
2' - 4'	
PCBs (ug/kg)	
Aroclor-1254	44,000
Total PCBs	44,000

SP-41	
2' - 3.5'	
PCBs (ug/kg)	
Aroclor-1248	17,000
Aroclor-1260	19,000
Total PCBs	36,000

SP-42	
2' - 3'	
PCBs (ug/kg)	
Aroclor-1248	12,000
Aroclor-1260	17,000
Total PCBs	29,000

TP-19	
4' - 6'	
PCB (ug/kg)	
Aroclor-1242	2,200
Aroclor-1260	1,000
Total PCBs	3,200

TP-19	
8'	
PCB (ug/kg)	
Total PCBs	ND

SP-43	
6' - 7'	
PCBs (ug/kg)	
Aroclor-1260	120,000
Total PCBs	120,000

SP-45	
1' - 4'	
PCBs (ug/kg)	
Aroclor-1248	6,000
Aroclor-1260	1,900
Total PCBs	7,900

SP-40	
4' - 8'	
PCBs (ug/kg)	
Total PCBs	ND

SP-48	
2' - 4'	
PCBs (ug/kg)	
Aroclor-1248	6,000
Aroclor-1260	2,800
Total PCBs	8,800

SP-47	
0' - 4'	
PCBs (ug/kg)	
Aroclor-1248	20,000
Aroclor-1260	8,400
Total PCBs	28,400

TP-17	
2' - 4'	
PCB (ug/kg)	
Aroclor-1242	11,000
Aroclor-1260	7,100
Total PCBs	18,100

TP-17	
4' - 4.5'	
PCB (ug/kg)	
Aroclor-1242	290
Aroclor-1260	190
Total PCBs	480

SP-46	
1' - 3'	
PCBs (ug/kg)	
Aroclor-1248	9,800
Aroclor-1260	2,500
Total PCBs	12,300

NOTES:

1. 2005 AERIAL PHOTOGRAPH DOWNLOADED FROM http://www.nysgis.state.ny.us/gateway/mg/interactive_main.html.

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3. ANALYTICAL DATA PROVIDED ON THIS FIGURE FOR AN INDIVIDUAL COMPOUND REPRESENTS ONLY THOSE DETECTED ABOVE ITS RESPECTIVE COMPARATIVE CRITERIA (SEE SECTION 4.0). OTHERWISE ONLY THE TOTAL CONCENTRATION OF PCBs IS SHOWN.

4. FOR A COMPLETE SUMMARY OF ANALYTICAL RESULTS REFER TO TABLES 2, 3 AND 14.

LEGEND:

TP-12 — APPROXIMATE LOCATION AND DESIGNATION OF TEST PIT EXPLORATION

SP-19 — APPROXIMATE LOCATION AND DESIGNATION OF SOIL PROBE EXPLORATION

HA-1 — APPROXIMATE LOCATION AND DESIGNATION OF HAND AUGER EXPLORATION

DRAWN BY: DEW

DATE: MARCH 2011

GZA GeoEnvironmental of New York

APPROXIMATE SCALE IN FEET

0 40 80 160

CITY OF BATAVIA

BATAVIA IRON & METAL COMPANY, INC. SITE

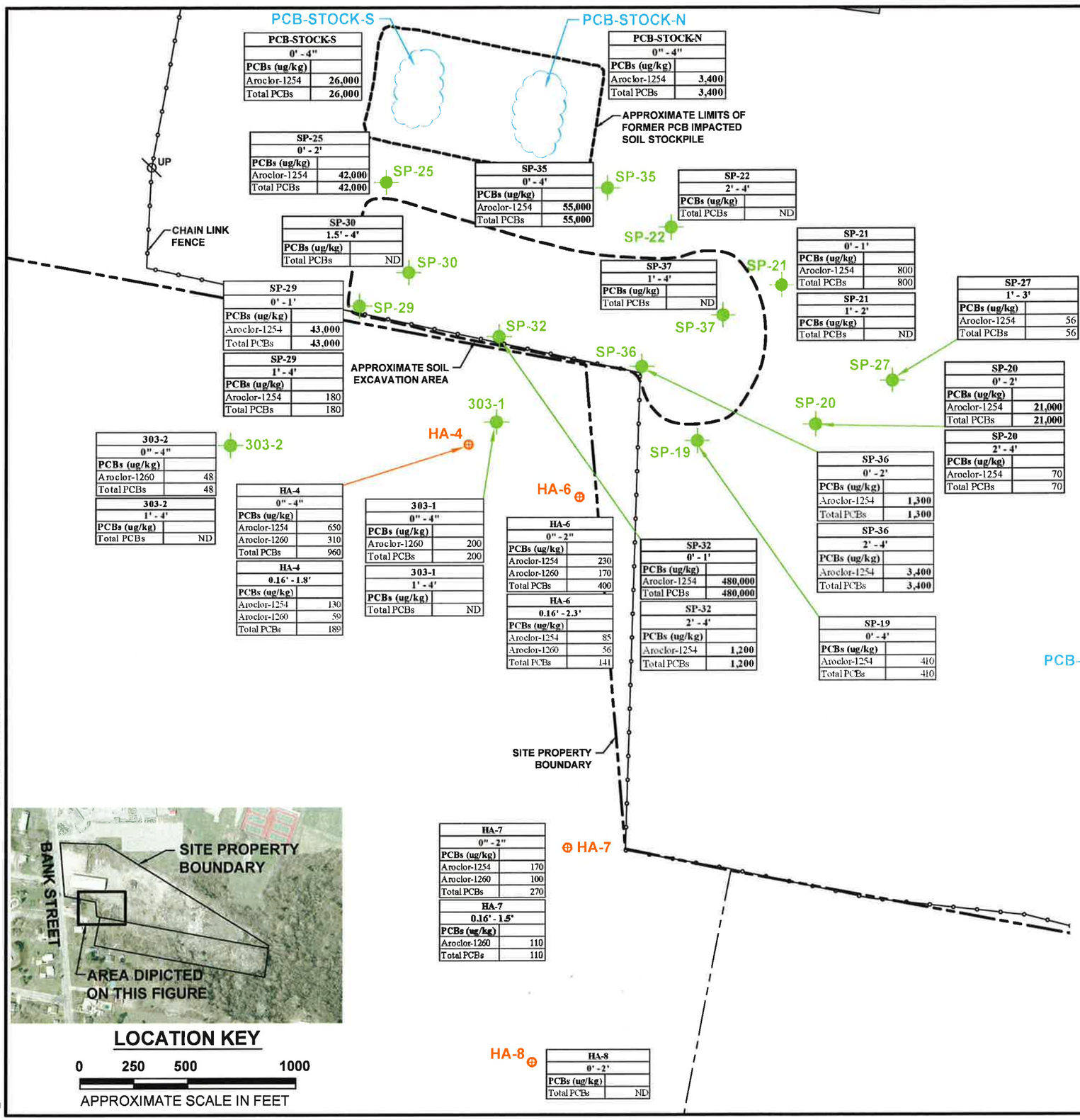
301 & 305 BANK STREET, BATAVIA, NEW YORK

Preliminary Remedial Action Plan

PCBs Dioxins & Furans in Soils

Figure 5

G:\Z--7-\PROJECTS\58100\58118 301--305 bank street batavia\ANALYTICAL FIGURES\FIGURE 13.dwg [FIGURE 13] March 11, 2011 - 3:41pm daniel.wulff



LOCATION KEY

0 250 500 1000

APPROXIMATE SCALE IN FEET

LEGEND:

- SP-20 — APPROXIMATE LOCATION AND DESIGNATION OF SOIL PROBE EXPLORATION
- PCB-STOCK-S — APPROXIMATE LOCATION AND DESIGNATION OF COMPOSITE SOIL SAMPLE COLLECTED BY GZA AFTER THE PCB SOIL STOCKPILE WAS LOADED AND REMOVED FROM THE SITE FOR DISPOSAL
- HA-6 — APPROXIMATE LOCATION AND DESIGNATION OF HAND AUGER EXPLORATION

NOTES:

1. 2005 AERIAL PHOTOGRAPH DOWNLOADED FROM http://www.nysgis.state.ny.us/gateway/ mg/interactive_main.html.

2. SITE PROPERTY BOUNDARY AND EXPLORATION LOCATIONS ADAPTED FROM A PLAN ENTITLED, "BATAVIA WASTE MATERIAL CORP., INC.", PROVIDED BY KING CONSULTING ENGINEERS, P.C. IN AUTOCAD FORMAT, DATED JUNE 2006

3. ANALYTICAL DATA PROVIDED ON THIS FIGURE FOR AN INDIVIDUAL COMPOUND REPRESENTS ONLY THOSE DETECTED ABOVE ITS RESPECTIVE COMPARATIVE CRITERIA (SEE SECTION 4.0). OTHERWISE ONLY THE TOTAL CONCENTRATION OF PCBs IS SHOWN.

4. FOR A COMPLETE SUMMARY OF ANALYTICAL RESULTS REFER TO TABLES 3 AND 14.

DRAWN BY: DEW

DATE: MARCH 2011

GZA GeoEnvironmental of New York

APPROXIMATE SCALE IN FEET 0 7.5 15 30

CITY OF BATAVIA

BATAVIA IRON & METAL COMPANY, INC. SITE
301 & 305 BANK STREET, BATAVIA, NEW YORK
SITE INVESTIGATION/
REMEDIAL ALTERNATIVE REPORT

TOTAL PCB CONCENTRATIONS DETECTED IN SOIL LOCATION PLAN (SOUTHERN PORTION OF SITE)

PROJECT No. 21.0056118.00

FIGURE No. 6