

# PROPOSED REMEDIAL ACTION PLAN

---

90 Hopkins Street  
Environmental Restoration Project  
Buffalo, Erie County  
Site No. E915181  
August 2014



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

# PROPOSED REMEDIAL ACTION PLAN

90 Hopkins Street  
Buffalo, Erie County  
Site No. E915181  
August 2014

---

## **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:

Buffalo and Erie Co. Public Library - Dudley Branch  
Attn: Head Librarian  
201 South Park Avenue  
Buffalo, NY 14220  
Phone: 716-823-1854

**A public comment period has been set from:**

**August 11, 2014 to September 22, 2014**

**A public meeting is scheduled for the following date:**

**September 9, 2014; 7:00 PM**

**Public meeting location:**

**Valley Community Center  
93 Leddy Street  
Buffalo, New York**

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 through TBD to:

Eugene Melnyk, PE  
NYS Department of Environmental Conservation  
Division of Environmental Remediation  
270 Michigan Ave  
Buffalo, NY 14203-2915  
eugene.melnyk@dec.ny.gov

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 90 Hopkins Street site is located off Hopkins Avenue in the City of Buffalo, Erie County, approximately 1/4 mile south of the Tift Street intersection. The site is situated in an urban industrial area.

**Site Features:** The 90 Hopkins Street site is a triangular shaped parcel approximately 8 acres in size and is currently vacant. Foundations and floor pads from several industrial buildings still exist at the site. The site is bordered by a steel fabricating plant to the northeast; a machine shop and auto junk yard to the east; an active railroad line and remediated LTV Steel disposal site (Site No. 915047) to the south/southwest; and a rail spur and the remediated Alltiff Landfill/Ramco Steel disposal sites (Site No's 915054 and 915046B) to the north/northwest. The site contains two piles of carbide lime approximately 15 feet above adjoining grades that extend approximately 10 feet below grade. The lime piles cover approximately two thirds of the site. Investigations and evaluations have estimated the volume of carbide lime to be approximately 123,000 cubic yards; however, approximately 10,000 cubic yards of lime has been mined from the above grade portion of the south lime pile and used as an agricultural soil amendment at several local farms in western NY. The lime was intermittently removed during the period between 2011 and 2013. The current estimated volume of carbide lime is approximately 113,000 cubic yards. The western half of the northern site perimeter contains a stormwater detention pond to intercept lime sediment in stormwater runoff and normalize the pH of the water before exiting the site.

**Current Zoning/Use:** This site is zoned for industrial use and is currently vacant. The site is located within a Brownfield Opportunity Area.

**Past Use of the Site:** Previous use of the site included acetylene gas manufacturing from approximately 1930 to 1964. The acetylene manufacturing process utilized at the site resulted in the formation of a carbide lime slurry as a byproduct. The carbide lime slurry was dewatered in bermed piles which resulted in the formation of the carbide lime piles present at the site. Site use from 1964 to 1987 was undisclosed industrial or commercial use. The City of Buffalo took title to the property through tax foreclosure in 1987. From 2002 to 2006, the City leased the property to a commercial entity (demolition and trucking) which used the site for crushing demolition concrete and selling the crushed concrete as a recycled product. Several former structures from the previous acetylene manufacturing operations were demolished in 2002 by the lessee. The site has been vacant from 2006 to present.

The site was subject to a US Environmental Protection Agency (USEPA) removal action in 1998 to address drums of waste and removal of PCB contaminated soil.

**Site Geology and Hydrogeology:** The area in the vicinity of the site is generally flat with the exception of the carbide lime pile mounds on the site, local railroad grades and other remediated offsite landfills. The site generally contains several feet of fill in the non-lime pile areas and up

to 25 feet in thickness of carbide lime in the lime pile areas (up to 15 feet above grade and 10 feet below grade). Native soil below the fill and lime piles consists of silty/clayey soil deposits ranging 15 to 20 feet in thickness. Below the native soil is bedrock consisting of limestone.

Groundwater is shallow at the site, and is approximately 1.5 to 4 feet below ground surface in areas of the site that do not contain the lime piles. The groundwater gradient is to the northwest toward the Buffalo River/Lake Erie.

A site location map is attached as Figure 1 and a site plan is attached as Figure 2.

#### **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 commercial use (which allows for 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.

The PRPs for the site, documented to date, include:

Praxair Distribution, Inc.  
Sloan Auto Parts, Inc.  
AA-1 Auto Wrecking  
Cambria Contracting

City of Buffalo will assist the state in their efforts by providing all information to the state which identifies Potentially Responsible Parties (PRPs). 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. The City of Buffalo 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

#### **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 are:

benz(a)anthracene	lead
benzo(a)pyrene	benzene
benzo(b)fluoranthrene	ethylbenzene
dibenz[a,h]anthracene	toluene
indeno(1,2,3-cd)pyrene	xylene
PCB-aroclor 1242	MTBE
phenol	acetone

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.

#### **IRM - Stormwater Runoff Detention and Partial Lime Pile Removal**

An interim measure to control stormwater runoff from the site was implemented in 2012. The IRM involved the construction of a stormwater detention pond. Stormwater runoff from the lime piles is intercepted via constructed swales and detained in the detention pond that allows the lime sediment to settle and normalize the pH of the water.

Approximately 10,000 cubic yards of lime was mined intermittently between 2011 and 2013 from the above grade portion of the south pile site for beneficial use as an agricultural soil amendment.

The stormwater detention pond and partial lime removal were completed by, Praxair Distribution, a responsible party.

### **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.

Carbide lime is a by-product from the generation of acetylene through the hydrolysis of calcium carbide. The hydrated carbide lime slurry by-product is composed of essentially calcium hydroxide (approximately 85-95%) with minor parts calcium carbonate (1-10%), unreacted carbon and silicates. Carbide lime is a potentially high quality hydrated lime because of the quality of the original raw materials used in the process, but it is often washed into settling ponds where a lime mud is created. This mud is difficult to recover for agricultural spreading. However, once dried to a moisture content suitable for handling, carbide lime makes an excellent alternative soil liming material comparable in quality to regular hydrated lime. The primary impact from the exposed and uncontrolled carbide lime piles are its effects on raising the pH of groundwater and surface water. The pH in groundwater has been measured as high as 13.14 and up to 11.6 in surface water runoff. High pH (alkaline) runoff from the piles is impacting local surface waters. High pH (alkaline) water can be harmful to aquatic life in wetlands.

#### Nature and Extent of Contamination:

Results of recent and previous investigations and sampling reveal the following:

**Groundwater:** In addition to elevated pH in groundwater, groundwater impacts at the site consist of acetone and phenol along the north-northeast perimeter of the site with levels up to 350 ppb for acetone (50 ppb GW quality standard) and 44 ppb for phenol (1 ppb GW quality standard). Acetone was a chemical used during the period acetylene was manufactured at the site. Groundwater is slightly impacted at the southeast end of the site by petroleum BETX compounds (200 ppb total with 1 to 5 ppb water quality standards for respective compounds) and MTBE (74 ppb with a 10 ppb water quality standard). The petroleum contamination is likely attributed to offsite migration from an adjoining automobile scrap yard with documented petroleum spills.

**Soil:** Surface soils along the eastern end of the site along a debris pile/soil berm are nominally impacted with semi-volatile organic compounds (SVOCs) primarily from combustion residues. One sample location adjacent to the debris pile/soil berm and the south lime pile contained lead (1080 ppm/1000 ppm commercial use soil cleanup objective [SCO]) and PCBs (4.6 ppm/1 ppm commercial use SCO). Site-related contaminants do not appear to be contributing to off-site environmental impacts that require additional investigation or remedial action.

**Carbide Lime:** No contaminants of concern were detected in samples collected from the carbide lime piles. Silver was found in the carbide lime nominally above the unrestricted use SCG and appears that silver may have been a naturally occurring element in the raw material for the carbide lime. Nominal levels of acetone found above unrestricted use SCGs were contained in soils below the carbide lime pile and in the carbide lime material.

#### **6.4: Summary of Human Exposure Pathways**

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

The site is not fenced and persons who enter the site could contact contaminants in the soil by walking on the soil, digging or otherwise disturbing the soil. People are not drinking the contaminated groundwater because the area is served by a public water supply that is not contaminated by the site. Volatile organic compounds in the groundwater may move into the soil vapor (air spaces within the soil), which in turn may move into overlying buildings and affect the indoor air quality. This process, which is similar to the movement of radon gas from the subsurface into the indoor air of buildings, is referred to as soil vapor intrusion. Because the site is vacant, the inhalation of contaminants due to soil vapor intrusion does not represent a current concern. However, the potential exists for the inhalation of contaminants due to soil vapor intrusion for any future on-site development.

#### **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 and/or with elevated pH levels.  
Prevent contact with, or inhalation of volatiles, from contaminated groundwater.

###### **RAOs for Environmental Protection**

- 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.

###### **RAOs for Environmental Protection**

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

## **Surface Water**

### **RAOs for Environmental Protection**

- Restore surface water to ambient water quality criteria for the contaminant of concern.

## **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 Carbide Lime Excavation/Offsite Beneficial Use and Impacted Soil/Fill Excavation remedy.

The estimated present worth cost to implement the remedy is \$4,090,000. The cost to construct the remedy is estimated to be \$4,000,000 and the estimated average annual cost is \$3,000.

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. Green remediation principles and techniques will be implemented to the extent feasible in the

design, implementation, and site management of the remedy pursuant to 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. Carbide Lime Excavation for Offsite Beneficial Use

Excavation and removal of approximately 113,000 cubic yards of lime for beneficial use as an agricultural soil amendment or for acid neutralization of industrial process waters. A nominal amount of carbide lime may be left at the bottom interface of the lime piles. The low solubility of the lime and the low alkalinity serves to limit the migration of pH impacted groundwater from the site.

The excavation methods and sequencing will be implemented in a manner to limit large open excavations below the groundwater table. Water encountered during excavation below the groundwater table and any other water that is potentially contaminated requiring management will be collected for treatment and disposal.

Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be imported to replace the excavated material, as necessary, and backfill the depressions resulting from lime pile excavation below adjoining ground to establish minimum design grades needed to promote positive drainage and prevent ponding of water.

Soil derived from any re-grading and onsite fill materials meeting commercial use SCOs and suitable for use as fill may be re-used to backfill the excavation depressions resulting from lime removal.

### 3. Impacted Soil/Fill Excavation and Disposal

Initial excavation and off-site disposal of material in areas shown on Figure 5 where soils/fill contain contaminants above commercial use SCOs, including

- any contaminated carbide lime that cannot be beneficially used or that is comingled with debris;
- impacted fill/debris containing PCBs above commercial use SCOs along the eastern property line to an estimated depth of one to two feet below existing grade (estimated 750 +/- cy) for landfill disposal;
- the top one foot of impacted soil/fill material across the non-lime areas of the site (estimated 3,000 +/- cy) assuming that the underlying fill meets commercial use SCOs;
- post excavation sampling to determine if commercial use SCOs have been achieved; and
- depending on confirmation sampling results, remove impacted soil/fill material across the non-lime areas of the site that exceed commercial use SCOs (estimated 3,000 to 9000 cy) for landfill disposal.
- If post-excavation sampling determines a limited amount of impacted soil/fill material above commercial use SCOs remains, a site cover will be required to allow for commercial use of the site. The cover will consist either of the structures such as buildings, pavement, sidewalks comprising the site development or a soil cover in areas where the upper one foot of exposed existing surface soil exceeds the applicable SCOs. Where the soil cover is required it will be a minimum of one foot of soil, meeting the SCOs for cover material as set forth in 6 NYCRR Part 375-6.7(d) for commercial use. The soil cover will be placed over a demarcation layer, with the upper three inches of the soil of sufficient quality to maintain a vegetation layer. Any fill material brought to the site will meet the requirements for the identified site use as set forth in 6 NYCRR Part 375-6.7(d).

### 4. 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 commercial and industrial use 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.

## 5. Site Management Plan

A Site Management Plan (SMP) is required, which includes the following:

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

**Institutional Controls:**

An Environmental Easement, periodic certifications, groundwater use restrictions, and compliance with the Site Management Plan as discussed above.

**Engineering Control:**

No Engineering Controls are deemed necessary for remaining soil or fill that meet commercial SCOs.

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;
  - provisions for the management and inspection of necessary engineering controls;
  - a provision for evaluating potential soil vapor intrusion for any buildings developed on the site including a provision for implementing actions recommended to address exposures related to soil vapor intrusion;
  - 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:
    - groundwater monitoring of the site to assess the performance and effectiveness of the remedy;
    - monitoring for soil vapor intrusion for any buildings developed on the site, as may be required by the Institutional and Engineering Control Plan discussed above, and
    - a schedule of monitoring and frequency of submittals to the Department.

## **Exhibit A**

### **Nature and Extent of Contamination**

This section describes the findings of the Remedial Investigation (RI) 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, 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), pesticides/polychlorinated biphenyls (PCBs), and inorganics (metals and cyanide). 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 6.1.1 are also presented.

### **Waste/Source Areas**

As described in the RI report, waste/source materials were identified at the site and are impacting groundwater and surface water.

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 where 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 the following:

- Two carbide lime piles (a byproduct from the carbide lime acetylene manufacturing process), containing approximately 113,000 cubic yards in volume of lime that occupy approximately two thirds of the site. The lime piles contribute to high pH alkaline surface water runoff that flows into a recently remediated federal wetland and high pH in groundwater. The lime piles contain trace amounts of silver and acetone slightly above unrestricted use levels. The lime piles do not appear to have contributed to additional contaminants to the environment.
- Previous use of acetone during acetylene manufacturing may have contributed to acetone found in groundwater at the site.
- The balance of the site contains random fill, a debris/soil pile, an area containing some automotive scrap debris and an area with concrete pads/floors of former buildings that occupied the site. The random fill areas are covered with demolition debris consisting of brick, concrete and stone comingled with soil. The debris/soil pile is located along the central eastern border. The random fill areas and debris/soil pile contain varying levels of SVOCs at or above commercial SCOs. A debris area between the south lime pile and the debris/soil pile contains an area impacted with PCBs (4.6 ppm) and lead (1,080 ppm).

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

## Groundwater

Groundwater samples from overburden wells MW-01 through MW-03 (Figure 3) were analyzed for VOCs. At monitoring well MW-01 located adjacent to a neighboring automotive scrap yard, petroleum compounds, including benzene, ethylbenzene, toluene, total xylenes (BTEX), and MTBE were detected at concentrations nominally above the respective NYSDEC Ambient Water Quality Standards and Guidance Values (AWQSGV). The source of this contamination is likely from the documented petroleum spills at the adjoining automotive scrap yard. Groundwater along the downgradient edge of the site at monitoring wells MW-02 and MW-03 is impacted with acetone (190 to 350 ppb, respectively) and above the AWQSGV (50 ppb) for acetone.

Groundwater samples from MW-02 and MW-03 detected phenol (17 to 44 ppb, respectively), an SVOC, at concentrations above the AWQSGVs (1 ppb) for phenol.

Groundwater samples from MW-01 through MW-03 were analyzed for TAL metals. Each sample contained at least one compound (aluminum, iron and sodium) at levels exceeding respective AWQSGVs.

No pesticide concentrations were detected above AWQSGVs in the groundwater samples from MW-01 through MW-03.

The pH of groundwater samples from MW-01 through MW-03 were measured in the field and pH values varied from 12.95 to 13.14.

**Table 1 - Groundwater**

Detected Constituents	Concentration Range Detected (ppb) <sup>a</sup>	SCG <sup>b</sup> (ppb)	Frequency Exceeding SCG
<b>VOCs</b>			
Acetone	190 – 350	50	2 of 3
Benzene	28	1	1 of 3
Ethylbenzene	9.8	5	1 of 3
Xylene (total)	88	5	1 of 3
Toluene	74	5	1 of 3
MTBE	32	10	1 of 3
<b>SVOCs</b>			
Phenol	17 - 44	1	2 of 3
<b>Inorganics</b>			
Aluminum	2570 – 8570	2000	3 of 3
Iron	1630 – 5740	600	3 of 3
Sodium	26900 - 83600	20000	3 of 3
<b>Field Parameters</b>			
pH	12.95 – 13.14	6.5 – 8.5	3 of 3

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 impacts are pH from the lime piles. The lime has affected the alkalinity of groundwater significantly raising the pH; however, the low solubility of the lime and low buffering capacity serves to minimize the pH effects on groundwater quality and groundwater quality impacts from the lime chemistry is limited to the close proximity of the lime piles.

The inorganic compounds found in shallow groundwater are indicative of poor shallow groundwater quality in urban settings and are considered to represent site background conditions. Therefore, the metal compounds found in groundwater are not considered site specific contaminants of concern.

Based on the findings of the RI, the presence of carbide lime has impacted groundwater pH and has contributed to the acetone found in the groundwater. The site contaminant that is considered to be the primary contaminant of concern which will drive the remediation of groundwater to be addressed by the remedy selection process is carbide lime. The off-site source of petroleum BETX and MTBE residuals found in the groundwater will not be addressed by any on-site remedies. If new buildings are developed on the site, a soil vapor intrusion evaluation will be completed and appropriate actions to address exposures will be implemented.

### Soil

Surface and subsurface soil samples were collected at the site during the RI. Surface soil samples were collected from a depth of 0-2 inches to assess direct human exposure. Subsurface soil samples were collected from a depth of 2 to 29 feet below ground surface at the site to assess soil contamination and associated impacts to groundwater. The results indicate that soils at the site nominally exceeded the unrestricted SCGs for VOCs, SVOCs, metals/inorganics and PCBs.

With the exception of silver, the reported exceedances for SVOCs, metals and PCBs were found in the random fill material covering the non-lime covered areas. Silver was found in the carbide lime nominally above the unrestricted use SCG and appears that silver may have been a naturally occurring element in the raw material for the carbide lime. Nominal levels of acetone found above unrestricted SCGs were contained in soils below the carbide lime pile and in the carbide lime material. Acetone was a compound that was used in the acetylene gas bottling process utilized at the site.

**Table 2 - Soil**

Detected Constituents	Concentration Range Detected (ppm) <sup>a</sup>	Unrestricted SCG <sup>b</sup> (ppm)	Frequency Exceeding Unrestricted SCG	Restricted Use SCG <sup>c</sup> (ppm)	Frequency Exceeding Restricted SCG
<b>VOCs</b>					
Acetone	0.011 – 0.21	0.05	12 of 26	500	0 of 26
<b>SVOCs</b>					
Benzo(a)anthracene	ND – 12 D08 <sup>e</sup>	1	6 of 26	5.6	4 of 26
Benzo(a)pyrene	ND – 14 D08 <sup>e</sup>	1	6 of 26	1	6 of 26
Benzo(b)fluoranthrene	ND – 15 D08 <sup>e</sup>	1	6 of 26	5.6	3 of 26
Benzo(k)fluoranthrene	ND – 6.1 D08,J <sup>e</sup>	0.8	6 of 26	56	0 of 26
Chrysene	ND – 11 D08 <sup>e</sup>	1	6 of 26	56	0 of 26

Detected Constituents	Concentration Range Detected (ppm) <sup>a</sup>	Unrestricted SCG <sup>b</sup> (ppm)	Frequency Exceeding Unrestricted SCG	Restricted Use SCG <sup>c</sup> (ppm)	Frequency Exceeding Restricted SCG
Dibenzo(a,h)anthracene	ND – 2.3 D08 <sup>e</sup>	0.33	4 of 26	0.56	4 of 26
Indeno(1,2,3-cd)pyrene	ND – 8.7 D08 <sup>e</sup>	0.5	5 of 26	5.6	2 of 26
<b>Inorganics</b>					
Arsenic	ND – 14.4	13	6 of 26	16	0 of 26
Cadmium	ND – 3.95	2.5	1 of 26	9.3	0 of 26
Chromium	3.2 – 36.5	30	1 of 26	400	0 of 26
Copper	2.2 – 96.5	50	1 of 26	270	0 of 26
Lead	ND – 1080	63	6 of 26	1,000	1 of 26
Silver	ND – 3.35	2	10 of 26	1,500	0 of 26
Zinc	4.4 – 425 B <sup>e</sup>	109	6 of 26	10,000	0 of 26
<b>Pesticides/PCBs</b>					
PCB Aroclor 1242	ND – 4.6 D08 <sup>e</sup> , QSU <sup>e</sup>	0.1	1 of 26	1	1 of 26

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 Commercial Use, unless otherwise noted.

d - SCG: Part 375-6.8(b), Restricted Use Soil Cleanup Objectives for the Protection of Groundwater.

e – Data Qualifiers:

B – Analyte was detected in the associated method blank.

D08 – Dilution required due to high concentration of target analytes.

J – Analyte detected at a level less than the Reporting Limit and greater than or equal to the Method Detection Limit. Concentrations within this range are estimated.

QSU – Sulfur (EPA 3660) clean-up performed on extract.

The primary non-lime soil contaminants are SVOCs that may associated with residues from the operation of the former acetylene manufacturing plant and is generally found in the random fill in the non-lime covered areas. Metals and PCBs found in a discrete random fill area may be attributed to post-industrial use of the site for automobile scrapping operations. The locations of these impacted areas are noted on Figure 4. The lime piles essentially contribute surface water and groundwater impacts by raising the pH to levels that could impact aquatic habitat in the adjoining remediated pond at the Ramco Steel site. The lime appears to contain trace levels of acetone that has impacted groundwater.

Based on the findings of the Remedial Investigation, the presence of several SVOCs, metals and PCB has resulted in the contamination of soil. The carbide lime is affecting surface and groundwater quality by raising the pH of these waters. 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 the lime piles and defined non-lime covered areas containing benzo(a)anthracene, benzo(a)pyrene, benzo(b)flouranthrene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene, and PCBs.

**Exhibit B**

**Description of Remedial Alternatives**

**Alternative 1: No 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.

*Present Worth:* ..... \$90,000  
*Capital Cost:* ..... \$0  
*Annual Costs:* ..... \$3,000

**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 excavating and transporting off-site for disposal all carbide lime material and all on-site soils/fill which exceeds unrestricted use SCOs, as defined by 6 NYCRR Part 375-6.8.

This alternative includes the excavation of lime and impacted soil/fill materials from the following areas of the site and disposal of the excavated materials meeting solid waste disposal criteria at a permitted sanitary landfill:

- Lime material from the lime piles and subsurface locations as identified in the RI (est'd. 113,000 +/- cy);
- Impacted fill/debris material pile along the eastern property line to a depth of one foot below existing grade (estimated 6,000 +/- cy);
- Impacted soil/fill material across non-lime covered areas of the site (estimated 19,000 +/- cy); and,
- Impacted soil fill located above buried lime material that extends from the toe of slope of each lime pile (estimated 2,900 +/- cy).

The excavation depression remaining after lime and soil/fill removal would be backfilled with approved off-site clean fill to existing grade (estimated 74,000 +/- cy) necessary to prevent ponding of water and promote positive drainage.

This measure does not prevent or preclude migration of residual groundwater contaminants from off-site sources (i.e. BETX VOCs from an adjoining property). If new buildings are developed on the site, a soil vapor intrusion evaluation will be completed and appropriate actions to address exposures will be implemented.

*Capital Cost:* ..... \$12,000,000

**Alternative 3: Carbide Lime/Fill Material Excavation/Off-site Disposal at an Operating Landfill**

This alternative would include excavating and transporting off-site for disposal of carbide lime material and specific portions of on-site soil/fill which exceeds commercial use SCOs, as defined by 6 NYCRR Part 375-6.8.

This alternative includes the excavation of lime and impacted soil/fill materials from the following areas of the site and disposal of the excavated materials meeting solid waste disposal criteria at a permitted sanitary landfill:

- Lime material from the lime piles and subsurface locations as identified in the RI (113,000 +/- cy);
- Impacted fill/debris pile along the eastern property line to an estimated depth of one foot below existing grade (estimated 6,000 +/- cy);
- The top one foot of impacted soil/fill material across the non-lime areas of the site (estimated 3,000 +/- cy); and
- Impacted soil fill located above buried lime material that extends from the toe of slope of each lime pile (estimated 2,900 +/- cy).

The excavation depression resulting from lime and soil/fill removal would be backfilled with approved off-site clean fill (estimated 55,000 +/- cy) necessary to prevent ponding of water and promote positive drainage.

With slightly elevated SVOC and metals contamination levels in the site soils remaining at the site below the proposed clean fill layer, Institutional and Engineering Controls (IC/EC) will be implemented as follows:

- Execution and recording of an Environmental Easement to restrict land use to commercial use in accordance with NYSDEC Part 375 regulations and minimize/control future exposure to any contamination remaining at the site; and
- Development and implementation of a Site Management Plan (SMP) for long term management of remaining contamination, including restricting use of groundwater and monitoring of groundwater at the site perimeter to assess natural attenuation related to reduction of the elevated pH value.

The SMP would specify the methods necessary to ensure compliance with all ECs and ICs required by the Environmental Easement. The SMP would also include an Excavation Work Plan that details procedures to be implemented to minimize human and ecological exposure if future work on site requires the disturbance of the remaining impacted soil on site.

This measure does not prevent or preclude migration of residual groundwater contaminants from off-site sources (i.e. BETX VOCs from an adjoining property). If new buildings are developed on the site, a soil vapor intrusion evaluation will be completed as part of the SMP and appropriate actions to address exposures will be implemented.

<i>Present Worth:</i> .....	<i>\$10,240,000</i>
<i>Capital Cost:</i> .....	<i>\$10,150,000</i>
<i>Annual Costs:</i> .....	<i>\$3,000</i>

#### **Alternative 4: Carbide Lime/Fill Material Excavation/Off-site Disposal at the Marilla Street Landfill**

This alternative would include excavating and transporting off-site for disposal of carbide lime material and specific portions of on-site soil/fill which exceeds commercial use SCOs, as defined by 6 NYCRR Part 375-6.8.

This alternative includes the excavation of carbide lime and impacted soil/fill materials from the following areas of the site and disposal of the excavated materials meeting solid waste disposal criteria at the adjoining Marilla Street Landfill (inactive hazardous waste site NYSDEC Site No. 915047):

- Lime material from the lime piles and subsurface locations as identified in the RI (estimated 113,000 +/- cy);
- Impacted fill/debris pile along the eastern property line to an estimated depth of one foot below existing

grade (estimated 6,000 +/- cy);

- The top one foot of impacted soil/fill material across the non-lime areas of the site (estimated 3,000 +/- cy) assuming that the underlying fill meets commercial SCOs; and
- Impacted soil fill located above buried lime material that extends from the toe of slope of each lime pile (estimated 2,900 +/- cy).

The excavation depression resulting from lime and soil/fill removal would be backfilled with approved off-site clean fill (55,000 +/- cy) necessary to prevent ponding of water and promote positive drainage.

With slightly elevated SVOC and metals contamination levels in the site soils remaining at the site below the proposed clean fill layer, IC/ECs will be implemented as follows:

- Execution and recording of an Environmental Easement to restrict land use to commercial use in accordance with NYSDEC Part 375 regulations and minimize/control future exposure to any contamination remaining at the site; and
- Development and implementation of an SMP for long term management of remaining contamination, including restricting use of groundwater and monitoring of groundwater at the site perimeter to assess natural attenuation related to reduction of the elevated pH value.

The SMP would specify the methods necessary to ensure compliance with all ECs and ICs required by the Environmental Easement. The SMP would also include an Excavation Work Plan that details procedures to be implemented to minimize human and ecological exposure if future work on site requires the disturbance of the remaining impacted soil on site.

This measure does not prevent or preclude migration of residual groundwater contaminants from off-site sources (i.e. BETX VOCs from an adjoining property). If new buildings are developed on the site, a soil vapor intrusion evaluation will be completed as part of the SMP and appropriate actions to address exposures will be implemented.

<i>Present Worth:</i> .....	\$8,490,000
<i>Capital Cost:</i> .....	\$8,400,000
<i>Annual Costs:</i> .....	\$3,000

**Alternative 5: Carbide Lime Material Excavation for Off-site Beneficial Use and Impacted Soil/Fill Excavation/Off-site Disposal at an Operating Landfill**

This alternative would include excavating and transporting off-site all usable carbide lime material for beneficial use and disposal of on-site soils/fill which exceed commercial use SCOs, as defined by 6 NYCRR Part 375-6.8.

This alternative includes the excavation of the carbide lime for beneficial use, and excavation of impacted soil/fill materials from defined areas of the site and disposal of the excavated materials meeting solid waste disposal criteria at a permitted sanitary landfill:

- Lime material from the lime piles and subsurface locations as identified in the RI (estimated 113,000 +/- cy) for beneficial reuse;
- Any contaminated carbide lime that cannot be beneficially used or is comingled with debris for disposal in a permitted landfill;
- Impacted fill/debris containing lead and PCBs above commercial SCOs along the eastern property line to an estimated depth of one to two feet below existing grade (estimated 750 +/- cy) for disposal in a

permitted landfill

- The top one foot of impacted soil/fill material across the non-lime areas of the site (estimated 3,000 +/- cy) for disposal in permitted landfill;
- Post excavation sampling to verify commercial SCOs have been achieved, and
- Depending on confirmation sampling results, remove additional impacted soil/fill material across the non-lime areas of the site that exceed commercial use SCOs (estimated 3,000 to 9,000 cy) for landfill disposal.

The excavation remaining after lime and soil/fill removal would be backfilled with approved off-site clean fill to prevent ponding of water and promote positive drainage (estimated 45,000 to 50,000 cy). Some existing on-site fill that meets commercial SCOs may be used to backfill below grade portions of the lime pile excavations.

With commercial use SVOC and metals contaminant levels in site soils remaining at the site, IC/ECs will be implemented as follows:

- Execution and recording of an Environmental Easement to restrict land use to commercial use in accordance with NYSDEC Part 375 regulations and minimize/control future exposure to any contamination remaining at the site; and,
- Development and implementation of a Site Management Plan (SMP) for long term management of remaining contamination, including restricting use of groundwater and monitoring of groundwater at the site perimeter to assess natural attenuation related to reduction of the elevated pH value.

The SMP would specify the methods necessary to ensure compliance with all ECs and ICs required by the Environmental Easement. The SMP would also include an Excavation Work Plan that details procedures to be implemented to minimize human and ecological exposure if future work on site requires the disturbance of the remaining impacted soil on site.

This measure does not prevent or preclude migration of residual groundwater contaminants from off-site sources (i.e. BETX VOCs from an adjoining property). If new buildings are developed on the site, a soil vapor intrusion evaluation will be completed as part of the SMP and appropriate actions to address exposures will be implemented.

<i>Present Worth:</i> .....	\$4,090,000
<i>Capital Cost:</i> .....	\$4,000,000
<i>Annual Costs:</i> .....	\$3,000

**Exhibit C****Remedial Alternative Costs**

<b>Remedial Alternative</b>	<b>Capital Cost (\$)</b>	<b>Annual Costs (\$)</b>	<b>Total Present Worth (\$)</b>
1: No Action	0	0	0
2: Unrestricted Use	\$12,000,000	0	\$12,000,000
3: Excavation of Lime and Fill to Commercial SCOs / Permitted Landfill Disposal	\$10,150,000	\$3,000	\$10,240,000
4: Excavation of Lime and Fill to Commercial SCOs / Marilla St. Landfill Disposal	\$8,400,000	\$3,000	\$8,490,000
5: Lime Excavation for Beneficial Use / Fill Excavation to Commercial SCOs and Permitted Landfill Disposal	\$4,000,000	\$3,000	\$4,090,000

## **Exhibit D**

### **SUMMARY OF THE PROPOSED REMEDY**

The Department is proposing Alternative 5, Lime Excavation for Reuse / Fill Excavation to Commercial Use SCOs and Landfill Disposal as the remedy for this site. Alternative 5 would achieve the remediation goals for the site by excavation of lime for beneficial reuse and excavation impacted soil/fill materials from defined areas of the site and disposal of the excavated materials meeting solid waste disposal criteria at a permitted sanitary landfill. Clean imported backfill and on-site fill meeting commercial use SCOs will be used to backfill excavation depressions needed to prevent ponding of water and promote drainage. The elements of this remedy are described in Section 7. The proposed remedy is depicted in Figure 5.

### **Basis for Selection**

The selected 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 Alternative Analysis 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 selected remedy (Alternative 5) would satisfy this criterion by removing the carbide lime and contaminated soils from the site. Alternative 3 and 4 equally addresses the source of the groundwater and surface water impacts and contamination, which is the most significant threat to public health and the environment. Alternative 5 accomplishes this criterion in the most cost effective manner and the beneficial use of the carbide lime as a soil amendment or an industrial wastewater neutralizing agent achieves "Green Remediation" principles in reducing demand for similar virgin products and unnecessary use of landfill airspace. In Alternative 4, lime and impacted soil/fill would be excavated, but interred in a closed inactive hazardous waste site adjacent to the site. The material would be covered with a RCRA cover system to prevent exposure and release to the environment, but environmental legacy of the lime and impacted soil/fill will always remain in the area.

Alternative 1 (No Action) does not provide any additional protection to public health and the environment and will not be evaluated further. Alternative 2, by removing all soil contaminated above "unrestricted" use SCOs, meets the threshold criteria. Alternatives 3, 4, and 5 also comply with this criterion but to a lesser degree or with lower certainty as a nominal amount of residual contaminants above unrestricted use SCOs, but at or above commercial use SCOs for Alternatives 3 and 4, and at or below commercial use SCOs for Alternative 5 would remain in-place at the site.

For all alternatives, excluding Alternative 1 (No Action), if new buildings are developed on the site, a soil vapor intrusion evaluation will be completed and appropriate actions to address exposures will be implemented.

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 5 complies with SCGs to the extent practicable. It addresses source areas of contamination and complies with the commercial use SCOs as the bulk of the lime material and impacted soils above commercial use SCOs are removed from the site. It also creates the conditions necessary to restore groundwater quality to the extent practicable. Alternatives 3 and 4 equally comply with this criterion, but in a less cost effective manner. In Alternative 4, lime and impacted soil/fill would be excavated, but interred in a closed inactive hazardous waste site adjacent to the site, which would require development and adherence to special permitting requirements to allow this alternative to occur. The implementation of Alternative 2 would remove all contamination and would achieve more stringent unrestricted residential requirements. Because Alternatives 2, 3, 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, 3, 4 and 5). The lime material creating most of the groundwater and surface water impacts and soils/fill with contamination above commercial use SCGs will be removed in Alternatives 3, 4 and 5. Alternatives 3, 4 and 5 remediate the site to a level that limits potential for human exposure to remaining contamination, limits the potential for the remaining contamination to come into contact with ecological receptors, and limits impacts to the environment. Under Alternatives 3, 4 and 5, an environmental easement and site management plan would further protect human health and the environment during future on-site redevelopment activities. Alternative 2 has the greatest long-term effectiveness and permanence as all contaminated soil and fill would be removed and properly disposed of in an approved facility and removes the need for property use restrictions and long-term monitoring.

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 3, 4 and 5, excavation and off-site disposal, reduces the toxicity, mobility and volume of on-site materials impacting the environment and contaminants by transferring the material to an approved off-site location. Alternative 5 accomplishes this criterion in the most cost effective manner and through the beneficial use of the carbide lime as a soil amendment or an industrial wastewater neutralizing agent achieves "Green Remediation" principles in reducing demand for similar virgin products and unnecessary use of landfill airspace. Reuse of the lime ultimately reduces the volume, toxicity and mobility of the uncontrolled impacts to the environment that it is currently causing. In Alternative 4, lime and impacted soil/fill would be excavated, but interred in a closed inactive hazardous waste site adjacent to the site. The material would be covered with a RCRA cover system to prevent exposure and release to the environment, but environmental legacy of the lime and impacted soil/fill will always remain in the area. In Alternatives 2, 3 and 4, the volume of the material would not be reduced, but managed in a landfill. Although the volume of the contaminated soil is not reduced

in Alternatives 2, 3 and 4, the overwhelming majority of contamination from below the water table is removed from the site. In Alternative 3 and 4, some residual contamination may remain at or above commercial use SCOs. In Alternative 5, some residual contamination at or below commercial use levels may remain. However, potential exposures will be managed through the use of engineering and institutional controls.

None of the alternatives prevent or preclude migration of residual groundwater contaminants from offsite sources (i.e. BETX VOCs from an adjoining property). For all alternatives, excluding Alternative 1 (No Action), if new buildings are developed on the site, a soil vapor intrusion evaluation will be completed and appropriate actions to address exposures will be implemented.

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 through 5 all have short-term impacts which could easily be controlled. The time needed to achieve the remediation goals is the shortest for Alternative 4 and longest for the selected alternative, Alternative 5, due to the limited ability to market and remove the lime for beneficial use.

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, 3, 4 and 5 are favorable in that they are all readily implementable. Equipment and trained personnel are readily available. Removal of the lime below grade and/or below the water table will require special handling (i.e., staging and dewatering) to enable effective handling and transport of lime for beneficial use or disposal. Specific excavation and backfill methods and sequencing will be required. Some additional handling and processing of saturated lime (below groundwater level) for hauling and disposal will be required. Alternative 4 would pose additional challenges in that a closed inactive hazardous waste site would be uncovered and prepared to receive additional waste and then the cover system would require reconstruction upon completion of the work at the site. Regulatory approvals to allow opening and disposal of the inactive hazardous waste landfill would be required. Alternative 4 does offer an advantage in that it is adjacent to the site and would serve to limit truck traffic on roadways as the lime and impacted soil/fill is hauled to the adjoining site. Alternative 2 is also implementable, but the additional volume of soil excavated and additional required backfill under this alternative would necessitate increased truck traffic on local roads for several months. Alternative 5, the selected alternative, poses some challenges in that marketing and sale of the lime for beneficial use will delay the time to complete the project by almost 6 years.

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, the selected alternative, has the lowest cost in that there is the avoided cost for disposal of the lime in a landfill and that there may be some income from the sale of the lime material to end users, which would serve to offset the cost of the work. Alternatives 2, 3 and 4

include costs to dispose the lime in a landfill. Alternative 2 (excavation to unrestricted use SCOs and off-site disposal) has the largest volume of soil/fill to be handled in addition to the lime, resulting in the highest present worth cost. The present worth costs of Alternatives 3 and 4 are similar to each other, but Alternative 3 would be higher than that of Alternative 4 due to additional hauling costs to a permitted landfill.

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.

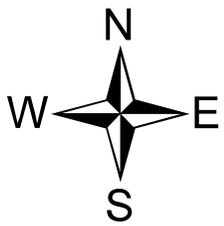
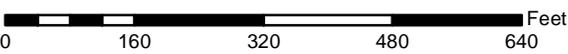
Since the anticipated use of the site is commercial, Alternatives 3, 4 and 5 would be desirable, but some contaminated soil would remain on the property. Alternative 2 would remove all contaminated soil from the site and not result in any site use restrictions. However, the contamination remaining with Alternatives 3, 4 and 5 would be controllable with implementation of appropriate engineering and institutional controls and implementation of a Site Management Plan. Given the intended reuse and development of the site for commercial purposes, levels of contamination at or below commercial use SCOs is acceptable. For all alternatives, excluding Alternative 1 (No Action), if new buildings are developed on the site, a soil vapor intrusion evaluation will be completed and appropriate actions to address exposures will be implemented.

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.

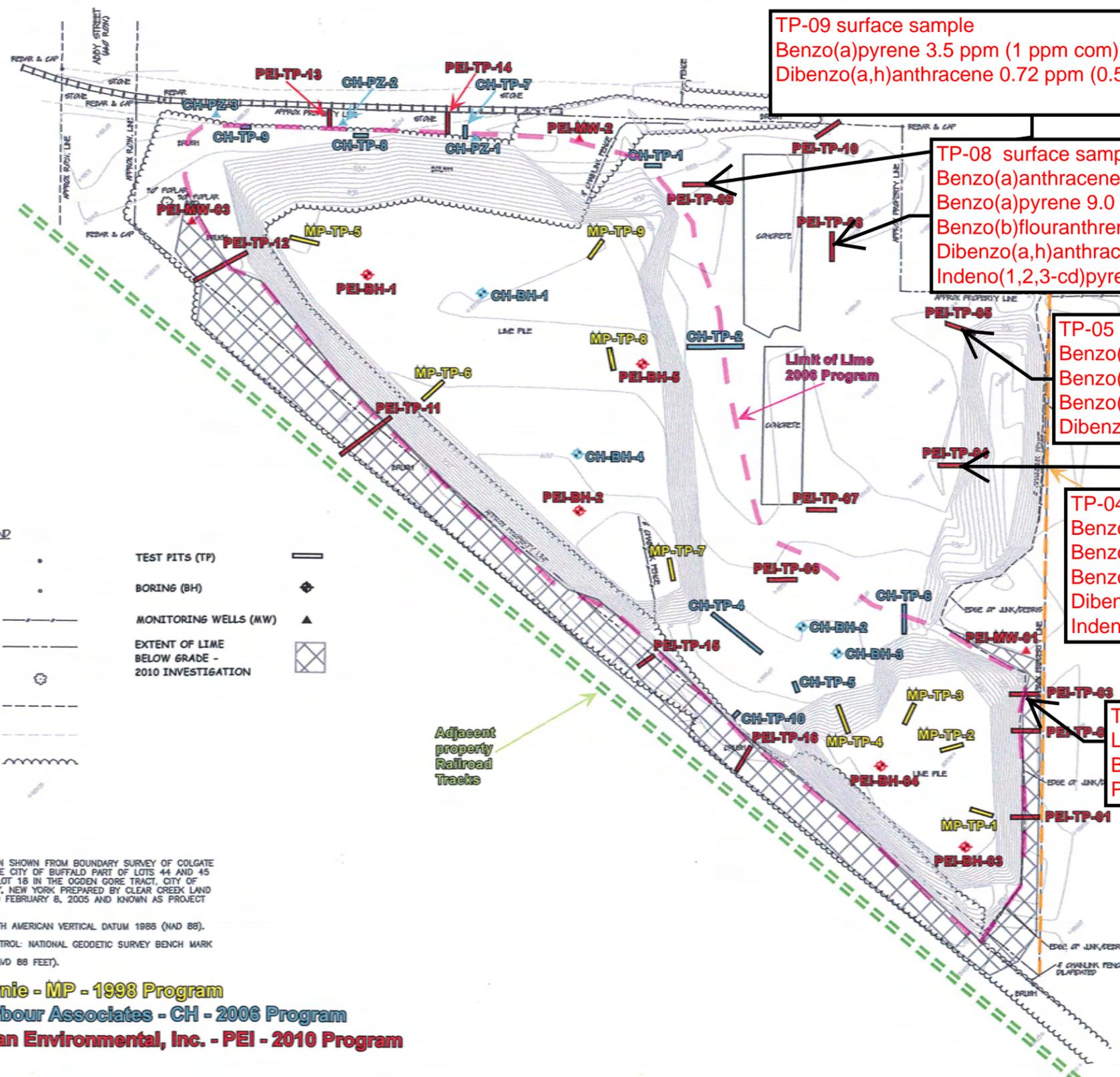




**Figure 2**  
**Site Plan**  
 90 Hopkins ERP Site  
 City of Buffalo, Erie Co.  
 Site No. E915181







TP-09 surface sample  
 Benzo(a)pyrene 3.5 ppm (1 ppm com)  
 Dibenzo(a,h)anthracene 0.72 ppm (0.56 ppm com)

TP-08 surface sample  
 Benzo(a)anthracene 9.2 ppm (5.6 ppm com)  
 Benzo(a)pyrene 9.0 ppm (1 ppm com)  
 Benzo(b)flouranthrene 10 ppm (5.6 com)  
 Dibenzo(a,h)anthracene 1.8 ppm (0.56 ppm com)  
 Indeno(1,2,3-cd)pyrene 5.8 ppm (5.6 ppm com)

TP-05 surface sample  
 Benzo(a)anthracene 5.6 ppm (5.6 ppm com)  
 Benzo(a)pyrene 6.3 ppm (1 ppm com)  
 Benzo(b)flouranthrene 7.7 ppm (5.6 com)  
 Dibenzo(a,h)anthracene 1.2 ppm (0.56 ppm com)

TP-04 surface sample  
 Benzo(a)anthracene 12 ppm (5.6 ppm com)  
 Benzo(a)pyrene 14 ppm (1 ppm com)  
 Benzo(b)flouranthrene 15 ppm (5.6 com)  
 Dibenzo(a,h)anthracene 2.3 ppm (0.56 ppm com)  
 Indeno(1,2,3-cd)pyrene 5.8 ppm (5.6 ppm com)

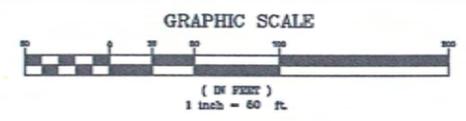
TP-03 2' bgs  
 Lead 1080 ppm (1000 ppm com)  
 Benzo(a)anthracene 3.0 ppm (1 ppm com)  
 PCB Aroclor 1242 4.6 ppm (1 ppm com)

**LEGEND**

REBAR & GAP	•	TEST PITS (TP)	—
PN	•	BORING (BH)	◆
FENCE	—	MONITORING WELLS (MW)	▲
PROPERTY LINE	- - -	EXTENT OF LIME BELOW GRADE - 2010 INVESTIGATION	⊠
TREE	⊙		
RIGHT OF WAY	- - -		
STONE	—		
BRUSH	~ ~ ~		
SPOT ELEVATION	—		

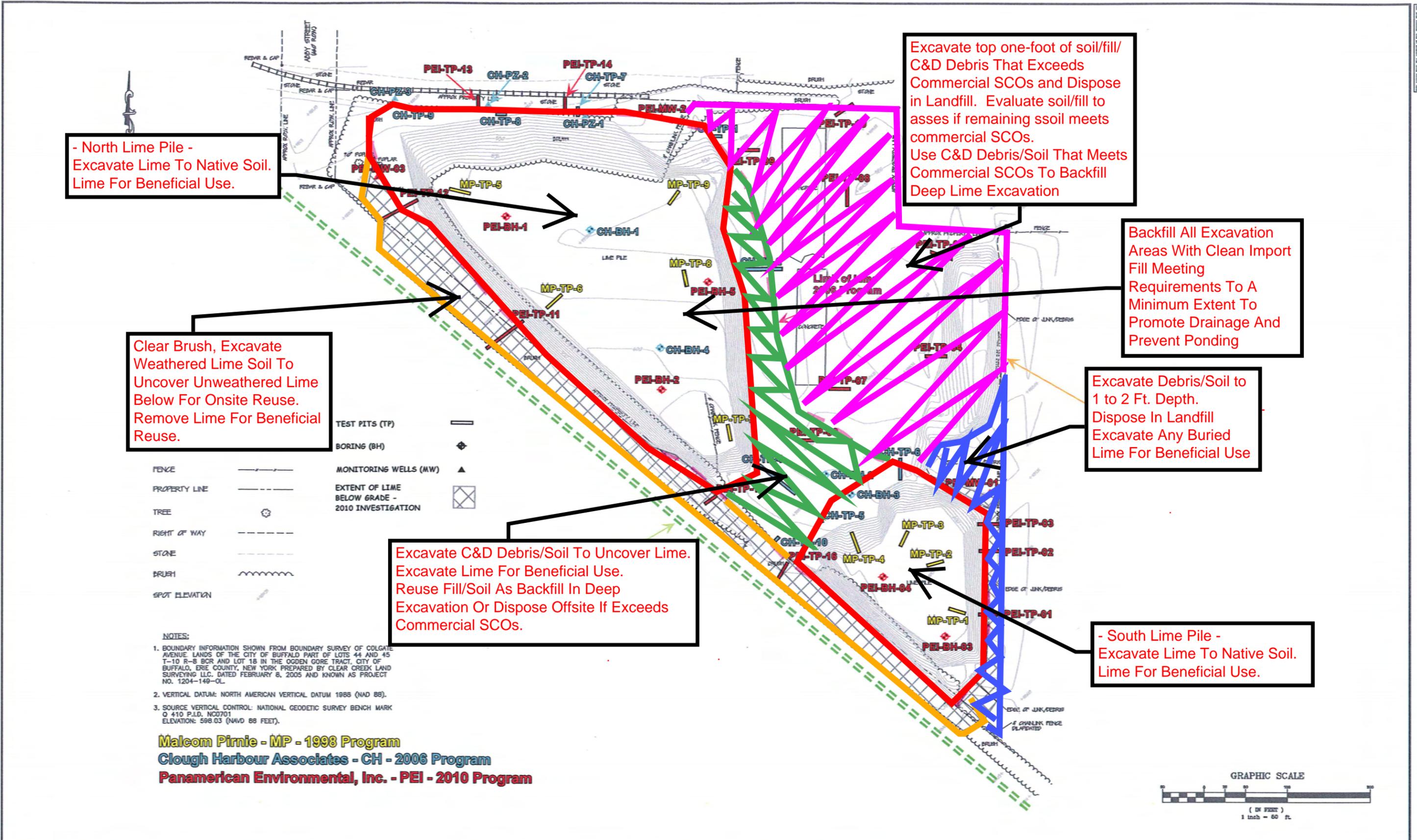
- NOTES:**
- BOUNDARY INFORMATION SHOWN FROM BOUNDARY SURVEY OF COLGATE AVENUE LANDS OF THE CITY OF BUFFALO PART OF LOTS 44 AND 45 T-10 R-8 BCR AND LOT 18 IN THE OGDEN GORE TRACT, CITY OF BUFFALO, ERIE COUNTY, NEW YORK PREPARED BY CLEAR CREEK LAND SURVEYING LLC, DATED FEBRUARY 8, 2005 AND KNOWN AS PROJECT NO. 1204-149-OL.
  - VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM 1985 (NAV D 85).
  - SOURCE VERTICAL CONTROL: NATIONAL GEODETIC SURVEY BENCH MARK Q 410 P.L.D. NC0701 ELEVATION: 598.03 (NAVD 88 FEET).

**Malcom Pirnie - MP - 1998 Program**  
**Clough Harbour Associates - CH - 2006 Program**  
**Panamerican Environmental, Inc. - PEI - 2010 Program**



REVISIONS NO. MADE BY DATE DESCRIPTION				DESIGNED BY: _____ DRAWN BY: BAK CHECKED BY: JSB PROJ. ENGR. _____	<b>URS Corporation</b> New York 77 Goodell Street, Buffalo, New York 14203 (716)856-5636 - (716)856-2545	COUNTY DEPARTMENT TOWN 90 HOPKINS CITY OF BUFFALO STATE OF NEW YORK	TOPOGRAPHIC SURVEY
Revised PEI July 2010				JOB No. 11174699			

Figure 4  
 Soil Contamination Above  
 Commercial SCOs



- North Lime Pile -  
Excavate Lime To Native Soil.  
Lime For Beneficial Use.

Excavate top one-foot of soil/fill/  
C&D Debris That Exceeds  
Commercial SCOs and Dispose  
in Landfill. Evaluate soil/fill to  
asses if remaining ssoil meets  
commercial SCOs.  
Use C&D Debris/Soil That Meets  
Commercial SCOs To Backfill  
Deep Lime Excavation

Backfill All Excavation  
Areas With Clean Import  
Fill Meeting  
Requirements To A  
Minimum Extent To  
Promote Drainage And  
Prevent Ponding

Clear Brush, Excavate  
Weathered Lime Soil To  
Uncover Unweathered Lime  
Below For Onsite Reuse.  
Remove Lime For Beneficial  
Reuse.

Excavate Debris/Soil to  
1 to 2 Ft. Depth.  
Dispose In Landfill  
Excavate Any Buried  
Lime For Beneficial Use

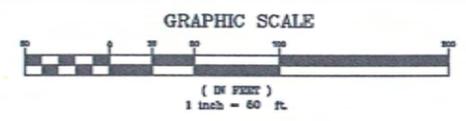
Excavate C&D Debris/Soil To Uncover Lime.  
Excavate Lime For Beneficial Use.  
Reuse Fill/Soil As Backfill In Deep  
Excavation Or Dispose Offsite If Exceeds  
Commercial SCOs.

- South Lime Pile -  
Excavate Lime To Native Soil.  
Lime For Beneficial Use.

- FENCE
- PROPERTY LINE
- TREE
- RIGHT OF WAY
- STONE
- BRUSH
- SPOT ELEVATION
- TEST PITS (TP)
- BORING (BH)
- MONITORING WELLS (MW)
- EXTENT OF LIME BELOW GRADE - 2010 INVESTIGATION

- NOTES:**
- BOUNDARY INFORMATION SHOWN FROM BOUNDARY SURVEY OF COLGATE AVENUE LANDS OF THE CITY OF BUFFALO PART OF LOTS 44 AND 45 T-10 R-8 BCR AND LOT 18 IN THE OGDEN GORE TRACT, CITY OF BUFFALO, ERIE COUNTY, NEW YORK PREPARED BY CLEAR CREEK LAND SURVEYING LLC, DATED FEBRUARY 8, 2005 AND KNOWN AS PROJECT NO. 1204-149-OL.
  - VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM 1985 (NAVD 85).
  - SOURCE VERTICAL CONTROL: NATIONAL GEODETIC SURVEY BENCH MARK Q 410 P.L.D. N00701 ELEVATION: 598.03 (NAVD 88 FEET).

**Malcom Pirnie - MP - 1998 Program**  
**Clough Harbour Associates - CH - 2006 Program**  
**Panamerican Environmental, Inc. - PEI - 2010 Program**



Revised PEI July 2010 DESIGNED BY: _____ DRAWN BY: <b>BAK</b> CHECKED BY: <b>JSB</b> PROJ. ENGR. _____				<b>URS Corporation</b> New York 77 Goodell Street, Buffalo, New York 14203 (716)856-5636 - (716)856-2545		COUNTY DEPARTMENT TOWN 90 HOPKINS CITY OF BUFFALO STATE OF NEW YORK		TOPOGRAPHIC SURVEY		Figure 5 Alternative 5 Concept Plan														
<table border="1"> <thead> <tr> <th>NO.</th> <th>MADE BY</th> <th>APPROVED BY</th> <th>DATE</th> <th>DESCRIPTION</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>				NO.	MADE BY	APPROVED BY	DATE	DESCRIPTION											JOB No. 11174699		CITY OF BUFFALO STATE OF NEW YORK		Figure 5 Alternative 5 Concept Plan	
NO.	MADE BY	APPROVED BY	DATE	DESCRIPTION																				