MALCOLM PIRNIE

Citizen Participation Plan

CERTAINTEED SITE

PORTIONS OF HANNA FURNACE – PARCELS 1 AND 2

Prepared for:

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MALCOLM PIRNIE

Table of Contents

Page i

LIST OF TABLES

Table of Contents

LIST OF APPENDIX

MALCOLM PIRNIE

Introduction

SECTION 1

This Citizen Participation Plan (CPP) details public information and community outreach activities related to the implementation of a Brownfield Cleanup Program (BCP) on 25 acres of the Buffalo Lakeside Commerce Park (BLCP) located at 118 Fuhrmann Boulevard in Buffalo, NY (i.e., the Krog USC Associates I, LLC-CertainTeed Project Site). These activities are designed to keep nearby residents, businesses and the public in general, informed of the development of the site. This CPP includes:

- Background information about the Krog/CertainTeed Project Site.
- A description of BCP activities.
- A description of citizen participation activities that have been conducted to date.
- A list of citizen participation activities that will be conducted in the future.
- Information on whom to contact and where to get more information about the site and the development.
- A glossary of terms and acronyms (Attachment A).

The CPP will be updated as necessary to include new information concerning the work.

Malcolm Pirnie, Inc. (Malcolm Pirnie) has prepared this CPP as an element of a Brownfield Cleanup Program. The BLCP, which was formerly known as the Hanna-Furnace or Union Ship Canal site, encompasses four parcels of approximately 113 acres. Parcels 1 and 2 include the 43-acre Former Railroad Yard and the Former Manufacturing Area (32-acres), respectively. Other Parcels of the BCLP Site include Parcel 3; the Union Ship Canal (8.7 acres) with a surrounding 200-foot Buffer zone; and the remaining area

located north of Parcel 3 (Parcel 4). Parcels 1 and 2 have been characterized during several investigations, which led to the development of the Remedial Action Work Plans (RAWPs) for each parcel. The RAWPs are based on redevelopment of the parcels for commercial and industrial purposes. The Krog/CertainTeed Project Site consists of approximately 25 acres located on portions of Parcels 1 and 2 at the southeast corner of the BLCP.

MALCOLM PIRNIE

Site Background Information

SECTION 2

2.1 Site Description

The Buffalo Union Steel Corporation purchased the manufacturing and railroad yard portions of the site in 1900. The Union Ship Canal was constructed near the northern edge of the Buffalo Union Steel property in 1910 to service the facility. Pig iron manufacturing commenced during the period of 1900 to 1915 with the construction of the blast furnaces. Following the construction of the blast furnaces, the Hanna Furnace Company acquired the property from Buffalo Union Steel. The National Steel Company subsequently purchased the property in 1929, and the corporate entity became known as the Hanna Furnace Corporation. During peak production, the Hanna Furnace Corporation employed over 800 personnel.

The Union Ship Canal is approximately 20 feet deep. Iron ore, lime, coke and other raw materials were received via the canal, and were stockpiled along the northern and southern edges of the canal. In the area immediately to the south of the canal and north of the manufacturing area, the raw materials were placed on massive concrete pads that occupy the bulk of the southern portion of Parcel 3. The concrete pads are assumed to be approximately four feet thick.

The Pennsylvania Railroad was first to acquire the land to the north of the canal and used the property for unloading raw material ores into train cars. The Hanna Furnace Corporation purchased an approximately 25-acre portion of the property located to the north of the canal from the Pennsylvania Railroad in 1960. The property included the northern portion of the designated 200-foot Buffer Area. Wetland areas that included ponds with depths up to 15 feet occupied much of the property at the time. The swampy

area was subsequently backfilled with silty sand and gravel, with some black cinders, as described in Recra Environmental, Inc.'s 1988 report.

The Hanna Furnace Corporation ceased all operations at the site in 1982 due to foreign competition and the closure of the Shenango Furnace Company, formerly a primary recipient of pig iron from Hanna Furnace. The Jordan Foster Scrap Corporation purchased the site in 1983 and subsequently dismantled many of the buildings and removed the rails from the Former Railroad Yard for scrap. The Jordan Foster Scrap Corporation filed for bankruptcy during 1986, and leased the site briefly to the Equity Scrap Processing Company. In 1998, the City of Buffalo gained title to the Hanna Furnace Site due to nonpayment of taxes. The Hanna Furnace Site has been vacant and unsecured since 1986.

Since 1998, the City of Buffalo has proactively initiated efforts to characterize and remediate the BLCP site under the auspices of a voluntary cleanup program. Accordingly, the development of Parcels 1 and 2 have entailed soil and groundwater characterization, the removal of soil/debris piles, railroad ties, and building demolition.

The Hanna Furnace Site is now part of the Buffalo Lakeside Commerce Park, and is owned by Krog USC Associates I, LLC (Krog). In 2004, Krog, in conjunction with CertainTeed Corporation (CertainTeed), began redevelopment of a portion of the site in accordance with Voluntary Cleanup Agreements dated January 2, 2003 and January 6, 2003 and site-specific Remedial Action Work Plans prepared for Parcel 1 (Malcolm Pirnie, 2002) and Parcel 2 (OB&G, 2002). Construction activities began at the site on December 3, 2003 and were completed by January 7, 2005, including site clearing and regrading, cover system installation, and construction of the CertainTeed manufacturing facility. The construction contractor demobilized from the site the week of January 3, 2005.

2.2 Site Investigation History

A number of environmental site assessments and investigations have been completed at the Hanna Furnace Site, which included Parcels 1 and 2. This work has entailed the

collection and analysis of numerous soil/fill, groundwater, surface water and sediment samples distributed within both parcels.

The NYSDEC prepared an "Inactive Hazardous Waste Disposal Site Report" for the Hanna Furnace Site in 1983. The NYSDEC subsequently identified the property as Site #915029, and initially assigned the site a classification of "2A," indicating that the site was a potential hazardous waste site but that insufficient data were available to properly characterize potential issues at the site. Following several environmental investigations of the Hanna Furnace Site, ABB Environmental Services (ABB) conducted a Preliminary Site Assessment of the site in 1995 for the NYSDEC. The results of this investigation determined that contaminants present on the Hanna Furnace Site did not pose a serious threat to human health or the environment. Based on the results of this investigation, the NYSDEC removed the Hanna Furnace Site from its registry of potential hazardous waste sites.

The environmental assessments and investigations that have been completed at the site (Parcels 1 and 2) were documented in the following reports:

- Rupley, Bahler and Burke, Solid Waste Management Facility Report, 1979. In 1979 Rupley, Bahler, and Blake, Consulting Engineers prepared a Solid Waste Management Facility Report for the Hanna Furnace Corporation. This report includes an evaluation of surface water quality in the Union Ship Canal and an on-site pond. The water samples contained phenols and soluble iron at concentrations above NYSDEC Class GA (drinking water) groundwater standards. It should be noted that groundwater is not used as a drinking water supply in the area of the site.

- Erie County Department of Environmental Protection, Inactive Site Profile Report. In April 1982, after the cessation of pig iron manufacturing at the site, the Erie County Department of Environmental Protection inspected the site and prepared a report entitled "Inactive Site Profile Report". The report recommended that the NYSDEC downgrade the classification of the site to a "class F" which pertains to a site where no further action is warranted and little to no environmental hazard potential exists.

- United States Geological Survey, Draft Report of Preliminary Evaluation of Chemical Migration to the Niagara River from Hazardous Disposal Sites in Erie

and Niagara Counties. In 1983, the United States Geological Survey (USGS) drilled and sampled seven test borings on the north side of the Union Ship canal. Samples from these borings were analyzed for a short list of heavy metals. In their report entitled "Draft Report of Preliminary Evaluation of Chemical Migration to the Niagara River from Hazardous Waste Disposal Sites in Erie and Niagara Counties," the USGS concluded that there was potential for lateral migration of contaminants at and away from the site. No samples were collected in the Former Production Area during this investigation.

- Recra Environmental, Site Characterization and Environmental Assessment. In August 1988, Recra Environmental, Inc. (Recra) performed a "Site Characterization and Environmental Assessment" for the New York State Department of Transportation. The characterization and assessment included the entire 113-acre site. The work involved the collection of samples of surface and subsurface soil/fill, surface water, sediment and groundwater, performance of a risk assessment, and an evaluation of remedial alternatives. The investigation included the collection and analysis of eight surface soil samples, six subsurface soil samples, and two groundwater samples in the Former Production Area. The soil and groundwater samples were analyzed for arsenic, chromium, copper, lead, cyanide, oil and grease, ammonia, and PCBs. Analytical results indicated elevated levels of metals and low (less than 1 part per million) concentrations of PCBs in the soil samples. Groundwater samples from the monitoring wells contained arsenic, chromium, lead, and cyanide at concentrations above the class GA standards. The pH of the groundwater was also above the range of the class GA standard. The HRS score of the Hanna Furnace site was recalculated using the data collected from the site characterization. The revised HRS, as scored by Recra, remained low at 12.28 out of 100, and Recra concluded that the site does not pose an immediate threat to human health and the environment.

- New York State Department of Environmental Conservation, 1990. The NYSDEC collected two surface soil samples (one composite and one discrete) from the Former Production Area for analysis of PCBs. The composite sample was collected from three locations in the vicinity of the oil shack building where it was identified that transformer salvaging apparently had been conducted. The discrete sample was collected from oil-stained soil in the vicinity of a suspected transformer pen in the southwest corner of the site, near the former office building. PCBs were not detected in either sample.

- New York State Department of Environmental Conservation. In 1994, the NYSDEC collected 36 surface soil samples from the Hanna Furnace Site, of which 13 were collected in the Former Production Area. The thirteen samples

were analyzed for PCBs using immunoassay techniques, and were analyzed for metals (arsenic, barium, cadmium, chromium, copper, lead, mercury, nickel, and selenium) using standard laboratory methodologies. PCBs were not detected in the samples, and all the metals except for silver were detected at concentrations exceeding the current NYSDEC soil cleanup guidelines in at least one sample.

- ABB Environmental Services, Preliminary Site Assessment, November 1995. ABB Environmental Services performed a Preliminary Site Assessment (PSA) for the NYSDEC at the site. The PSA included not only the 113-acre Hanna Furnace site but also the adjacent Shenango Steel Site. The purpose of the PSA was to more thoroughly characterize the site, recalculate the site score using the HRS system, and reclassify the site. Of the sampling conducted during the PSA, five surface soil, two subsurface soil, and two groundwater samples were collected from the Former Production Area. The soil and groundwater samples were analyzed for Target Compound List (TCL) volatile organic compounds (VOCs), SVOCs, pesticides/PCBs, and Target Analyte List (TAL) metals plus cyanide. The surface soil samples were also analyzed for EPTox metals.

  Analytical results for the surface soil samples indicated that SVOCs, primarily polycyclic aromatic hydrocarbons (PAHs), and a number of metals were detected at concentrations exceeding the TAGM 4046 soil cleanup guidelines. Metals were detected in the EPTox analysis at low concentrations. The analytical results for the two subsurface samples indicated that no VOCs, SVOCs, pesticides, or PCBs were detected, and a number of metals were detected at concentrations exceeding the soil cleanup guidelines.

  Analysis of the groundwater samples indicated that only iron, magnesium, manganese, and sodium were detected at concentrations exceeding the NYSDEC Glass GA Groundwater Quality Standards. VOCs, SVOCs, and pesticides/PCBs were not detected in the groundwater samples.

  No disposal of listed or characteristic hazardous waste was documented at the site. Therefore, the NYSDEC removed the Hanna Furnace Site from its Registry of Inactive Hazardous Waste Disposal Sites.

- Ecology and Environment, Inc., Environmental Site Assessment. Ecology and Environment, Inc., performed an Environmental Site Assessment for the Buffalo Urban Renewal Agency in May 1997. The objective of the assessment was to summarize all available and pertinent environmental information, to identify variations in current site conditions relative to those defined in earlier

investigations, and to identify potential areas of concern. The assessment involved a review of records as well as the performance of three site inspections.

The assessment report presented the findings in order of environmental concern by area. The only environmental concern associated with the railroad yard area was solid waste disposal. Several waste piles of railroad ties, tires, C&D debris, household trash, firebrick and black material were noted in the report. Only those debris piles with black material were considered to have potential contamination by E & E

- Malcolm Pirnie, Inc, Characterization of the Former Railroad Yard, June 1999, Revised October 1999. Malcolm Pirnie collected surface and subsurface soil samples from 36 boring locations within the Former Railroad Yard area of the Hanna Furnace Site during the period from December 1998 to January 1999. The report detailing the results of this investigation was submitted to the NYSDEC in October 1999. As described in the report, the results of sampling performed indicated that no VOCs, phenols, or PCBs were detected in any of the samples collected. However, metals and polycyclic aromatic hydrocarbons (PAHs) were present in the samples at concentrations above TAGM guidelines.

  The concentrations of PAHs detected in both the surface and subsurface soil samples are primarily within the range typically found in urban soils. The TAGM soil cleanup guidelines for PAH compounds were contravened in 17 of the 18 surface soil composite samples.

  The PAH concentrations detected in the subsurface soil samples were significantly lower than those in the surface soil composite samples. The TAGM soil cleanup guidelines for PAH compounds were contravened in only 5 of the 18 subsurface soil composite samples.

  Because PAHs are formed through anthropogenic combustion processes such as the burning of coal, oil and gasoline, they are generally ubiquitous in soils, especially industrial and urban soils. The presence of PAHs at this site is consistent with its industrial location and past use as a railroad yard located adjacent to an active pig iron manufacturing facility.

  The analysis of composite soil samples for inorganic analytes (TAL metals plus cyanide) indicated that a number of metals were detected at concentrations above the soil cleanup guidelines.

The analysis of the surface soil composite samples indicated that aluminum, arsenic, beryllium, cadmium, calcium, chromium, copper, lead, magnesium, manganese, mercury, nickel, and zinc were detected in at least one sample at concentrations exceeding the soil cleanup guidelines and/or the Eastern U.S. background concentrations. The concentrations of metals in the composite subsurface soil samples were generally lower than or similar to those of the surface soil samples. Aluminum, arsenic, beryllium, cadmium, calcium, magnesium, manganese, nickel, and zinc were detected in at least one composite surface sample at concentrations exceeding the soil cleanup guidelines and/or the Eastern U.S. background concentrations.

Total cyanide concentrations in the composite surface and subsurface soil samples ranged from 1 to 33 mg/kg. Analysis of the sample of blue-green sandy material collected from boring SB-20 revealed that no reactive cyanide was detected in the sample, and that the total cyanide concentration was 38.8 mg/kg. Although there currently is no NYSDEC soil cleanup guideline for cyanide, the United States Environmental Protection Agency (USEPA) soil screening level (SSL) can be used for comparison. The SSL for amenable cyanide is 1600 mg/kg. Amenable cyanide is that portion which is amenable to chlorination. The susceptibility of cyanide complexes to chlorination is indicative of its availability to organisms. Total cyanide includes the cyanide that is amenable and that is not amenable to chlorination. Because the total cyanide concentrations detected in the samples from the site are less than 40 mg/kg, the concentrations detected in the soil at the Former Rail Yard are well below the USEPA soil screening levels for amenable cyanide.

The Toxicity Characteristic Leaching Procedure (TCLP) analysis of 5 subsurface composite samples indicated that only barium is present in leachable quantities. Barium concentrations ranged from 0.2 to 0.6 :g/L in the samples of fill material, well below the USEPA Maximum Concentration Value for Toxicity Characteristics of 100 :g/L for barium.

- Malcolm Pirnie, Inc., Supplemental Investigation Report. Hanna Furnace Site, the Former Railroad Yard (Parcel 1), Revised January 2001.

  Based on the results of Malcolm Pirnie's investigation of the railroad yard, the NYSDEC requested additional activities to better characterize the Former Railroad Yard Area. The additional investigatory activities included the installation and sampling of monitoring wells, the characterization of fill piles, and the characterization of blue material encountered at depth in borings.

To address outstanding issues at the Former Railroad Yard, Malcolm Pirnie implemented a Supplemental Investigation in 2000, which included the drilling of seven borings for characterization purposes. Three of those borings were completed as monitoring wells and were sampled as part of the Supplemental Investigation. Additionally, the characterization of on-site debris piles was performed and included a thorough inventory and a test pit program and sample collection. The results of the Supplemental Investigation were detailed in the July 2000 Supplemental Investigation Report, and are discussed below.

Drilling activities were conducted from January 24 through January 26, 2000 and included the advancement of seven borings and the installation of shallow groundwater monitoring wells in three those borings. The borings and monitoring wells were designated B-37 through B-40 and MW-001 through MW-003, respectively.

Additional Characterization of Blue-Colored Fill Material

During the January 1999 characterization, a blue-colored layer of fill material was encountered beneath the majority of the Former Railroad Yard. To further characterize the chemical composition of the blue material, additional samples were collected from completed borings during the Site Characterization and Supplemental Investigation.

Soil that is described as blue soil, especially Prussian Blue, is often a result of industrial activities, and often contains cyanide at very high concentrations. The blue-colored material at the Hanna Furnace Site is not a Prussian Blue color. The color of the material ranges from grayish blue-green to grayish blue to white-gray. The blue-green material generally underlies the white-gray material, and the transition from one color to the other was sometimes observed to be at approximately the water table.

The analysis of the samples collected during the Supplemental Investigation from the blue-green colored material indicated that VOCs were detected at concentrations below the soil cleanup guidelines, and pesticides and PCBs were not detected. Two SVOCs (i.e., benzo(a)anthracene and benzo(a)pyrene) were detected at concentrations above the conservative TAGM soil cleanup guidelines.

Eight metals (aluminum, barium, beryllium, calcium, iron, magnesium, selenium, and zinc) were detected in at least one of the blue-colored soil samples at concentrations above the conservative TAGM soil cleanup guidelines.

As described in the 1999 Characterization Report, one sample was collected from the blue-green material in boring BS-20 for analysis of total cyanide and reactive cyanide due to concerns regarding cyanide contamination. The total cyanide concentration was low (38.8 mg/kg), and no reactive cyanide was detected in this sample. Additional samples were collected specifically for the characterization of the blue-green material during the Supplemental Investigation. These samples were analyzed for total cyanide, and the results showed that cyanide concentrations were low and ranged from 3.1 to 43 mg/kg. Groundwater samples collected from monitoring wells in areas that contain this blue-green material (MW-104, MW-105, and MW-001) contained cyanide at concentrations ranging from 20 to 90 µg/L. These concentrations are below the NYSDEC groundwater standard of 200 µg/L.

Characterization of Eastern Portion of Former Railroad Yard Area

At the request of the NYSDEC, one additional soil boring was drilled to sample the fill overburden in the extreme eastern portion of the site. Additionally, one boring was completed in the northeastern portion of the Former Railroad Yard because that area also was not characterized in previous investigations. The borings were sampled during advancement using the same techniques employed during the January 1999 investigation.

The material encountered during the drilling of the monitoring wells was similar to that encountered in the borings throughout the area. The analytical results of the soil samples collected from the two borings indicated that VOCs were detected at concentrations below the soil cleanup guidelines, and pesticides and PCBs were not detected. Only one SVOC (chrysene) was detected at concentrations above the soil cleanup guidelines. Chrysene was detected in the sample collected from boring MW-002 at a concentration of 480 µg/kg, slightly above the soil cleanup guideline of 400 µg/kg.

Nine metals (aluminum, arsenic, beryllium, calcium, copper, iron, magnesium, selenium, and zinc) were detected in at least one of the soil samples at concentrations above the soil cleanup guidelines.

Debris Pile Characterization

Numerous debris piles of admixed soil and construction debris have been documented and were observed in the Former Railroad Yard during the January 1999 site characterization effort. The debris piles are generally located along the southern and southeastern perimeters of the Former Railroad Yard Area.

Since these piles had not yet been sampled for chemical analyses, a thorough inventory and sampling program was implemented during the Supplemental Investigation to characterize the contents of the debris piles. To best characterize the debris piles, Malcolm Pirnie verified and updated the inventory to provide an accurate estimate of the number, location, volume, and apparent contents of all on-site debris piles.

Debris Pile Inventory

As part of the Supplemental Investigation, Malcolm Pirnie verified Ecology and Environmental Inc.'s 1997 soil pile inventory and amended the inventory to include the contents of the debris piles. Malcolm Pirnie's estimate of the volume of all above grade debris in the piles is approximately 24,000 cubic yards**.** The materials observed in the debris piles during the investigation were generally categorized as construction and demolition debris mixed with sand and gravel with occasional railroad ties, slag, and metal refuse.

Debris Pile Screening and Sampling

Subsequent to an inventory of all debris piles, sampling of the debris was performed. A backhoe was used to breach select debris piles to ascertain the contents and provide access to non-weathered debris for sampling. Samples were visually characterized and screened for VOCs using a PID equipped with a 10.2 eV lamp and the observations were recorded on the stratigraphic logs.

A total of 20 debris pile test pits designated SS-1 through SS-20 were excavated on January 23 and 24, 2000, and one sample was collected from each test pit. The Supplemental Investigation Report includes a descriptive log for each sampled excavation. The 20 debris pile samples were submitted to the laboratory for analysis of TCL VOCs, SVOCs, pesticides, and PCBs, and TAL metals plus cyanide**.**

The analytical results of the debris pile sampling indicated that no VOCs were detected at concentrations above the soil cleanup guidelines. Aldrin was the only pesticide detected above the soil cleanup guidelines. Aldrin was detected in three samples, but the concentrations exceeded the soil cleanup guidelines in only sample SS-4. PCBs were detected in two samples at concentrations above the soil cleanup guidelines.

Only six SVOCs were detected at concentrations exceeding the conservative TAGM soil cleanup guidelines. These six compounds are PAHs, and were also

detected in samples collected during the 1999 Site Characterization. The concentrations of these compounds detected in the soil/fill material are primarily within the range typically found in urban soils. Because PAHs are formed through anthropogenic combustion processes such as the burning of coal, oil and gasoline, they are generally ubiquitous in soils, especially urban soils. The presence of PAHs at this site is consistent with its urban location and past use as a railroad yard. Eleven metals were detected in at least one debris pile sample at concentrations above the soil cleanup guidelines.

Groundwater Characterization Results

Based on the findings of the Supplemental Investigation, the groundwater flow direction at the Former Railroad Yard is generally north and west, toward the canal. This groundwater flow direction is consistent with that described during previous investigations. No VOCs or SVOCs were detected in the groundwater samples above the Class "GA" Groundwater Quality Standards. Pesticides and PCBs were not detected in the groundwater samples. Six metals (iron, magnesium, manganese, selenium, sodium, and thallium) were detected at concentrations exceeding the standards in at least one groundwater sample.

- Malcolm Pirnie, Inc., Remedial Action Work Plan. Hanna Furnace Site, The Former Railroad Yard Area (Parcel 1), pH Investigation, 2001.

  A total of five soil borings were completed around monitoring wells MW-104 and MW-105 in January 2001 to assess whether the high pH observed in the groundwater in the wells was due to grout contamination of the wells. Groundwater was collected from each boring using either a bailer or a bottle lowered on a string. The pH of each groundwater sample was measured using a portable pH meter that was calibrated immediately prior to the start of the boring program. The pH of the groundwater collected from these five borings ranged from 10.00 to 11.53.

  Based on the results of the boring program, Malcolm Pirnie completed on May 17, 2001 a total of 10 test pits to delineate the areal extent of high pH in the groundwater in Parcel 1. Groundwater was collected from each test pit either by lowering a bottle into the excavation or by collecting water from the backhoe bucket. The pH of each groundwater sample was measured using a portable pH meter that was calibrated immediately prior to the start of the test pit program. The pH of the groundwater collected from these five borings ranged from 8.67 to 11.95. The results of the pH Investigation were reported to the NYSDEC in a June 6, 2001 letter report.

- O"Brien and Gere, Engineers Inc., Site Investigation Report, Hanna Furnace Site (Parcel 2), June 2002.

  In July/August 2001 Environmental Resources Management (ERM) performed a site investigation at Parcel 2 of the Hanna Furnace property on behalf of the NYSDEC. ERM conducted the investigation in accordance with the Work Assignment prepared by O'Brien and Gere Engineers, Inc. and the NYSDEC. The investigation consisted of installation of soil borings, installation of new groundwater monitoring wells, and excavation of test pits. Samples from soil borings were analyzed for VOCs, SVOCs, PCBs, and target analyte list (TAL) metals. Groundwater samples were analyzed for VOCs, SVOCs, PCBs, and TAL metals. Fourteen test pits were completed in Parcel 2 to evaluate the nature and extent of NAPL that was discovered during the 2001 Malcolm Pirnie investigation. Soil and groundwater samples were collected from two test pits and analyzed for SVOCs, PCBs, and TAL metals.

  The 2001 ERM investigation, as well as previous investigations, indicate that of the existing contaminants detected in soil and groundwater within the Site, SVOCs (PAHs in particular), and metals were the most prevalent. VOCs and PCBs were sporadically detected and when encountered, were detected at concentrations below SSALS, and regulatory soil and groundwater standards or guidance. An area of elevated pH in groundwater and areas of NAPL-impacted soils were also encountered.

MALCOLM PIRNIE

The Remedial Plan

SECTION 3

Based on previous investigations completed at the Buffalo Lakeside Commercial Park (BLCP) and analytical results of prior sampling in Parcels 1 and 2, Remedial Action Work Plans were developed that fulfill requirements of the NYSDEC's Brownfield Cleanup Program. The Remedial Plans define the scope of work activities necessary to remediate these Parcels commensurate with the proposed intended end use of the BLCP. The specific clean up objectives presented in the Malcolm Pirnie February 2002 Remedial Action Work Plan for The Former Railroad Yard (Subparcel 1) and Obrien & Gere's Remedial Action Work Plan Hanna Furnace Site: Subparcel 2 are briefly outlined below.

3.1 Description of Brownfield Cleanup Objectives

Detailed listings of the various cleanup objectives for the Hanna Furnace - Former Railroad Yard Site (Parcel 1) and Manufacturing Area (Parcel 2) are presented in Remedial Action Work Plan(s). The proposed cleanups have been designed to be protective of human health and the environment by covering the soil and fill material with asphalt, concrete, or clean soil. Because VOCs were not detected in the samples collected in the Former Railroad Yard and sporadically detected at concentrations below site-specific action levels in the Former Manufacturing Area, the primary exposure pathway for contaminants at the site (metals and PAHs) is via direct contact. The proposed plan of covering the on-site fill material will eliminate the potential for direct contact with soil and is therefore protective of human health and the environment.

During invasive redevelopment activities such as the construction of buried utilities, fill material will be excavated in accordance with the Soil/Fill Management Plan contained in

the Remedial Work Plan(s). It is expected that the material excavated will contain concentrations of contaminants similar to those encountered during investigations previously conducted at the site. However, due to the nature of subsurface investigations, it is possible that localized zones of more significant contamination may be encountered. To define areas of soil/fill that will require additional cleanup, site-specific action levels (SSALs) have been established for soil/fill at the site. The SSALs are specific concentration limits for the parameters of concern that, when exceeded, trigger the need for remediation. The list of SSALs for the site is presented in Table 3-1.

Protection of the off-site community, which includes surrounding residents and businesses as well as potential future commercial and public users of the site during the redevelopment period, will be addressed through a Community Air Monitoring Plan and a Soil/Fill Management Plan. The Community Air Monitoring Plan establishes specific requirements for air monitoring and procedures to mitigate off-site migration of airborne particulates and vapors during the remediation and redevelopment periods. The Soil/Fill Management Plan provides requirements for handling of soils/fill excavated during redevelopment (i.e., for foundation and subsurface utilities) and for placement of final, clean vegetated cover material or paving over exposed soil/fill in all redeveloped areas of the site.

3.2 Summary of Brownfield Cleanup Activities

In order to eliminate potential exposure risks associated with direct contact with site fill material, the Former Railroad Yard and Manufacturing Areas will be covered as part of site redevelopment. The cover system will be placed directly on top of the regraded on-site fill material and will include clean soil for outdoor, vegetated areas; asphalt for roads and parking lots; or concrete for sidewalks, buildings and heavy use areas. Surface coverage over the redeveloped Parcels will be required by the site owner or developer as a pre-condition of occupancy. The site cover system will be maintained in accordance with the OM&M Work Plan and the Brownfield Cleanup Agreement.

During excavation activities at the site, the soil/fill will be inspected for staining and will be field screened for the presence of volatile organic compounds (VOCs) with a

photoionization detector (PID). Excavated soil/fill that is visibly stained or produces elevated PID readings (i.e., sustained 10 ppm or greater) will be considered potentially contaminated and stockpiled on the Hanna Furnace site for further assessment. The potentially contaminated soil will be stockpiled on polyethylene sheeting and then sampled for reuse, treatment or disposal. The stockpiled potentially contaminated soil will also be completely covered using polyethylene sheeting to reduce the infiltration of precipitation and the entrainment of dust. Soil/fill containing one or more constituents in excess of the site-specific action levels (SSALs) will be transported off-site to a permitted waste management facility. Any analytes that do not have a corresponding SSAL and are detected at concentrations above the soil cleanup guidelines (TAGM 4046) will be transported off-site to a permitted waste disposal facility unless otherwise agreed by the NYSDEC. Soil/fill awaiting analytical results or awaiting transportation will be stored on-site under polyethylene sheeting.

Excavated or disturbed soil/fill, which exhibits no staining or elevated PID readings, and has been analyzed and found to meet SSALs, may be used as subgrade or excavation subgrade backfill. All excavations or disturbances must be backfilled as soon as the work allows.

3.3 Cleanup Schedule

Due to the nature of commercial and industrial site development, the specific schedule for the BLCP redevelopment activities, including the remedial actions, is not currently known. However, it is anticipated that the Former Railroad Yard and Manufacturing Areas will be completely redeveloped in approximately ten years.

The Krog/CertainTeed Project Site redevelopment reached substantial completion in January 2005. Final site grading and installation of grass and other vegetative cover is scheduled to be completed in Spring 2005.

MALCOLM PIRNIE

TABLE 3-1
SITE-SPECIFIC ACTION LEVELS
CITIZEN PARTICIPATION PLAN
CERTAINTEED SITE - PORTIONS OF HANNA FURNACE PARCELS 1 AND 2

PARAMETER	NYSDEC TAGM VALUES[1]	EASTERN U.S. BACKGROUND RANGE[1]	MAXIMUM CONCENTRATION DETECTED[2]	SITE-SPECIFIC ACTION LEVEL[3]
VOLATILE ORGANIC COMPOUNDS (ug/kg)				
TOTAL VOCs	10,000	-	265	10,000[5]
SEMIVOLATILE ORGANIC COMPOUNDS (ug/kg)				
TOTAL SVOCs	500,000	-	80,750	500,000[3,5]
PESTICIDES / PCBs (ug/kg)				
Total Pesticides	10,000	-	500	10,000[5]
Total PCBs (surface-0 to 1')	1000	-	3820	1000
Total PCBs (subsurface-below 1')	10,000	-	Not Detected	10,000
METALS (mg/kg)				
Arsenic	7.5 or SB	3 - 12	61.7	50
Barium	300 or SB	15 - 600	327	500
Cadmium	(10)	0.1 - 1	19.9	20
Chromium	(50)	1.5 - 40	4,700	200
Lead	(1000)	4 - 500	3,300	1,000
Mercury	0.1	0.001 - 0.2	0.67	1.0
Selenium	2 or SB	0.1 - 3.9	35.9	50
Silver	SB	-	1,170	1,000
Cyanide	1,600[4]	-	43	50

Notes:

(1) Soil Cleanup Guidelines and Eastern U.S. Background Range from NYSDEC TAGM 4046 (1/24/94). Value in parentheses are NYSDEC revised values for nonresidential sites but have not yet been incorporated into TAGM 4046.

(2) Maximum concentration detected during Recra Environmental, Inc.'s 1988 investigation, ABB Environmental Services' 1995 investigation, and Malcolm Pirnie's 1999 and 2000 investigations.

(3) In addition to the SSAL of 500,000 ug/kg for total concentrations of SVOCs, the SSAL for each individual SVOC is 50,000 ug/kg.

(4) USEPA Region 3 Soil Screening Level for cyanide.

(5) Total concentration is the sum of concentrations of Target Compound List (TCL) compounds plus estimated concentrations of Tentatively Identified Compounds (TICs).

- Soil cleanup guideline or background range not available.

photoionization detector (PID). Excavated soil/fill that is visibly stained or produces elevated PID readings (i.e., sustained 10 ppm or greater) will be considered potentially contaminated and stockpiled on the Hanna Furnace site for further assessment. The potentially contaminated soil will be stockpiled on polyethylene sheeting and then sampled for reuse, treatment or disposal. The stockpiled potentially contaminated soil will also be completely covered using polyethylene sheeting to reduce the infiltration of precipitation and the entrainment of dust. Soil/fill containing one or more constituents in excess of the site-specific action levels (SSALs) will be transported off-site to a permitted waste management facility. Any analytes that do not have a corresponding SSAL and are detected at concentrations above the soil cleanup guidelines (TAGM 4046) will be transported off-site to a permitted waste disposal facility unless otherwise agreed by the NYSDEC. Soil/fill awaiting analytical results or awaiting transportation will be stored on-site under polyethylene sheeting.

Excavated or disturbed soil/fill, which exhibits no staining or elevated PID readings, and has been analyzed and found to meet SSALs, may be used as subgrade or excavation subgrade backfill. All excavations or disturbances must be backfilled as soon as the work allows.

3.3 Cleanup Schedule

Due to the nature of commercial and industrial site development, the specific schedule for the BLCP redevelopment activities, including the remedial actions, is not currently known. However, it is anticipated that the Former Railroad Yard and Manufacturing Areas will be completely redeveloped in approximately ten years.

The Krog/CertainTeed Project Site redevelopment reached substantial completion in January 2005. Final site grading and installation of grass and other vegetative cover is scheduled to be completed in Spring 2005.

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Contact Information

SECTION 4

4.1 NYSDEC and NYSDOH Contacts

The list below identifies names, addresses and phone numbers of contact people within the NYSDEC and NYSDOH who can answer questions and address public concerns about the site:

Mr. David Locey
Project Manager
NY State Dept. of Environmental Conservation
270 Michigan Avenue
Buffalo, New York 14203
(716) 851-7220

Mr. Matthew J. Forcucci
Environmental Health Specialist II
NY State Dept. of Health
584 Delaware Ave.
Buffalo, New York 14202
(716) 847-4501

4.2 Document Repositories

Documents related to the Hanna Furnace Site / Buffalo lakeside Commerce Park, are available for public review at the document repositories that NYSDEC has established at the following locations:

Buffalo & Erie County Public Library
JP Dudley Branch
2010 So. Park Avenue
Buffalo, New York 14220
(716) 823-1854
Sun: 1:00 p.m. - 5:00 p.m.

Hours of Operation:
M/F/Sat 10:00 a.m.-6:00 p.m.
Tue: 12:00 p.m. - 8:00 p.m.
W: Closed
Th: 12:00 p.m. - 8:00 p.m.

NY State Dept. of Environmental Conservation
Region 9 Offices
270 Michigan Avenue
Buffalo, New York 14203
(716) 851-7220

Hours of Operation:
M-F, 8:30 a.m.- 4:45 p.m.
(by appointment only)

Contact: Mr. David Locey, Project Manager

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List of Planned Citizen Participation Activities

SECTION 5

Table 5-1 shows the citizen participation activities that have been and will be performed during the redevelopment and cleanup of the Krog/CertainTeed Project Site. The adjacent time line indicates when each activity is tentatively scheduled to be completed and will be updated as necessary to reflect the actual completion dates.

Additional citizen participation activities may be conducted based on the amount of citizen interest shown at the site. Community involvement is important to ensure that the cleanup does not impose a negative impact on people living and working near/on the site. Additional citizen participation-related activities that will be completed specific to the site will involve updating the document repositories with reports and other documentation, as they become available.

TABLE 5-1

CITIZEN PARTICIPATION ACTIVITIES - BROWNFIELD CLEANUP PROGRAM
CERTAINTEED SITE - PORTIONS OF PARCELS 1 AND 2 OF HANNA FURNACE

CITIZEN PARTICIPATION PLAN

Activity	Activity Completion Point	Anticipated Activity Completion Date	Actual Activity Completion Date
Develop Citizen Participation Plan	Once BCP Application is deemed complete by NYSDEC.	8/16/2004	February and November of 2002
Mail Voluntary Cleanup Agreement Fact Sheet	Prior to Construction	-	2/1/2002 (Attachment B)
Mail Remedial Action Complete/Remedial Action Report Under Review Fact Sheet	When construction is complete	Mar-05	Pending (Draft: Attachment B)
Update mailing list	As needed during construction	August 2004 through June 2005	Feb-05

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SECTION 6

Mailing List

The mailing list is used to provide information to area residents, elected officials, media and other interested parties who want to be kept informed about the Buffalo Lakeside Commerce Park (CertainTeed Site). A copy of the list is presented in Attachment B, as part of the Remedial Action Complete/Remedial Action Under Review Fact Sheet. If you would like to request your name be added to the list, please contact Mr. Michael Podd, Citizen Participation Specialist in the DEC Region 9 Office at (716) 851-7220.

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SECTION 7

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Recra Environmental. *Site Characterization and Environmental Assessment*. August 1988.

Rupley, Bahler and Burke. *Solid Waste Management Facility Report*. 1979.

United States Geological Survey. *Draft Report of Preliminary Evaluation of Chemical Migration to the Niagara River from Hazardous Disposal Sites in Erie and Niagara Counties*. 1983.

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APPENDIX

Glossary

A

APPENDIX B
Citizen's Glossary of Environmental Terms

This glossary lists common terms related to New York State Department of Environmental Conservation's voluntary cleanup, brownfield, and inactive hazardous waste disposal site programs. It includes some terms used by the United States Environmental Protection Agency"s (EPA) Superfund program. Glossary explanations should help you understand various environmental concepts. Some words within the definitions are in bold, which indicates that they are defined elsewhere in the glossary.

The following do not constitute the state's official use of terms and phrases for regulatory purposes, and nothing in this document should be construed to alter or supplant any other state document. The glossary includes brief definitions of some contaminants frequently found at remediation sites. However. not all contaminants found at remediation sites are included, nor are the listed contaminants found at every site.

Acid — Chemicals that have a high concentration of hydrogen ions. Acids have a **pH** of less than 7 on a scale of 0 to 14. Strong acids, closer to 0 on the scale are corrosive, and weak acids, with a pH closer to 7, are not. An acid is the opposite of a **base**.

Activated carbon — A highly absorbent form of carbon, formed primarily from coal and lignite, that absorbs organic compounds. "Activated carbon treatment systems" are used to remove odors and toxic substances from liquid or gaseous emissions.

Acute effects — Health effects that have a rapid onset, a short course, and pronounced symptoms and termination. A reaction that occurs shortly after exposure to a chemical.

Acute exposure — A single, short contact with a chemical. It may last a few seconds or a few hours, but no longer than a day.

Administrative order on consent — See **Consent order**

Administrative record — Part of a site's **Record of Decision** (ROD) which lists and defines documents used in the development of DEC's decision about selection of a **remedial action.**

Adsorb/ Adsorption — Molecules of gas, liquid, or dissolved solids that adhere or "stick" to the surfaces they come in contact with. Some chemicals adsorb strongly to soil particles. This differs from *absorb:* "to take up or make part of the existing whole," like a sponge absorbs (sucks up) water.

Air sparging — Injecting air or oxygen into an **aquifer** to strip or flush volatile contaminants as air bubbles up through the ground water. The air is captured by a vapor extraction system. (See **soil vapor extraction system).**

Air stripping — A treatment system that removes or "strips" **volatile organic compounds** from contaminated groundwater or surface water by forcing an airstream through the water and causing the compounds to evaporate.

Ambient	The surrounding environment. Ambient usually refers to the surrounding outdoor air, water, or land.
Anaerobic	Absence of oxygen. Some organisms, such as certain soil bacteria, thrive under anaerobic conditions in soil.
Arsenic	An element used in wood preservatives and pesticides.
Applicable or Relevant and Appropriate Requirements (ARARs)	Any state or federal statute that pertains to protection of human life and the environment in addressing specific conditions or use of a particular cleanup technology at a **Superfund** site.
Aquifer	An underground water-bearing formation of soil or rock commonly used for drinking water.
Aquifer recharge	See **Recharge**
Attenuation	The process by which a compound is reduced in concentration over time, through absorption, adsorption, degradation, dilution, and/or transformation.
Availability session	A scheduled gathering of program staff and members of the public in a casual setting, with or without a formal presentation or agenda but usually focusing on a specific aspect of a site's remedial process.
Background, Background level	The **concentration** of a substance in air, water, or soil that occurs naturally or is the result of human activities not related to a hazardous waste site; conditions in the area near, but not affected by, a hazardous waste site. "Background samples" are often taken to compare an area's natural or pre-existing conditions to conditions at a hazardous waste site.
Barrier protection layer	A layer of soil covering a **geomembrane** designed to protect the geomembrane from wear and tear caused by the weather, animals, etc.
Base	Bases are chemicals that have a large concentration of hydroxyl (one hydrogen plus one oxygen atom) ions. A basic compound has a **pH** of more than 7 on a scale of 0 to 14. Strong bases, pH closer to 14, are corrosive. Weak bases, with pH closer to 7, are not. An **acid** can neutralize the effects of a base.
Bedrock	The continuous solid rock of the continental crust. Bedrock can be found anywhere from the surface to hundreds of feet below ground. Bedrock can be solid or it can contain numerous cracks (fractures). Groundwater and chemicals can move through fractured bedrock.
Bentonite	A very fine clay, expansible when moist, commonly used to provide a tight seal around a monitoring well. Also used in **slurry walls.**

Bioaccumulation	The build-up of toxic materials in body tissues of fish and animals.
Bioavailability	The extent to which a substance can readily be absorbed by an organism or is ready to interact in an organism's metabolism
Bioremediation	The **degradation** (breakdown) or stabilization of contaminants in the environment by microorganisms. There are many **remedial** techniques that use microorganisms, such as bacteria, to break down contaminants. Any of these techniques may be called bioremediation.
Biota	All the living organisms in a given area.
Borehole	Hole made with drilling equipment.
Boring	See **Soil boring**
Brownfield	Abandoned, idled, or under-used properties where expansion or redevelopment is complicated by real or perceived environmental contamination. Brownfield sites can pose environmental, legal, and financial burdens on a community and its taxpayers. New York State provides funds through the **1996 Clean Water/Clean Air Bond Act** to help municipalities that own brownfields but are not responsible for the contamination to investigate and clean up these sites. Brownfields cleaned up using Bond Act funds are also called Environmental Restoration Projects. The U.S. Environmental Protection Agency has a similar brownfield initiative.
Cap	See **Landfill cap/ Landfill cover system**
Carbon adsorption	A process by which contaminants are removed from groundwater or surface water when the water is forced through tanks containing **activated carbon,** a material that attracts the contaminants.
Carbon tetrachloride	A colorless, nonflammable liquid with a characteristic odor used as a solvent and in the synthesis of fluorocarbons.
Carcinogen	A cancer-producing substance.
Carcinogenic	Capable of producing or inciting cancer.
CERCLA	See **Comprehensive Environmental Response, Compensation, and Liability Act**
Chlorinated hydrocarbons	Chemicals containing only chlorine, carbon, and hydrogen. These include some pesticides, such as DDT and heptachlor, and solvents such as **trichloroethene and chloroform.**
Chlorinated organics	See **Chlorinated Solvents**

Chlorinated solvents	A group of organic (carbon-containing) solvents which contain chlorine as a part of their molecular structure. Chlorinated solvents are widely used for metal parts cleaning, chemical processing, and photographic film making. Common chlorinated solvents include **chloroform, methylene chloride, carbon tetrachloride, trichloroethene, tetrachloroethene, and 1,1,1-trichloroethane.**
Chloroform	A clear, colorless liquid with a characteristic odor. Chloroform was one of the earliest general anesthetics but this use was abandoned due to toxic effects. Now it is widely used as a solvent in the production of lacquer, pharmaceuticals, fluorocarbons, and plastics.
Chronic effects	A long-term or repeated reaction that occurs after an exposure to a chemical. Chronic effects are the opposite of **acute effects**.
Citizen participation (CP)	A process to inform and involve citizens in the decision-making process during identification, assessment and **remediation of inactive hazardous waste sites.** This process helps to assure that sound decisions are made from environmental, human health, economic, social and political perspectives.
Citizen participation plan	A document that describes the site-specific citizen participation activities that will take place to complement the investigation and clean-up activities at a hazardous waste site. A plan may be updated or altered as public interest or the technical aspects of the program change.
Citizen participation record	A series of documents prepared at a major remedial stage which describes the citizen participation activities required at that stage. A CP record also directs a scoping process to determine if additional citizen participation activities are appropriate and feasible.
Citizen participation specialist	A DEC staff member within the Division of Public Affairs and Education who provides guidance, evaluation and assistance to help the project manager carry out the site-specific citizen participation program.
Classification	See **Site classification**
1996 Clean Water/ Clean Air Bond Act	Provides $1.75 billion for priority environmental programs to ensure further protection of New York's air, water and natural resources, $200 million of which funds the Environmental Restoration Program, also known as the **Brownfield** Program, to provide financial assistance to municipalities for the investigation and for cleanup of municipally-owned potentially contaminated properties. The municipality may then return these properties to productive use or can market them for redevelopment.
Cleanup	Action taken to respond to a hazardous material release or threat of a release that could affect humans and/or the environment. Also called **remedial action, removal action,** response action, or corrective action.

Combustion	Burning.
Comment period	A time period for the public to review and comment on various documents and **Division of Environmental Remediation** (DER) actions. For example, a 30 day comment period is provided when DER issues a **Proposed Remedial Action Plan** (PRAP).
Community relations	The Environmental Protection Agency's program to inform and involve the public in the **Superfund** process and respond to community concerns.
Community Relations Plan (CRP)	The formal plan for Environmental Protection Agency community relations activities at a **Superfund** site. The CRP is designed to ensure citizen opportunities for public involvement and allow citizens the opportunity to learn about a site.
Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA)	A Federal law passed in 1980 and modified in 1986 by the Superfund Amendments and Reauthorization Act. CERCLA created a special tax that goes into a trust fund, commonly known as **Superfund,** to investigate and clean up abandoned or uncontrolled hazardous waste sites. Under the program, EPA can either pay for site cleanup when parties responsible for the contamination cannot be located or are unwilling or unable to perform the work; or take legal action to force parties responsible for site contamination to clean up the site or pay back the federal government for the cost of cleanup.
Cone of depression/ Cone of influence	A depression in the **water table** that develops around a pumped well.
Concentration	The amount of one substance in another substance. For example, a concentration of 10 milligrams per liter means there are 10 milligrams of a substance in 1 liter of another substance.
Conceptual design	The general outline of planned actions that will be taken to address a hazardous waste site, such as building a **landfill cover system.** The conceptual design is incorporated into detailed design documents during **Remedial Design.**
Consent order	A legal and enforceable negotiated agreement between DEC and responsible parties where **responsible parties** agree to undertake investigation and cleanup or pay for the costs of investigation and cleanup work at a site. Also called an "Order on Consent."
Construction and demolition (C&D) debris/ waste	Waste building materials, dredging materials, tree stumps, and rubble resulting from construction, remodeling, repair, and demolition of homes, commercial buildings and other structures and pavements.
Contact list	Names, addresses and/or telephone numbers of individuals, groups, organizations and media interested and/or affected by a particular hazardous waste site. The DEC mails site-related information to the contact list, also called a mailing list.

Contaminant	Any physical, chemical, biological, or radiological substance or matter that has an adverse effect on air, water, or soil.
Contamination	Microorganisms, chemicals, toxic substances, wastes, or wastewater introduced into water, air, or soil in a concentration that makes the medium unfit for its next intended use. Objects such as building surfaces can also contain contamination.
Contaminant mass	The volume and area of contaminants in a polluted material, such as soil or groundwater. The goal of waste cleanup is to reduce the contaminant mass (e.g., reduce the amount and area of contaminants in soil).
Contaminant plume	see **Plume**
Contract Laboratory Program (CLP)	The Environmental Protection Agency's program that approves laboratories that provide chemical testing services of known quality using a wide range of standard methods and maintaining consistent quality control.
Corrosive	Having the power to degrade or wear away a material by chemical action.
Cost recovery	A legal process where **potentially responsible parties** can be required to pay back the federal or state government for money spent on cleanup actions. Cost recovery actions usually begin after the government has completed a site cleanup.
Cover material	(1) Soil used to cover compacted solid waste in a sanitary landfill. (2) See **Landfill cap/landfill cover system.**
Cover system	See **Landfill cap/landfill cover system**
Deed notification	A notice placed on a property deed to alert future buyers about contamination on a property.
Deed restriction	A legal restriction placed on a property deed to restrict future uses of a contaminated property. For example, a deed restriction may prohibit future housing development on a contaminated industrial site, or prohibit use of contaminated groundwater on a piece of property.
Degradation products	**Chlorinated solvents,** when released in the environment, will naturally degrade by microbial and physical processes in soil and/or groundwater into similar compounds that have fewer chlorine atoms. These new compounds are known as degradation products. For instance, **tetrachloroethylene,** which has 4 chlorine atoms, degrades to **trichloroethylene,** which has only 3 chloride atoms.
Degreaser	Chemical used to remove grease, usually from metal or plastic.

Delist/delisted/delisting Many sites that have been cleaned up are delisted, meaning they are removed from the **State's Registry of Inactive Hazardous Waste Disposal Sites** Sites that are delisted can fall into one of three categories:

D1: No consequential amount of hazardous waste was confirmed at the site.
D2: **Remedial actions** have been completed at the site and no further action is required.
D3: Site was combined with another site on the **Registry of Inactive Hazardous Waste Disposal Sites.**

Dense Non-Aqueous Phase Liquid (DNAPL) Liquids denser than water that represent a special class of soil and groundwater contaminants with unique behavior and problems. Since they are denser than water, DNAPLs can sink deeper into the ground and can act as a continuing source of groundwater contamination, as small amounts of the material can dissolve in groundwater.

Density The mass of a substance per unit of volume. Substances with a density greater than 1.0 are denser than water, substances with a density less than 1.0 are lighter than water.

Dermal By or through the skin. "Dermal contact" refers to a substance coming in contact with skin.

Desorption The opposite of **adsorption** or absorption; molecules detach from a surface (such as soil particles).

Detection limit The lowest concentration of a chemical that can be reliably measured by a testing method.

Dewater (1) Remove a portion of the water in soil or sludge to dry the soil/ sludge so it can be treated or disposed of. (2) Remove or drain the water from a tank or trench.

1,1-Dichloroethane (1,1-DCA) and 1,2-Dichloroethane (1,2-DCA) Chemicals with similar molecular structures used to produce a variety of consumer and industrial products, such as specialty chemicals and cleaning products. These chemicals are sometime found at hazardous waste sites as the **degradation** products of other chemicals, such as **trichloroethane.**

Dichloroethene or 1,1-Dichloroethene (DCE) and 1,2-Dichloroethene Chemicals with similar molecular structures used to make specialty chemicals and pharmaceuticals. These chemicals are sometimes found at hazardous waste sites as the **degradation products of trichloroethene.**

Diffusion Movement of a substance from an area of high concentration to an area of low concentration. Diffusion can also refer molecules of gas or vapor moving from a source, such as a bottle, to a receptor, such as a human nose.

Division of Environmental Enforcement	A unit within the DEC which works with the **Division of Environmental Remediation** to negotiate agreements with responsible parties for the investigation and remediation of hazardous waste sites. A negotiated agreement is contained in a **consent order.**
Division of Environmental Remediation	Formerly the Division of Hazardous Waste Remediation, a major unit within the DEC created to manage the hazardous waste site remedial program from site discovery through **Operation and Maintenance** activities. Staff include: engineers, geologists, chemists, attorneys, citizen participation specialists, environmental program specialists and support staff.
Document Repository	Typically, a DEC regional office and/or a public building, such as a library, near a particular site, at which documents related to **remedial** and **citizen participation** activities at the site are available for public review. Environmental Management **Councils (EMCs),** Conservation Advisory Committees (CACs) and active local groups can also serve as document repositories.
Downgradient	The direction that groundwater flows similar to "downstream" for surface water.
Drainage Swale	See **Swale**
Drum	A metal or plastic container, usually with a 55 gallon capacity.
Dual-Phase Vacuum Extraction System	A treatment system designed to remove both contaminated groundwater and **soil gas** from a common groundwater well or wells. By removing ground-water, the system lowers the groundwater level around the well, allowing a strong vacuum to be applied to remove contaminated soil gas. The contaminated water and air can then be removed or treated and released.
Effluent	Treated or untreated wastewater that flows out of a treatment plant, sewer, or industrial outfall. Generally refers to wastes discharged to surface waters.
Enforcement	DEC's efforts, through legal action if necessary, to compel a responsible party to perform or pay for site remedial activities.
Engineered/ engineering controls	Method of managing environmental and health risks by placing a barrier between the contamination and the rest of the site, thus limiting exposure pathways.
Environmental Notice Bulletin	A weekly DEC publication used to announce a variety of DEC activities. The ENB announces proposals to **delist** or change the **site classification** of **hazardous waste sites,** as well as **voluntary cleanup agreements.**
Environmental Restoration Program/ Project	See **Brownfield**
1986 Environmental Quality Bond Act	An act passed in 1986 that gives New York State bonding authority of up to $1.2 billion to fund the State's share of the total cost of remediating hazardous waste sites

	in New York State.
Epidemiology	The study of diseases as they affect population, including the distribution of disease, the factors (e.g., age, sex, occupation) that influences this distribution; and the application of this study to control health problems.
EP Tox Test	See **Extraction Procedure**
Explanation of Significant Differences (ESD)	A document prepared by the **Division of Environmental Remediation** explaining changes to a cleanup plan called for in a **Record of Decision** and the reason for those changes.
Explosive limits	The amounts of **vapor** in air which form explosive mixtures. Explosive limits are expressed as "lower explosive limits" and "upper explosive limits;" these give the range of **vapor** concentrations in air that will explode if heat is added. Explosive limits are expressed as percent of vapor in air.
Exposure	Contact. No matter how dangerous a substance or activity, without exposure, it cannot harm you.
Exposure routes	A means by which a toxic substance can come into contact with or enter the body. The three major exposure routes are: inhalation (breathing), direct contact (touching), and ingestion (swallowing).
Ex-situ	Outside the original location. For example, contaminated that soil is dug up and removed before it is treated is being treated ex-situ. This is the opposite of **in-situ.**
Exceedance	Violation of the pollutant levels permitted by environmental protection standards.
Extraction procedure (EP Tox Test)	Determining toxicity by a procedure which simulates leaching; if a certain concentration of a toxic substance can be leached from a waste, that waste is considered hazardous, i.e., "EP Toxic."
Extraction well	A discharge well used to remove contaminated groundwater or air.
Feasibility Study (FS)	A report examining the pros and cons of alternative methods to address contamination at a hazardous waste site. The feasibility study usually recommends a certain alternative. The FS is usually based on the results of a **remedial investigation**; together, they are commonly referred to as the RI/FS.
Federal Register	A weekly publication covering federal government activity including rulemaking, proposed plans, response to public comments, etc.
Fill	Man-made deposits of natural soils or rock products and waste materials.
Fish and wildlife impact analysis	Part of a **remedial investigation** that looks at the effects or potential effects of contamination on fish and wildlife.

Flammable	Catches on fire easily and burns rapidly.
Flash point	The lowest temperature at which the vapor of a substance will catch on fire, even momentarily, if heat is applied. Provides an indication of how **flammable** a substance is.
Gas venting system	A system of pipes and vents installed in a **landfill** to prevent the build up of **landfill** gases, such as methane, that could potentially explode. Sometimes the gas vents have flares on them to burn the gas as it is released into the atmosphere. At some very large landfills, the gas is collected and used to generate electricity.
Geomembrane	A low **permeability** plastic sheet that is placed over a landfill to deter rain and snow from entering a landfill's waste. Geomembranes are often made from a plastic called HDPE (high density polyurethane). The geomembrane is covered with soil (**barrier protection layer**) and top soil to protect it.
Geophysical surveys	Techniques used to characterize the subsurface without having to dig up large areas. Examples include seismic refraction (commonly used to determine depth to bedrock), ground-penetrating radar (used to define sub-surface structures and buried objects), and **magnetometry** (used to detect buried iron objects).
Geoprobe	A special machine used to make **soil borings** and to create temporary **groundwater monitoring wells**.
Gram (g)	The unit of mass in the metric system. An ounce is about 28 grams, and a pound is approximately 450 grams.
Granular activated carbon treatment	A filtering system often used in small water systems and individual homes to remove **organic compounds**. See **activated carbon.**
Groundwater	Water found beneath the earth's surface that fills pores between soil particles such as sand, clay, and gravel or that fills cracks in bedrock. Precipitation that does not evaporate or runoff to surface waters **percolates** downward through soil and becomes groundwater. Groundwater flows from areas of high elevation to low elevation at generally low velocities (usually ranging from 10-1000 feet/year) and eventually discharges into surface waters such as rivers, lakes, and wetlands. Groundwater often provides a source of drinking water via wells. The chemical composition of the groundwater reflects the soil or bedrock through which it passes; groundwater dissolves minerals in the soil and bedrock. If a source of contamination exists at or below the earth's surface, percolating rainfall or snowmelt can transport contaminants downward where they can migrate with the groundwater.
Groundwater collection/ extraction and treatment system	A system of wells or trenches fitted with pumps and piping used to pump out or extract contaminated groundwater from the subsurface. Properly designed and operated systems can effectively contain a groundwater contaminant **plume** and

	prevent further contaminant migration.
Groundwater table	See **Water Table**
Half-life	(1) The time required for a pollutant to lose half its effect on the environment. (2) The time required for half of the atoms of a radioactive element to undergo decay. (3) The time required for the elimination of one half a total dose from the body.
Hammer mill	A high-speed machine that uses hammers and cutters to crush, grind, chip, or shred solid waste.
Hazardous ranking system (HRS)	A scoring system used to evaluate potential relative risks to public health and the environment from releases or threatened releases of hazardous materials. EPA and States use the HRS to calculate a site score (0 to 100) based on the actual or potential release of hazardous materials from a site through air, surface water, or groundwater. This score is the primary factor used to decide if a hazardous waste site should be placed on the **National Priorities List**
Hazardous Substances	(1) Under the **Comprehensive Environmental Response**, **Compensation, and Liability Act**, a hazardous substance is any element, compound, mixture, solution, or substance that, when released to the environment, may present a substantial danger to the public health or welfare or to the environment, including, but not limited to, toxic and certain other pollutants under the Federal Water Pollution Control Act, **Resource Conservation and Recovery Act**, hazardous air pollutants regulated by parts of the Clean Air Act, and **Toxic Substance Control Act** The term is much broader than the term **hazardous waste**. Sites that contain only hazardous substances are excluded from New York's **Superfund** program. (2) Any substance designated reportable by the EPA if a designated quantity of the substance is spilled in the waters of the United States or if it is otherwise emitted to the environment.
Hazardous waste(s)	By-products of society that can pose a substantial or potential hazard to human health or the environment when improperly managed. To be considered hazardous waste, the waste must possess at least one of four characteristics (ignitability, corrosivity, reactivity, or toxicity) or appear on special EPA lists.
Hazardous Waste Site	A place where **hazardous wastes** have been dumped, buried or improperly stored. Sites range from a crest of land containing thousands of tons of chemical wastes to a few drums of solvents dumped in a vacant lot. See also **inactive hazardous waste disposal site.**
Health and safety plan	A plan included in investigation or **cleanup** work plans which outlines protective measures for site workers and the community during investigation or cleanup activities.
Health hazard	Anything which can have harmful effects on health. There can be both acute and chronic health hazards.

Health risk assessment	A process which estimates the likelihood that people who could be exposed to chemicals may have health effects. The four steps of a risk assessment are: (1) hazard identification (Can this substance damage health?), (2) dose-response assessment (What dose causes what effect?), (3) **exposure** assessment (How and how much do people contact it?), and (4) risk characterization (combining the other three steps to estimate **risk**).
Heavy metals	Metals with high atomic weights, such as mercury, chromium, cadmium, arsenic, and lead. They can damage living things at low concentrations and tend to accumulate in the food chain.
Herbicide	A chemical used to control, suppress, or kill plants, or to severely interrupt their normal growth process.
Heterogeneous	Consisting of dissimilar ingredients or constituents.
Homogeneous	Having a uniform consistency or ingredients; composed of similar ingredients.
Hydraulic	Operated, moved or effected by means of water.
Hydraulic conductivity	The rate at which water can move through a **permeable medium.**
Hydraulic gradient	In general, the direction of **groundwater flow** due to changes in the depth of the **water table.** Just as water flows downhill, water in the ground moves from areas of high elevation to areas of low elevation. The slope of the water table is the hydraulic gradient. The hydraulic gradient determines the speed of groundwater flow. A steep gradient causes groundwater to mover faster than a nearly horizontal gradient.
Hydrocarbon	Any of a series of chemical compounds that consist entirely of carbon and hydrogen.
Hydrogeologic testing	Physical tests performed to obtain specific groundwater and geologic data. A pump test, for example, is used to determine the permeability (a measure of how readily **groundwater flows)** and storage capacity (a measure of the amount of water available) of an **aquifer.**
Hydrogeology	The geology of **groundwater,** with particular emphasis on the chemistry and movement of water.
Hydrology	The study of the movement and properties of water on the earth's surface, underground and in the atmosphere.
Impermeable	Unable to be penetrated, as by liquids. For example, an "impermeable membrane" can be a thin plastic sheet through which rainwater cannot move.

Inactive hazardous waste disposal site	A hazardous waste site where disposal of hazardous wastes has been confirmed and wastes are no longer being disposed of there ("inactive" site).
Incineration	Burning of certain types of solid, liquid, or gaseous materials under controlled conditions to destroy hazardous wastes
Infiltration	The penetration of water through the ground surface into subsurface soil or the penetration of water from the soil into sewer or other pipes through defective joints, connections, or manhole walls. (See: **percolation.)**
Influent	Water, wastewater, or other liquid flowing into a reservoir, basin, or treatment plant. The opposite of **effluent**.
Ingestion	Swallowing. This is one way a person can be exposed to chemicals.
Inhalation	Breathing. This is one way a person can be exposed to chemicals.
Inorganic chemicals/ compounds	Chemicals that do not contain carbon. Metals are inorganic chemicals.
In-Situ	In the original place. In-situ treatment is carried out at a hazardous waste site without having to dig up and move the contaminated material. In-situ is the opposite of **ex-situ**.
Insoluble	Incapable of being dissolved in water or another liquid.
Institutional controls	A variety of methods used to control access to a contaminated site and/or exposure to contaminants at a site. Examples of institutional controls include fencing or **deed notifications/ restrictions.**
Interim remedial measures (IRM)	Action(s) that can be conducted at a site relatively quickly to reduce the risk to people's health and the environment from a well-defined hazardous waste problem. An IRM can involve removing contaminated soil and drums, providing alternative water supplies or securing a site to prevent access.
Landfill	Any place where wastes were disposed of by dumping waste and covering it. There are three main kinds of landfills: (1) Sanitary landfills are disposal sites for nonhazardous solid wastes at which the waste is spread in layers, compacted to the smallest practical volume, and covered with material at the end of each operating day. (2) Secure chemical landfills are disposal sites for hazardous waste. They are selected and designed to minimize the chance of release of hazardous substances into the environment. (3) Old landfills were built without modern day protections; these may contain hazardous wastes. Many of these landfills are being investigated and cleaned up under the State's remediation program.

Landfill cap/ landfill cover system	A layering of material over a landfill to deter rain and snowmelt from moving through the waste pile. A typical landfill cover will include a **geomembrane** or a layer of clay covered with a layer of low **permeability** soil, which in turn is covered by a layer of topsoil and seeded to encourage grass to grow. Landfill cover systems can also include gas vents to prevent gases such as **methane** from building up inside the landfill. The cover system is designed so rain and snowmelt is directed into a drainage ditch or **swale.**
Landfill gas	As organic wastes within a landfill break down, gases such as methane and hydrogen sulfide are produced. The production of these gases drops off over time.
Leachate	Surface or groundwater that is contaminated while moving through a landfill's wastes.
Leachate collection system	A system that gathers leachate and pumps it to the surface for treatment.
Light non-aqueous phase liquid (LNAPL)	Liquids lighter than water that represent a special class of soil and groundwater contaminants with unique behavior and problems. See also **NAPL**.
Liner	A relatively **impermeable** barrier designed to keep leachate inside a landfill. Liner materials include plastic and dense clay.
List / listing	When DEC adds a hazardous waste site to the **Registry of Inactive Hazardous Waste Disposal Sites,** this is called "listing" a site.
Liter	The unit of volume in the metric system. A liter is about the same as a quart.
Magnetometer / magnetometer survey	A magnetometer is an instrument that can detect metal objects buried underground. When this instrument is used to look for buried drums or other metal objects at a hazardous waste site, this is called a magnetometer survey.
Maximum contaminant level	The maximum permissible level of a contaminant in water delivered to any user of a public water system. MCLs are enforceable standards.
Media/medium	Specific environments that can contain contaminants. Air, water, sediment and soil are media.
Metals	A number of chemical elements that share certain special characteristics. Many metals can be toxic in high doses and can **bioaccumulate** in the food **chain.** Metals sometimes found at **hazardous waste sites** include: arsenic, barium, cadmium, chromium, copper, lead, mercury, nickel, silver, and zinc.

Methane	An odorless gas produced in newer landfills as organic material (previously living things or material derived from living things) breaks down. Methane production drops off as a landfill gets older.
Methylene chloride	A colorless nonflammable liquid, with a pleasant aromatic odor, used as a solvent, paint remover, and **degreaser**.
Micrograms per kilogram (mg/kg)	A way of expressing dose: micrograms (µg) of a substance per kilogram (kg) of body weight or soil.
Micrograms per liter (mg/l)	A unit of measure: the number of micrograms of one substance in a liter of liquid: One microgram per liter means one microgram of chemical per liter of water, and is essentially equivalent to one **part per billion** (ppb). Theoretically one µg/l of a substance equals one part per billion of the substance multiplied by its **density**.
Milligrams per kilogram (mg/kg)	A way of expressing dose: milligrams (mg) of a substance per kilogram (kg) of body weight or soil.
Milligrams per liter (mg/1)	A unit of measure: the number of milligrams of one substance in a liter of liquid. One milligram per liter means one milligram of chemical per liter of water, and is essentially equivalent to one **part per million** (ppm) at very low concentrations. Theoretically one mg/l of a substance equals one part per million of the substance multiplied by its **density**.
Monitoring well	(1) A well used to obtain water quality samples or measure groundwater levels. (2) A well drilled to collect groundwater samples for testing to determine the amounts, types, and distribution of contaminants in the groundwater beneath the site. The well enables samples of groundwater to be collected at a specific horizontal and vertical location for chemical analysis. Sometimes soil samples are also collected as the well is being drilled.
National Priorities List (NPL)	The U.S. Environmental Protection Agency's list of the most serious uncontrolled or abandoned hazardous waste sites identified for possible long-term **remedial** response using money from a special trust fund **(Superfund).**
New York State Department of Health	Agency within the executive branch of New York State government which: determines potential risk from environmental exposure at hazardous waste sites; conducts health related community outreach around sites; and reviews remedial actions to assure that public health concerns are addressed.
New York State Department of Law	Agency within the executive branch of New York State government which takes the lead on hazardous waste site litigation. Litigation can involve negotiations and court action with responsible parties to clean up sites, natural resources damage claims, and recovery of remedial costs.

New York State Registry of Inactive Hazardous Waste Disposal Sites	See **Registry of Inactive Hazardous Waste Disposal Sites in New York State**
Non-aqueous phase liquids (NAPL)	Liquids, commonly a mixture of several different chemicals, that are either denser or less dense than water. **Dense NAPL** (DNAPL), such as chlorinated solvents, will sink if it enters groundwater; less dense, or **light NAPL** (LNAPL), such as gasoline, will float on the water table. NAPL in the subsurface can be a persistent source of groundwater contamination due to its low **solubility and viscosity.**
Occupational exposure limits	Maximum allowable concentrations of toxic substances in workroom air for workers.
Odor threshold	The lowest concentrations of a substance's **vapor,** in air, that can be smelled. Odor thresholds are highly variable, depending on the individual who breathes the substance and the nature of the substance.
Operable unit	An administrative term used to identify a portion of a site that can be addressed by a distinct investigation and/or cleanup approach. For example, groundwater contamination at a site may be considered as one operable unit, and soil contamination at the same site may be dealt with as a second operable unit. An operable unit can receive specific investigation, and a particular remedy may be proposed. A **Record of Decision** is prepared for each operable unit.
Operation and maintenance (0&M)	The period following construction of a remedy during which elements of the remedy must be operated and maintained. For example, after a groundwater collection and treatment system is installed (the **remedial construction** phase), operation of the groundwater collection system and treatment of the water would be part of the "Operation and Maintenance" phase of the remedial program. Activities could also include site inspections, groundwater well monitoring and other sampling.
Order on Consent	See **Consent Order**
Organic	(1) In chemistry, any compound containing carbon. (2) Referring to or derived from living organisms.
Organic compounds	Chemicals that contain carbon.
Overburden	The rock and soil in the ground above **bedrock**.
Oxidizer	A material which may cause combustible materials to ignite without the aid of an external ignition source (such as flame) or which, when mixed with combustible materials, increases the rate of burning of these materials.

Part 375	The portion of New York State regulations governing **inactive hazardous waste disposal sites.**
Part 360	New York State landfill regulations, including some regulations related to old landfills that contain hazardous waste.
Particulates	Fine liquid or solid particles such as dust, smoke, mist, fumes, or smog, found in air or emissions.
Parts per billion (ppb)	The concentration of a substance of air, water or soil. One ppb means that there is one part of a substance for every billion parts of the air, water or soil in which it is measured. One ppb is about one drop of dye in 18,000 gallons of water or about one second in 32 years. One ppb is 1,000 times less than one **part per million.**
Parts per million (ppm)	The concentration of a substance in air, water or soil. One ppm means that there is one part of a substance for every million parts of the water or soil in which it is measured. One ppm is about one drop of dye in 18 gallons of water, about the one inch in 16 miles, or one penny in $10,000.
Parts per trillion (ppt)	The concentration of a substance in air, water or soil. One ppt means that there is one part of a substance for every trillion parts of the water or soil in which it is measured. One ppt is 1,000 times less than one **part per billion.**
PCBs (polychlorinated biphenyls)	A group of toxic, persistent chemicals used in transformers for insulating purposes, in gas pipeline systems as a lubricant, and in some florescent light ballasts. The sale of PCBs was banned by law in 1979, but many old transformers still contain them.
Perchloroethene	See **Tetrachloroethene**
Percolate/ percolation	The movement of water through a porous substance such as soil.
Permeable/ permeability	The rate at which liquids pass through soil or other materials in a specified direction. Water moves easily through a "high permeability" soil (such as gravel) and very slowly through a "low permeability" soil (such as clay).
Pesticide	Substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pest. Some pesticides can accumulate in the food chain and/or contaminate the environment if misused.
pH	A measure of the acidity or alkalinity (how basic) of a liquid or solid material. It is related to the number of hydrogen ions in a substance.
Photo ionization detector (PID)	A hand-held instrument used to measure the overall level of **volatile organic compounds** in air.
Piezometer	An instrument used to measure the elevation of the **water table,** i.e. how far below the surface groundwater is located.

Plume	An area of chemicals moving away from its source in a feather-like (hence the name, plume) shape. A plume, for example, can be a column of smoke drifting away from a chimney. An area of dissolved chemicals moving with groundwater is called a "groundwater contaminant plume."
Polychlorinated biphenyls	See **PCBs**
Polycyclic aromatic hydrocarbons (PAHs)	See **polynuclear aromatic hydrocarbons**
Polynuclear aromatic hydro-carbons (PAHs)	A group of over 100 different chemicals that form during the incomplete burning of coal, oil and gas, garbage, or other organic substances like tobacco or charbroiled meat. PAHs are usually found as a mixture con-raining two or more of these compounds, such as soot. Some PAHs are manufactured. PAHs are found in coal tar, crude oil, creosote, and roofing tar, but a few are used in medicines or to make dyes, plastics, and pesticides. Most do not dissolve easily in water and stick tightly to soil particles.
Porosity	The percentage of the total volume of a given body of rock that is pore space. It is the portion of void (air) space in rock, soil, or sediment.
Potable	Drinkable.
Potentially responsible party (PRP)	Persons identified by the EPA under **CERCLA** or by New York State law as being responsible for the contamination at a hazardous waste site. By law, PRPs may be generators, present or former owners or operators of a site, or transporters of the hazardous substances.
PRAP	See **Proposed Remedial Action Plan**
Precipitation	(1) Rain or snow. (2) Removal of solids from liquid waste so that the hazardous solid portion can be disposed of safely.
Preliminary site assessment (PSA)	A PSA is the **Division of Environmental Remediation's first** investigation of a. site A PSA is performed to determine if a site meets New York State's definition of an **inactive hazardous waste disposal site** by confirming the presence of hazardous waste and determining if the site poses a significant threat to public health or the environment.
Presumptive remedy	Cleanup technique(s) that can be applied to hazardous waste sites with common characteristics. For example, old municipal landfills built without a liner often have similar characteristics. The presumptive remedy for these sites is a cover system.
Project manager	A DEC staff member within the **Division of Environmental Remediation** (usually an engineer, geologist, or hydrogeologist) responsible for the **remedial program** at

	a hazardous waste site. The project manager works with the Division of Public Affairs and Education as well as fiscal and legal staff to accomplish site-related goals and objectives.
Proposed Remedial Action Plan (PRAP)	A document outlining alternatives considered by the Division of Environmental Remediation for the **remediation** of a hazardous waste site and highlighting the alternative preferred by DEC. The PRAP is based on information developed during the site's **Remedial Investigation and Feasibility Study.** The PRAP is reviewed by the public and other state agencies.
Public hearing	A formal hearing at which the public has the opportunity to submit comments and testimony on proposed actions for the public record.
Public meeting	A scheduled gathering of DEC staff and the public to give and receive information, ask questions and discuss concerns.
Publicly owned treatment works (POTW)	A wastewater system, owned by a municipality, state, or tribe that is used for the collection, treatment, and/or disposal of sewage. Usually POTW refers specifically to the sewage treatment plant.
Pump and treat	A method used to collect and treat contaminated groundwater. Typically, groundwater is collected in a well or trench and pumped to a treatment system
Quality assurance (QA)/ quality control (QC)	A system of procedures, checks, audits, and corrective actions to ensure that environmental sampling and testing are of the highest achievable quality.
Reactivity	The ability of a substances to undergo change, usually by combining with another substance or by breaking down. Certain conditions, such as heat and light, may cause a substance to become more reactive. Highly reactive substances may explode.
Real-time monitoring	During construction or investigation activities, continuous monitoring of air with equipment that gives immediate read-outs; that is, samples don't need to be sent to a laboratory to obtain results.
Recharge	The replenishment of **groundwater** by infiltration of rain and snow through the soil.
Reclassification	A process by which the Division of Environmental Remediation redefines the threat posed by a hazardous waste site to public health and the environment by developing and assessing site information and, based on findings and conclusions, assigning the site a new classification code (see **Site Classification).**
Record of decision (ROD)	A document which provides the definitive record of the cleanup alternative that will be used to **remediate** a hazardous waste site. The ROD is based on the **Remedial Investigation I Feasibility Study** and public comment.

Registry of Inactive Hazardous Waste Disposal Sites in New York State

Often referred to as "the Registry," this is a compilation of all known and suspected hazardous waste sites (meeting certain criteria) in New York State. The Registry is compiled in a series of documents published every spring and can be purchased by the public. The document included a one page description and map of each site.

Remedial/ remediate/ remediation

Refers to any procedures or strategies used to address a hazardous waste site. For example, a Remedial Investigation determines what areas of a site need to be addressed (cleaned up or remediated), a **proposed remedial action plan** describes remedial actions (cleanup methods or corrective actions) that have been recommended for a specific site; remediation of a site could include removing contaminated soil.

Remedial action (RA)

Action taken to remove, destroy, reduce, or prevent the spread of contamination at a hazardous waste site.

Remedial alternatives report (RAR)

In New York State's **Brownfield** program, a RAR is the equivalent of a **feasibility** study.

Remedial construction

The physical development, assembly and implementation of tile alternative selected to **remediate** a site. For example, remedial construction could include installing a groundwater collection and treatment system. Construction follows a **remedial design** stage.

Remedial design (RD)

The process following finalization of a Record of Decision in which plans and specifications are developed for the implementation of the alternative selected to remediate (clean up) a site.

Remedial investigation (RI)

Studies designed to gather the data necessary to determine the type (nature) and extent (location) of contamination at a **hazardous waste site.** The RI is usually performed at the same time as a **Feasibility Study** in a process known as the "RIIFS." This process is designed to:

- Establish criteria for cleaning up the site.
- Identify and screen cleanup alternatives for remedial action; and
- Analyze in detail the technology and costs *of* the alternatives.

Remedial program

DEC's efforts to investigate and clean up **inactive hazardous waste disposal sites.** A remedial program is designed to correct or "cure"(remedy) releases or potential releases of hazardous materials into the environment. DEC takes several steps as part of each site's remedial program: it investigates contamination (**Remedial Investigation),** analyzes different methods to address threats posed by the site **(Feasibility Study),** proposes a cleanup plan **(Proposed Remedial Action Plan),** selects a final plan **(Record of Decision),** and designs and implements the plan **(Remedial Design and Remedial Construction).**

Remediation

See **remedial**

Remedy	Actions taken to prevent or mitigate the release of hazardous materials into the environment at **hazardous waste sites** and **brownfield** sites. The word "remedy", is used in the sense of a "cure" or "corrective action."
Removal action	Often less burdensome and extensive than **remedial actions,** a removal action is intended to be a quick, temporary response to a release or the threat of release of a hazardous material at a hazardous waste site. A removal action could involve removing drums of hazardous material, contaminated soil or contaminated sediment and taking these items to a proper disposal facility.
Residual / residue	The quantity of a substance, its degradation products, and/or its metabolites remaining on or in the soil or groundwater. "Residual contamination" usually refers to low levels of chemicals that may be left in soil, bedrock or groundwater after cleanup of hazardous wastes.
Resource Conservation and Recovery Act (RCRA)	Federal law governing the treatment, storage, handling, disposal, and overall management of solid and hazardous wastes.
Responsible parties	See **Potentially responsible parties**
Responsiveness summary	A formal or informal written summary and response by the DEC to public questions and comments. A responsiveness summary is prepared following a public meeting about a **Proposed Remedial Action Plan** and may also be prepared after other public meetings. The responsiveness summary may list and respond to each question, or summarize and respond to questions in categories.
Reverse osmosis	A type of pressurized filtration system in which water is forced through a semipermeable membrane that allows the passage of water but restricts many contaminants.
Risk	The chance of an injury, illness, or death caused by exposure to a hazard.
Risk assessment	The qualitative and quantitative evaluation performed in an effort to define the risk posed to human health and/or the environment by the presence or potential presence and/or use of specific pollutants.
ROD	See **Record of Decision**
Sampling	Small amounts of air, water, or soil are obtained and tested to determine the levels of different hazardous chemicals contained in them.
Sanitary landfill	See **Landfill**
Saturated zone	A subsurface area in which all pores and cracks in rock and/or soil are filled with water.

Scrubber A device for removing unwanted gases or particles from an air stream by spraying the air with liquid (usually water) or forcing air through a series of baths. Scrubbers are often put on smoke stacks.

Sediment Soil, sand, and minerals washed by rain from land into water that accumulates on the bottom of ditches, streams, rivers and lakes.

Selected alternative (1) The cleanup alternative selected by the state as the most feasible. (2) The cleanup alternative selected for a site on the **National Priorities List** based on technical feasibility, permanence, reliability, and cost.

Semi-volatile organic compounds (SVOCs) Chemicals similar to **volatile organic compounds** but that do not evaporate as readily. **Polynucleated aromatic hydrocarbons** are semi-volatile compounds.

Site classification DEC assigns **inactive hazardous waste disposal sites** classifications established by state law, as follows:

- Class 1 - A site causing or presenting an imminent danger of causing irreversible or irreparable damage to the public health or environment - immediate action required.
- Class-2 - A site posing a significant threat to the public health or environment - action required.
- Class 2a - A temporary classification for a site that has inadequate and/or insufficient data for inclusion in any of the other classes.
- Class 3 - Site does not present a significant threat to the public health or the environment - action may be deferred.
- Class 4 - A site which has been properly closed - requires continued management.
- Class S - A site which has been properly closed, with no evidence of present or potential adverse impact - no further action required.

Site Investigation/ Remedial Alternatives Report (SI/RAR) In New York's **Brownfield** program, this is the equivalent of a **Remedial Investigation / Feasibility Study** report. The site investigation is similar to a Remedial Investigation, and the Remedial Alternatives Report is similar to a Feasibility Study.

Sludge A semi-solid residue from any of a number of industrial processes or air or water treatment processes. Sludge can be a **hazardous waste**.

Slurry A watery mixture that does not contain a significant amount of dissolved materials.

Slurry Wall An underground wall designed to stop groundwater flow; constructed by digging a trench and backfilling it with a **slurry** rich in bentonite clay.

Soil boring A circular hole made in the ground by an auger or mechanical drill rig to collect soil samples deep in the ground. Representative samples are collected for testing to see if the subsoil has been contaminated. Sometimes these borings are converted into groundwater monitoring wells.

Soil gas	Air in the spaces between soil particles. Contaminants can be trapped in this air.
Soil gas survey	A method for investigating underground distributions of **volatile organic compounds** (VOCs) by looking for their vapors in the shallow **soil gas**. A small amount of soil gas is pumped out of the ground through a hollow probe driven into the ground and tested for the presence of contaminants. The presence ofVOCs in shallow soil gas indicates the VOCs may be in the unsaturated (dry) soil or in the groundwater below the probe. This survey is used to trace the outline of a groundwater contaminant **plume** and help determine the best location to install groundwater monitoring wells.
Soil Vapor Extraction System (SVE)	An **in-situ** remediation technique that applies a vacuum to a series of wells ("vapor extraction wells") and induces air flow through contaminated soil. As the air migrates through the soil, **volatile organic compounds** (VOCs) volatilize (evaporate) and move with the air to the extraction wells where they are removed from the subsurface. If the concentration of VOCs in the extracted air is high, the air maybe treated by a carbon adsorption system before being released to the atmosphere. In some cases, **dual phase vacuum extraction** is used to treat both groundwater and the overlying soil.
Solid waste	Non-liquid, non-soluble materials ranging from municipal garbage to industrial wastes that contain complex, and sometimes hazardous, substances. Solid wastes also include sewage sludge, agricultural refuse, demolition wastes, and mining residues.
Solubility	The amount of a substance that can be dissolved in water or (sometimes) another substance.
Solvent	A substance (usually a liquid) capable of dissolving one or more other substances. For example, paint remover is a paint solvent.
Sorb	To take up and hold by either **adsorption** or absorption.
Source area	An area from which groundwater contamination is believed to originate. For example, Company A spilled a 55 gallon drum of **trichloroethene** (TCE) onto the ground near a loading dock at their facility. The TCE spread through the soil and contaminated groundwater around the facility. Because the contamination originated in the loading dock area, this area is the "source area." Over time, the highly concentrated TCE in the source area would continue to slowly spread through groundwater and soil, acting as a continuous "'source" of groundwater contamination.
SPDES permit (pronounced SPEEDIES)	See **State Pollution Discharge Elimination System**

Split samples	A soil sample from a hazardous waste site that is divided between the **potentially responsible parties (PRPs)** and the DEC or the Health Department. It functions as a system of checks and balances since both the PRPs and the DEC analyze their half of the sample. The results of the two analyses can then be compared.
Split-spoon Sample	A sample of **unconsolidated** material taken by driving a sampling device (split spoon) into the soil ahead of a drill bit in a **soil boring.** A split-spoon sampler is typically driven into the soil by repeatedly dropping a weight.
Standards, criteria and guidance values	Values that indicate acceptable or normal levels of various contaminants in the environment. These values are used to establish cleanup goals at hazardous waste sites. Depending on the chemical, the values are developed by the U.S. Environmental Protection Agency, DEC and/or the New York State Department of Health.
State assistance contract (SAC)	In DEC's **brownfield** program, the official agreement between a municipality and the state that outlines both party's responsibility for a brownfield investigation and/or cleanup.
State Pollution Discharge Elimination System (SPDES) permit	A permit issued by the DEC as part of the SPDES program, which is designed to maintain New York's waters with reasonable standards of purity. State law requires a SPDES permit before construction or use of an outlet or discharge pipe for wastewater discharging into **surface water or groundwater,** and for construction or operation of disposal systems such as sewage treatment plants.
Sump	A pit or tank that catches liquid runoff for drainage or disposal.
Superfund	Federal and state programs to investigate and clean up inactive hazardous waste disposal sites. The federal program gives the U.S. Environmental Protection Agency the funding and authority to investigate, rank and conduct or supervise cleanup of sites on the **National Priority List** New York State's program gives the DEC the same authority to deal with sites that do not qualify for the federal superfund list, but meet certain other qualifications.
Superfund Amendments and Reauthorization Act (SARA)	Modifications to CERCLA enacted in 1986. Sometimes referred to as the "Right to Know Law," it requires, among other things, that industry provide the government with information on the use and release of certain chemicals into the environment. This information is then made available to the public.
Surface water	All water naturally open to the atmosphere. Refers to water in rivers, lakes, reservoirs, streams, impoundments, seas, estuaries, and so on.
Swale	A slight depression, sometimes swampy, in the midst of generally level land.
Technical and Administrative Guidance Memorandum (TAGM)	An **official internal Division of Environmental Remediation** document that outlines divisional policies or recommended guidance for topics such as determining cleanup goals at **hazardous waste sites.**

Technical Assistance Grant Program (TAG Program)	A federal grant program that provides funds for qualified citizens" groups to hire independent technical advisors to help them understand and comment on technical decisions relating to federal **Superfund** cleanup actions.
Technical and Operational Guidance Series (TOGs)	DEC Division of Water"s documents listing water quality standards and guidance values.
Terraprobe	A van-mounted, hydraulically-operated earth probe that pushes or hammers rods and specialized rod tips into soil. It is used to obtain samples of soil gas, soil, and groundwater relatively rapidly and in tight quarters.
Test pit	A small excavation at a hazardous waste site. Investigators dig test pits to get an idea of subsurface conditions at hazardous waste sites.
Tetrachloroethene (Perchloroethene)	A clear, colorless, non-flammable liquid with a characteristic odor. It is a widely used solvent, especially as a dry cleaning agent and as a **degreaser**.
Threshold	A dose or exposure below which there is no measurable adverse effect.
Title 3 program/ project	Part of New York State's Superfund program whereby the State pays 75 percent of eligible costs for **remediation** of municipally owned hazardous waste sites and the municipality pays 25 percent.
Toxicity	The degree of danger posed by a substance to animal or plant life.
Toxic substances	A chemical or mixture that may present an unreasonable risk of injury to health or the environment.
Toxic Substances Control Act (TSCA) of 1976	A federal law that provides for testing of manufactured substances to determine toxic or otherwise harmful characteristics and regulation of the manufacture, distribution, use, and disposal of regulated substances.
Treatability studies	(1) Tests of potential cleanup technologies conducted in a laboratory. (2) Pilot-scale type tests conducted at hazardous wastes sites to determine if a treatment technology will work for that site's particular set of environmental conditions.
Treatment, storage, and disposal facility (TSDF)	A site where a hazardous substance is treated, stored or disposed of. TSDF facilities are regulated *by EPA* and states under the **Resource Conservation and Recovery Act**.
1,1,1-Trichioroethane (1,1,1 TCA)	**Colorless, non-flammable,** man-made liquid **solvent** used as a **degreaser,** a dry cleaning agent, and a propellant.
Trichloroethene or Trichloroethylene	A colorless, man-made liquid used primarily as a solvent for removing grease from metal. It has a variety of other uses such as a dry cleaning solvent and in the

(TCE)	production of other chemicals. It generally gets into drinking water by improper waste disposal.
Unconfined aquifer	An **aquifer** in which water is not contained by an **impermeable** layer of rock or soil. The water level in the aquifer may rise or fall according to the volume of water stored, which varies according to seasonal cycles of natural recharge.
Unsaturated zone	The area of soil and rock between the land surface and the **water table.** The spaces between soil particles (pore spaces) in the unsaturated zone contain mostly air, but water occurs there as soil moisture.
Vadose zone	The underground zone between the land surface and the water table essentially the **unsaturated zone.**
Vapor	The gas given off by a solid or liquid substance at ordinary temperatures.
Vinyl chloride	A colorless gas used in the manufacture of polyvinyl chloride and other resins, and as a chemical intermediate and as an industrial solvent. Vinyl chloride is a **carcinogen.**
Viscosity	The property of a fluid describing its resistance to flow.
Volatile	Description of any substance that evaporates easily.
Volatile organic compounds (VOCs)	Carbon-containing chemicals which readily evaporate (cleaning solvents, gasoline, etc.). Many common industrial chemicals are VOCs, including **trichloroethene, 1,1,1-trichloroethane, and tetrachloroethene.**
Voluntary cleanup agreement	A legal document signed by DEC and another party (volunteer) for investigation and/or cleanup of a contaminated site. The volunteer is a party that is not legally responsible for the waste at a site. In return for cleaning up the site, the volunteer receives a limited liability release for past environmental contamination of the site.
Voluntary cleanup program	A program designed to promote voluntary cleanup of contaminated sites including inactive hazardous waste sites, petroleum contaminated sites and solid waste disposal sites, whereby the volunteer enters into a **Voluntary Cleanup Agreement** with the DEC.
Waste	(1) Unwanted materials left over from a manufacturing process. (2) Refuse from places of human or animal habitation.
Water table	The level of groundwater; the boundary between the **unsaturated zone** and the **saturated zone.** The water-table generally reflects surface topography and varies with changes in land surface elevations.
Wetlands	An area that is regularly saturated by surface water or groundwater. Examples of wetlands include swamps, bogs, fens, marshes, and estuaries.

References

This glossary and list of acronyms was assembled from various EPA sources, in addition to the following:

- *The EnviroDirectorv-Mid Atlantic* Environmental Marketing Group, Cambridge, 1997-1998.
- *Environmental Reporter's Handbook,* Glossary of Technical and Scientific Terms.
- New York State Department of Environmental Conservation, *New York State Hazardous Waste Site Remedial Program Fact Sheets,* June 1995.
- New York State Department of Health, Glossary of *Environmental Health Terms,* May 1991.
- United States Environmental Protection Agency, *Analysis of Selected Enhancements for Soil Vapor Extraction,* December 1997.

This glossary was compiled for DEC by Stacie E. Cornelius, DEC Citizen Participation Office Intern with assistance from Region 8 Citizen Participation staff. November, 1998.

APPENDIX C - REMEDIATION PROGRAM ACRONYMS

Guide to Environmental Acronyms

This list of acronyms includes abbreviations for agency names, chemicals, units of measure, and various documents and technical terms used by the NYSDEC Department of Environmental Remediation.

AG	Attorney General
AOC	Area of Concern
ARARs	Applicable or Relevant and Appropriate Requirements
AST	Above-Ground Storage Tank
ATSDR	Agency for Toxic Substances and Disease Registry *(Federal)*
BERC	Buffalo Economic Renaissance Corporation
C&D	Construction & Demolition
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of *1980 (Federal)*
CO	Consent Order
COC(s)	Contaminant(s) of Concern
CP	Citizen Participation
CPP	Citizen Participation Plan
CPS	Citizen Participation Specialist
DDI	Downtown Development, Inc.
DDT	Dichloro-diphenyltrichloroethane (pesticide)
DEC	Department of Environmental Conservation *(New York State)*
DEE	Division of Environmental Enforcement *(within DEC*
DEP	Division of Environmental Permits *(within DEC)*
DER	Division of Environmental Remediation *(within DEC)*
DNAPL	Dense Non-Aqueous Phase Liquid
DOD	Department of Defense *(Federal)*
DOH	Department of Health *(New York State)*
DOL	Department of Law *(New York State)*
DOW	Division of Water *(within DEC)*
EIS	Environmental Impact Statement
ENB	Environmental Notice Bulletin
EPA	United States Environmental Protection Agency
EQBA	1986 Environmental Quality Bond Act *(New York State "Superfund ")*
ESD	Explanation of Significant Differences *(DEC document)*
F&W	Division of Fish & Wildlife *(within DEC)*
FOIA	Freedom of Information Act *(Federal)*
FOIL	Freedom of Information Law *(New York State)*
FS	Feasibility Study
FSF	Federal Superfund
FY	Fiscal Year
GPM	Gallons Per Minute
HDPE	High Density Polyurethane (plastic)
HRS	Hazard Ranking System
IIWA	Immediate Investigation Work Assignment
IRM	Interim Remedial Measure

LEL	Lowest Effect Level
LNAPL	Light Non-aqueous Phase Liquid
mg/kg	Milligrams per Kilogram
MW	Monitoring Well
NAPL	Non-Aqueous Phase Liquid
ND	Non-detect (not detected)
NIOSH	National Institutes of Occupational Safety and Health
NPL	National Priorities List
NYCRR	New York Codes, Rules and Regulations
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
O&M	Operation & Maintenance
OSHA	Occupational Safety and Health Administration
OU	Operable Unit
PAH	Polynucleated Aromatic Hydrocarbon
PCB	Polychlorinated Biphenyls
PCE	Perchloroethene (Tetrachloroethene)
PID	Photoionization Detector
POTW	Publicly Owned Treatment Works
ppb	Parts per Billion
ppm	Parts per Million
ppt	Parts per Trillion
PRAP	Proposed Remedial Action Plan *(DEC document)*
PRP	Potentially Responsible Party
PRS	Priority Ranking System
PSA	Preliminary Site Assessment
QA/QC	Quality Assurance/Quality Control
RA	Remedial Action
RAR	Remedial Alternatives Report
RCRA	Resource Conservation and Recovery Act *(Federal)*
RD	Remedial Design
RHWRE	Regional Hazardous Waste Remediation Engineer
RI	Remedial Investigation
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision (DEC *document)*
RP	Responsible Party
SAC	State Assistance Contract
SARA	Superfund Amendments and Reauthorization Act
SCGs	Standards, Criteria and Guidance Values
SI	Site Investigation
SI/RAR	Site Investigation/Remedial Alternatives Report
SPDES	State Pollution Discharge Elimination System
SSMB	State Superfund Management Board
SVOCs	Semi-volatile Organic Compounds
2,4,5-T	2,4,5-trichlorophenoxyacetic acid (pesticide)
TAG	Technical Assistance Grant *(Federal)*
TAGM	Technical and Administrative Guidance Memorandum *(DEC)*

TCA	Trichloroethane
TCE	Trichloroethene or Trichloroethylene
TCLP	Toxicity Characteristic Leaching Procedure
TLV	Threshold Limit Value
TOGS	Technical and Operational Guidance series (DEC)
TSCA	Toxic Substances Control Act *(Federal)*
TSDF	Treatment, Storage and Disposal Facility
TWA	Time-Weighted Average
m**g/l**	Micrograms per Liter
USGS	United States Geological Survey
UST	Underground Storage Tank
VOC	Volatile Organic Compound

MALCOLM PIRNIE

APPENDIX

Fact Sheets

B

NEW YORK STATE DEPARTMENT OF

ENVIRONMENTAL CONSERVATION

Dear Interested Citizen:

This Fact Sheet is to inform you about the clean up plans for a portion of the former Hanna Furnace site located in Buffalo. If you have any questions or would like more information, please do not hesitate to contact:

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Project Manager
NYSDEC
270 Michigan Avenue
Buffalo, NY 14203
(716) 851-7220
or
Mr. Michael Podd
Public Affairs
NYSDEC
270 Michigan Avenue
Buffalo, NY 14203
(716) 851-7220

For site related health questions, please contact the New York State Department of Health's (NYSDOH) representative:

Mr. Matthew Forcucci
Public Health Specialist
NYSDOH
584 Delaware Avenue
Buffalo, NY 14202, at:
(716) 847-4385

FACT SHEET

HANNA FURNACE - SUBPARCEL 1

Voluntary Cleanup Agreement

February 2002

INTRODUCTION

The New York State Department of Environmental Conservation (NYSDEC), in cooperation with the New York State Department of Health (NYSDOH) is pleased to inform you that the City of Buffalo has volunteered to address contaminated areas in a portion of the 113 acre former Hanna Furnace facility. The remedial activities will be performed under the Department's Voluntary Cleanup Program and will address the former railroad yard portion of the site. This area has been designated as Subparcel 1 (see drawing). The remedial work will be done as the site is redeveloped, which is expected to take several years to complete.

SITE BACKGROUND

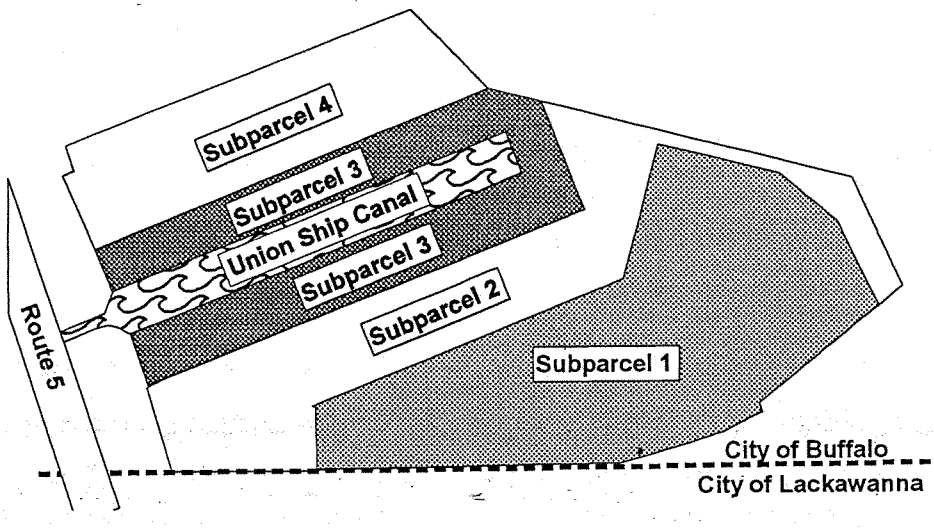
In 1900, the Buffalo Union Steel Corporation purchased the land that would become the manufacturing area and railroad yard. The Union Ship Canal was constructed in 1910 to service the facility. Pig iron manufacturing began around this time with the construction of four blast furnaces. The Hanna Furnace Company acquired the property from Buffalo Union Steel in 1915, and subsequently became known as the Hanna Furnace Corporation.

Hanna Furnace ceased all operations in 1982 and Jordan Foster Scrap Corporation purchased the property in 1983. They dismantled the blast furnaces, many of the buildings, and removed the rails from the railroad yard. In 1986, Jordan Foster Scrap filed for bankruptcy. In 1998, the City of Buffalo acquired title to the property due to nonpayment of taxes.

SITE DESCRIPTION

For future development considerations, the property was divided into four subparcels. They are:

- Subparcel 1 - the former railroad yard and is about 43 acres in size.
- Subparcel 2 - the manufacturing area and is about 29 acres in size.
- Subparcel 3 - a 200 feet wide strip around the canal and totals 22 acres.
- Subparcel 4 - a 19 acre disposal area for filter cake/flue ash and debris.



From: James Malcolm
To: Podd, Michael
Date: 12/11/02 4:09PM
Subject: Re: Fact Sheet

Mike,

Thanks for the mailing list. Could you please replace Cameron with Matt Forcucci and add the following individuals.

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New York State Department of Environmental Conservation

FACT SHEET

Brownfield Cleanup Program

Hanna Furnace – Portions of Parcels 1 and 2
Krog USC Associates I, LLC
City of Buffalo, NY

February 2005

Remedial Action Completed to Address Brownfield Site Contamination; Remedial Action Report Under Review

Remedial action has been completed to address contamination related to Hanna Furnace – Portions of Parcels 1 and 2 (Site) located at the Buffalo Lakeside Commerce Park in the City of Buffalo, Erie County under New York's Brownfield Cleanup Program (BCP). See map for the location of the site. Krog USC Associates I, LLC (Krog) has completed the remedial action and has submitted to the New York State Department of Environmental Conservation (NYSDEC) a Remedial Action Report (RAR), which is under review. The Remedial Action Report states that remediation requirements have been achieved regarding site contamination to fully protect public health and the environment for the proposed site use. The Remedial Action Report is available at the document repository identified in this fact sheet.

NYSDEC previously accepted an application submitted by Krog to participate in the BCP. The application proposes that the site will be used for industrial and commercial purposes.

Highlights of the Remedial Action Report

A Remedial Action Report (RAR) has several goals:

1) describe the remedial activities completed;
2) certify that remediation requirements have been achieved or will be achieved;
3) define the boundaries of the site;
4) describe any institutional/engineering controls to be used. An *institutional control* is a non-physical restriction on use of the site, such as a deed restriction, when the remedial action leaves residual contamination that makes the site suitable for some, but not all uses. An *engineering control* is a physical barrier or method to manage contamination such as a cap or vapor barrier;
5) certify that an operation, monitoring and maintenance plan for any engineering controls used at the site has been approved by NYSDEC.

"Remedial activities" and *"remediation"* refer to all necessary actions to address any known or suspected contamination associated with a site.

Brownfield Cleanup Program: New York's Brownfield Cleanup Program (BCP) encourages the voluntary cleanup of contaminated properties known as "brownfields" so that they can be reused and redeveloped. These uses include recreation, housing and business.

A **brownfield** is any real property that is difficult to reuse or redevelop because of the presence or potential presence of contamination.

For more information about the BCP, visit: **www.dec.state.ny.us/website/der/bcp**

The remedial action conducted at the site consisted of the placement of a cover system over portions of the site to be developed during construction activities. The cover system was placed directly over re-graded site fill material and included clean soil for vegetated areas, asphalt for roads and parking lots, and concrete for building slabs and in heavy-use areas. No contaminated soil material was removed from the site, although scrap railroad ties were hauled off-site and disposed of. The placement of the cover system was performed in accordance with the Remedial Action Work Plans, which were developed in February (Parcel 1) and November (Parcel 2) of 2002 to

eliminate potential exposure risks associates with direct contact with site fill material. Significant components of the remedial action included:

- Adoption of Remedial Action Work Plans, which established procedures necessary to protect workers during redevelopment activities and included a plan for the placement of the cover system.
- Preparation of the site surface, which included regrading the site and removing waste railroad ties for off-site disposal. These activities were conducted from December 3, 2003 to January 7, 2005, in conjunction with development of the site.
- Site development and construction of a manufacturing facility, as well as placement of the site cover system was performed from December 3, 2003 to January 7, 2005.
- Institutional controls were implemented at the site to restrict the exposure risk to contaminated soils. Activities at the site are limited to commercial and light industrial uses. An Operation, Monitoring and Maintenance (OM&M) Work Plan has been developed and will be implemented to maintain the institutional and physical components that comprise the remedial action on a long-term basis.
- An OM&M Work Plan defines procedures that will maintain the institutional and physical components that comprise the remedial action. The OM&M Work Plan includes an organizational chart outlining the responsible party's personnel who will be responsible for implementing the post-closure OM&M, a health and safety plan, example inspection report forms, a schedule for the annual inspections and reporting, and procedures to maintain the cover system and associated remedial work.

Next Steps

NYSDEC will complete its review, have any necessary revisions made and, if appropriate, approve the Remedial Action Report. NYSDEC will place the approved Remedial Action Report in the site document repository. NYSDEC then will issue a Certificate of Completion to Krog. With its receipt of a Certificate of Completion, Krog would:

- have no liability to the State for contamination at or coming from the site, subject to certain conditions; and
- be eligible for tax credits to offset the costs of performing remedial activities and for redevelopment of the site.

A Certificate of Completion may be modified or revoked if, for example, the applicant does not comply with the terms of its Brownfield Cleanup Agreement with NYSDEC, or if the applicant commits fraud regarding its application or its certification that it has met cleanup levels.

A fact sheet will be sent to the site contact list when NYSDEC issues a Certificate of Completion to Krog if institutional or engineering controls are necessary for the site.

Background

In 1900, the Buffalo Union Steel Corporation purchased the land that would become the manufacturing area and railroad yard. The Union Ship Canal was constructed in 1910 to service the facility. Pig iron manufacturing began around this time with the construction of four blast furnaces. The Hanna Furnace Company acquired the property from Buffalo Union Steel in 1915, and subsequently became known as the Hanna Furnace Corporation.

Hanna Furnace ceased all operations in 1982 and Jordan Foster Scrap Corporation purchased the property in 1983. They dismantled the blast furnaces, many of the buildings, and removed the rails from the railroad yard. The 1986, Jordan Foster Scrap filed for bankruptcy. In 1998, the City of Buffalo acquired title to the property due to nonpayment of taxes.

For future development considerations, the property was divided into four parcels. They are:

- Parcel 1 – the former railroad yard and is about 43 acres in size.
- Parcel 2 – the manufacturing area and is about 29 acres in size.
- Parcel 3 – a 200 feet wide strip around the canal and totals 22 acres.
- Parcel 4 – a 19 acre disposal area for filter cake/flue ash and debris.

In 1983, the NYSDEC added the Hanna Furnace Site to its Registry of Inactive Hazardous Waste Disposal Sites, as a class "2a" site. Class 2a means there was insufficient data to properly characterize potential issues at the site. Subsequently, several environmental studies were performed and, in 1995, the NYSDEC concluded:

- The site's soil and fill contained metals and semi-volatile organic compounds at concentrations exceeding recommended soil cleanup guidance; and,
- Groundwater and surface water in the canal contained carious metals and phenols at levels exceeding water quality standards.

However, because none of the soil or waste exhibited any of the characteristics of hazardous waste, State regulations required that the Hanna Furnace site be removed from the NYSDEC Registry.

To fulfill the requirements of Voluntary Cleanup Agreements, the City of Buffalo conducted more extensive sampling of Parcels 1 and 2 between 1999 and 2001. This sampling identified Contaminants of Potential Concern (COPCs) in the surface and subsurface soils, and fill material. The COPCs included various semi-volatile organic compounds; metals (e.g., arsenic, lead, and zinc); and cyanide. In addition, the pH of the groundwater in the western half of Parcel 1 was identified as a concern, measuring as high as 12. The elevated pH is attributed to the presence of lime that was used as a raw material in the iron manufacturing process.

Assessment activities conducted on Parcels 1 and 2 concluded that the primary exposure pathway for contaminants was via direct contact with the contaminated soils and fill. Analysis indicated that the contaminants did not readily leach or release to the groundwater. With the possible exception of pH, the groundwater was not significantly impacted; groundwater is not used at the site and therefore no direct contact with the groundwater is anticipated except during invasive construction activities. It was proposed that a cover of clean soil, asphalt or concrete would eliminate the potential for direct contact and hence be protective of public health. Remedial Action Work Plans were submitted to the NYSDEC and approved in February of 2002 (Parcel 1) and November of 2002 (Parcel 2).

Krog submitted a Brownfield Cleanup Program (BCP) Application to the NYSDEC to participate as a volunteer in the BCP to develop a 275,600 square foot manufacturing facility on 25 acres of land at the Buffalo Lakeside Commerce Park (Parcels 1 and 2) located in a primarily industrial and commercial area. The application was accepted by the NYSDEC and remedial action and construction at the site began on December 3, 2003.

FOR MORE INFORMATION

Document Repository
A local document repository has been established at the following location to help the public to review important project documents. These documents include the Remedial Action Report and the application to participate in the BCP accepted by NYSDEC:

Buffalo & Erie County Public Library
JP Dudley Branch
2010 South Park Avenue
Buffalo, New York 14220
(716) 823-1854

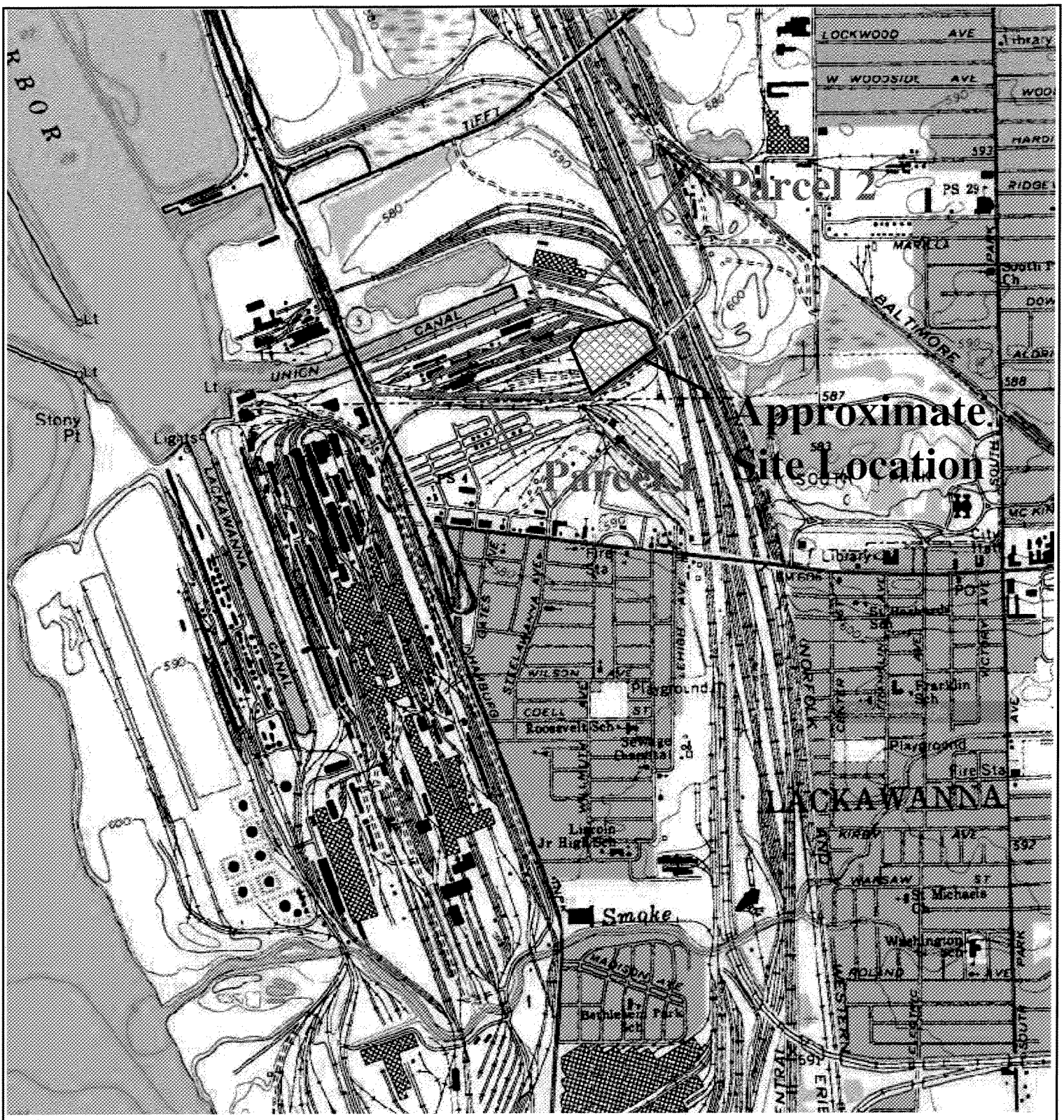
NYSDEC
Region 9 Offices
270 Michigan Avenue
Buffalo, New York 14203
(716) 851-7220

Who to Contact
Comments and questions are always welcome and should be directed as follows:

Project Related Questions
Mr. David Locey
New York State Department of Environmental Conservation
270 Michigan Avenue
Buffalo, NY 14203
(716) 851-7220
dplocey@gw.dec.state.ny.us

Health Related Questions
Mr. Matthew Forcucci
New York State Department of Health
584 Delaware Avenue
Buffalo, NY 14202
(716) 847-4385
mjf@health.state.ny.us

If you know someone who would like to be added to the project mailing list, have them contact the NYSDEC project manager above. We encourage you to share this fact sheet with neighbors and tenants, and/or post this fact sheet in a prominent area of your building for others to see.



MALCOLM PIRNIE	**HANNA FURNACE SITE** **Parcels 1 and 2** Buffalo, New York Brownfield Cleanup Program – Fact Sheet	Krog USC Associates I, LLC **SITE LOCATION MAP**
Feb. 2005 3198-004		

APPENDIX A – MAILING LIST

If you would like your name to be added to the list, please contact Mr. Michael Podd at the NYSDEC Region 9 Office at 716-851-7220.

CITIZENS GROUPS

Director William McKeever
Buffalo Audubon Society
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Chairman David Gianturco
Buffalo River Remedial Comm.
465 Brantwood Rd.
Amherst, NY 14226

Mr. Brian Smith
Citizens Campaign-Environment
3144 Main Street
Buffalo, NY 14214

Director Michael Schade
Citizens' Env. Coalition
543 Franklin St., Rm. 2
Buffalo, NY 14202-1109

Mr. William Hilts, Sr.
Environmental Council
5115 Baer Road
Sanborn, NY 14132

Mr. Richard Lippes
Environmental Management Com.
1260 Delaware Avenue
Buffalo, NY 14209

Mr. Earl Robinson
Environmental Mgt. Commission
P.O. Box 981
Buffalo, NY 14240

Mr. Roy Henzler
Erie Co. Fed. of Sportsmen
48 Loretto Drive
Cheektowaga, NY 14225

Mr. Don Kill
Erie County Sportsmen's Fed.
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Lackawanna, NY 14218

Executive Director
Friends of Buffalo River
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Director Lauren Makeyenko
Great Lakes Environmental Ed.
P.O. Box 56
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Buffalo, NY 14222

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SUNY @ Buffalo, School of Law
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Seirra Club, Niagara Group
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Snyder, NY 14226

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Buffalo, NY 14210

Senator Hillary Rodham-Clinton
U.S. Senate, 203 Guaranty Blvd.
28 Church Street
Buffalo, NY 14202

Senator Charles Schumer
U.S. Senate, Room 620
111 West Huron Street
Buffalo, NY 14202

Assemblyman Mark Schroeder
145th Assembly District
General Donavan Building
Buffalo, NY 14203

Senator William Stachowski
58th District, NYS Senate
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Buffalo, NY 14206

Assemblyman Jack Quinn
146th Assembly District
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NYSDEC/NYSDOH/USEPA REPRESENTATIVES

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NYSDEC/NYSDOH/USEPA REPRESENTATIVES, Continued

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WKBW News Channel 7
7 Broadcast Plaza
Buffalo, NY 14202

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WBEN Radio 930 & WMJQ
500 Corporate Pkwy.
Buffalo, NY 14226

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