LTV Steel

HANNA FURNACE CORPORATION

South Buffalo Redevelopment Plan: Steel Manufacturing Site

Voluntary Cleanup Site Assessment Report
Volume 1: Text

September 1997

0848-263-302

MALCOLM PIRNIE

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SOUTH BUFFALO REDEVELOPMENT PLAN
STEEL MANUFACTURING SITE

VOLUNTARY CLEAN-UP SITE ASSESSMENT REPORT

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MALCOLM PIRNIE

1.0 INTRODUCTION

1.1 SOUTH BUFFALO REDEVELOPMENT PLAN/INTENDED USE OF SITE

The City of Buffalo, in partnership with the City of Lackawanna, Erie County, and the Erie County Industrial Development Agency and other stakeholders, has developed a conceptual redevelopment plan for over 1,200 acres of currently inactive and largely vacant industrial properties ("brownfields") in South Buffalo, New York (see Appendix A and Figure 1-1). The redevelopment plan conceptualizes a program for creating employment opportunities while allowing for open space conservation, habitat enhancement, parks and recreation.

The City of Buffalo has already claimed its first significant brownfields success story under the South Buffalo Redevelopment Plan. The Truscon Property, a former LTV property now owned by the City, was the subject of a fast-track remediation (petroleum spill cleanup) project jointly funded by LTV and the City of Buffalo and completed in late 1996 with the full cooperation of the New York State Department of Environmental Conservation (NYSDEC).


DEVELOPMENT

Plans advance for tomato greenhouse on former Republic Steel site

By JAMES M. ODATO
News Business Reporter

A New Jersey company is gathering the funds to turn a formerly contaminated industrial site in South Buffalo into an 18-acre greenhouse to produce red, ripe, beefsteak tomatoes all year long.

Agro Power Development Inc., of East Brunswick, N.J., which already operates a 12.5-acre greenhouse in Wheatfield, envisions growing tons of tomatoes at the former Republic Steel site on South Park Avenue. The operation, first announced 18 months ago, would employ up to 250 full- and part-time workers.

With the help of about $2.5 million in public financing, the company plans to spend $13.89 million of the steel mill site, $10.8 million in construction alone, according to plans submitted to the Erie County Industrial Development Agency.

The agency's Regional Development Corp. approved a $500,000 loan to Argo for the project Wednesday. In January, the Buffalo Enterprise Development Corp. Area committee also approved a $500,000 loan for the project.

Empire State Development Corp. is expected to loan $4.5 million to the project, the IDA said.

Agro promises to employ 50 people full time plus another 172 part-time and to exclude migrant farm workers from its labor force, said Ronald W. Claus, the IDA's executive director.

The proposed greenhouse will be built on Republic's former parking lot, across the street from where the steel mill operated. The factory has been torn down.

In Wheatfield, the greenhouse is associated with Odessa Power Co. of Palm Beach, Fla., which built a gas-fired co-generation plant in North Tonawanda that sells electricity to Niagara Mohawk Power Corp. As a byproduct, the plant produces steam energy for the tomato plant.

See Tomatoes Page C12

Truscon Property Petroleum Spill Cleanup - 1996

South Buffalo Redevelopment Plan

Overall Master Plan with Potential Expressway Alignment

City of Buffalo
Division of Planning
Department of Community Development

In association with:
City of Lackawanna
Lackawanna Community Development Corp.
County of Erie
Erie County Industrial Development Agency

Connection to Buffalo Inner Harbor
Buffalo Outer Harbor Redevelopment Area
Landscaped Waterfront Parkway
Greenway Trail Connection
Existing Industrial Area
LAKE ERIE
Gateway Access to Outer Harbor
Expanded Small Boat Harbor
Boat Harbor Development
Waterfront Parkway
• Route 5 Downgraded to Boulevard
• Consolidation of Existing R.O.W.
• Removal of truck traffic from boulevard
• Greenway Trail
Gateway to Outer Harbor
Lake Overlook/ Passive Waterfront Park
Existing Industrial Area
Union Ship Canal
275+/- Acres
Union Ship Canal Redevelopment Site
• Public Access to Waterfront
• Site Remediation
• Expanded Canal
• Waterside Recreation
• Marina/ Boat Launch
• Light Industrial/ Corporate Park Development
• Restaurants/Waterside Shops
Gateway Metroport
Lackawanna Commerce Park
City of Lackawanna
Ridge Road
Industrial Heritage Trail
Improved Louisiana St. as a Major Urban Arterial
Future N.F.T.A. Light Rail Transit Corridor
First Ward Community
Historic Grain Elevators
Existing Industrial Area
Greenway Trail
Habitat Enhancement Area
Enhanced Redevelopment Area
Buffalo River
Heritage Park
Along Buffalo River Corridor
Realigned Ohio Street
Habitat Enhancement Area
Potential New Environmental Education Center/ Research Facility (adjacent to Buffalo River and Nature Preserve)
Tifft Nature Preserve
• Removal of "Exotic" and Invasive Plant Materials
• Introduction of Native Vegetation
Wetland Restoration
Expanded Nature Center
120+/- Acre Environmental Research and Development Area
• Headquarters/office clusters with natural areas between
Wetland Restoration
Divided Boulevard (Urban Arterial)
Greenway Trail Connection over Tifft
Expanded Tifft Playfields
Tifft Street
Redirected Route 5
Wetland Restoration
Existing Industrial Area
Union Ship Canal
Public Boat Launch
Boat Trailer Parking
Boat Storage & Repair Facilities
Future Greenway to Ridge Connection
Potentially rename Ridge Road to "Victoria Boulevard" to promote public visibility & tourism to Historic South Park, Botanical Gardens & Our Lady of Victory Basilica. Enhancements may include an improved signage and streetscape system.
Ridge Road
Expanded Recreation
The Valley Community
Residential Infill Areas
Habitat Enhancement Area
Riverfront Park Area
Historic Grain Elevator
Habitat Enhancement Area
Habitat Enhancement Area
Public Access to River & Greenway Trail
Riverfront Park Area
Existing Rail Corridor
Wetland Restoration
Rail to Truck Transfer
Wetland Restoration
Greenway Trail Connection over Tifft
Wetland Restoration
Existing Rail Corridor
Registration 18 Hole Golf Course
Creation of "safe rail" crossings for golfers
Future Greenway to Ridge Connection
Greenway Trail
Removal of Hopkins Street to through-traffic
NYS Thruway I-190
Sloan Street
100' Setback from River
Industrial Redevelopment Area
Gateway to Buffalo Thruway/ Connector to I-190
Mobil Oil Property
Ship to Truck Transfer Facility
Lower Fixed Bridge (End of Navigation Channel)
Realign Abby Street
Habitat Enhancement Area
Hickory Woods Residential Infill
350+/- Acre Redevelopment Area
• Warehousing and distribution focus
• Light Industrial / Corporate Park
• 5-25 acre parcels (20,000 sq.ft. - 300,000 sq.ft. facilities)
• Site remediation
Potential Southtowns Connector Alignment
(Interchange at Tifft Street for Development Access)
South Park Avenue Business District
Potential high density residential or extended-care facility
South Buffalo Community
Long term transition and relocation of industrial uses out of residential neighborhoods
Removal of Golf Course from Historic South Park
• Allows for full restoration of South Park to passive recreational uses and world class arboretum
Restoration of Historic South Park (F. L. Olmsted, 1888)
• Restoration of World Class Arboretum
South Park
Mc Kinley Parkway
Bailey Avenue

0' 200' 400' 800' 1200'
Greenway Trail/ Recreation Access

Prepared by:

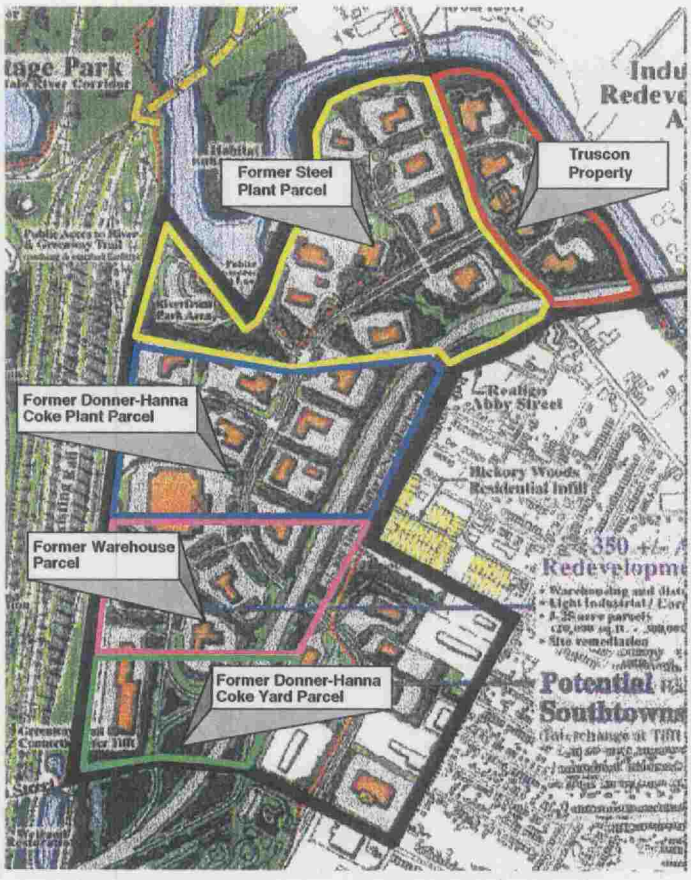
DE LEUW, CATHER & COMPANY
Engineers · Planners · Landscape Architects
in Association with
ERA - Economics Research Associates

Figure 1-1

MALCOLM PIRNIE

Successful completion of the fast-track remedial efforts allowed the City to close a deal with a developer for construction of a new hydroponics plant that will reportedly create over 200 new jobs (see Appendices C and D). The hydroponics plant is currently under construction.

Hydroponics plant under construction on Truscon Site



South Buffalo Redevelopment Plan - Steel Manufacturing Site

The cornerstone of the South Buffalo Redevelopment Plan is the industrial/commercial corridor and Southtowns Connector Highway planned on the site of the former Republic Steel Plant and Donner-Hanna Coke Plant properties. The Redevelopment Plan envisions light manufacturing, warehousing, and distribution facilities on the former Steel Manufacturing Site based on its unique attributes of interstate highway, rail and shipping access and its proximity to the Canadian border crossing at the Peace Bridge. The Steel Manufacturing Site consists of

four parcels owned by LTV or co-owned by LTV and Hanna Furnace Corporation (HFC).

The Redevelopment Plan also incorporates the use of the Marilla Street Landfill Site, owned by LTV Steel Company (LTV), for relocation and expansion of the South Park golf course and related wildlife habitat and recreational uses. The landfill was formerly used for disposal of slag, construction and demolition debris, and other steel-making wastes. An engineered low-permeability cover system was completed over the landfill in 1993. Remediation of the wetlands associated with the Marilla Street Landfill has been approved by the NYSDEC and is currently in progress. LTV is working with the City of Buffalo Division of Planning, Department of Community Development for redevelopment of the Marilla Street Landfill parcel as a golf course/recreation and wildlife habitat enhancement area consistent with the South Buffalo Redevelopment Plan as shown on Figure 1-2.

South Buffalo Redevelopment Plan - Marilla Street Site

Figure 1-2

GOLF CARD

HOLE	PAR	BLUE	WHITE	RED
1	4	362	342	295
2	4	407	380	350
3	4	420	403	375
4	3	207	193	155
5	5	523	483	425
6	3	168	147	128
7	4	386	352	310
8	5	537	505	453
9	4	430	400	339
OUT	36	3440	3205	2818
10	4	397	383	350
11	4	400	376	342
12	5	542	533	467
13	3	212	196	166
14	4	423	412	368
15	4	394	370	337
16	3	185	163	134
17	5	505	490	442
18	4	430	407	362
IN	36	3488	3330	2968
	72	6928	6533	5786

☐ Phase 1 Golf Course Routing

◯ Phase 2 Golf Course Routing

Conceptual Land Use Plan

LTV MARILLA STREET LANDFILL

BUFFALO NEW YORK

WENDEL

MALCOLM PIRNIE

JUNE 1997

MALCOLM PIRNIE

The redevelopment plan for the Marilla Street Landfill is strongly endorsed by Mayor Masiello, as demonstrated below.

CITY OF BUFFALO
OFFICE OF THE MAYOR

ANTHONY M. MASIELLO
Mayor

June 17, 1997

Mr Gerald F Mikol
Regional Director
NYS Dept. of Environmental
Conservation
270 Michigan Avenue
Buffalo, NY 14203

RE: LTV STEEL COMPANY
MARILLA STREET LANDFILL
SITE END USE PLAN

Dear Mr Mikol:

As you know, the City of Buffalo, in partnership with the City of Lackawanna, Erie County and the Erie County Industrial Development Agency and other stakeholders, has developed a conceptual comprehensive Master Plan for over 1,200 acres of "brownsfields" properties. The plan establishes a program for growth into the 21st Century. It provides a strong focus on environmental remediation which will allow for land redevelopment plus open space conservation, habitat enhancement, parks, recreational development, and public waterfront access.

One of the sub-areas included in the Master Plan is the area south of Tifft Street (the All-Tifft and Marilla Street Landfill areas). A major golf course development is envisioned for that area of the City

The purpose of this letter is to inform the NYSDEC that the City has actively worked with LTV Steel to develop the concept for an eighteen-hole golf course and park complex, the first phase of which would be located on the Marilla Street Landfill property after the wetland remediation project has been completed. The City's commitment and support of such redevelopment assumes that the remedial objectives of the DEC have been satisfied and will not be compromised by this type of development. The conceptual plan incorporates phasing of the golf course, multi-use greenway trails, a playground with a parking area plus enhanced wildlife areas adjacent to the wetlands. The City is encouraged by the cooperative attitude and assistance of LTV Steel in the planning process for redevelopment of the site for the benefit of the public and the City

The City of Buffalo is committed to a redevelopment plan, which will bring this and surrounding properties into productive reuse, and is looking forward to working with the NYSDEC and LTV Steel toward successful implementation of the plan We will keep you informed as the planning and implementation process proceeds.

If you have any questions, please feel free to contact my office.

Very truly yours,

ANTHONY M. MASIELLO
Mayor

AMM/ms

cc: M. Doster, NYSDEC
B. Lockwood, Councilmember
A. DeLisle, Community Development
D. Sengbusch, Community Development
K. Greiner, Community Development
D. DiSalvo, Community Development
M. Scinta, Community Development
S. Nasca, Law Dept.
W. Gould, LTV Steel Co
K. McManus, Malcolm Pirnie

The Steel Manufacturing Site is the focus of this Voluntary Cleanup Site Assessment Report.

1.2 BACKGROUND AND DESCRIPTION OF SITE

LTV owns, or co-owns with HFC (i.e., Donner-Hanna parcels), the vacant industrial site located in Buffalo, New York (Figures 1-3 and 1-4) that was formerly used for steel manufacturing operations, coke production and storage, and related site operations. The site (referred to as the Steel Manufacturing Site) is also referred to as the former Republic Steel Plant Area. All production operations ceased and related structures were demolished as part of decommissioning activities that were completed in the early 1990s. The Steel Manufacturing Site is approximately 218 acres in area and is bounded on the north by the Buffalo River and South Park Avenue, on the west by railroad tracks, on the east by Abby Street, and on the south by Tifft Street and Hood Industries. Based on the operational history, the site can be segregated into four parcels from north to south as follows:

- Area I - The former Republic (LTV) Steel Plant
- Area II - The former Donner-Hanna Coke Plant
- Area III - The former Warehouse
- Area IV - The former Donner-Hanna Coke Yard

These parcels are illustrated on Figure 1-5 and described briefly below:

Area I - Former Steel Plant Parcel - The former Republic Steel Plant was located on this parcel. This northernmost parcel is currently owned by LTV and is approximately 91 acres in area. The parcel is bounded on the west by railroad tracks and the Buffalo River and South Park Avenue to the north. In the late 1980s, the steel plant structures were demolished and the area regraded.

Area II - Former Donner-Hanna Coke Plant Parcel - The former Donner-Hanna Coke Plant parcel is approximately 53 acres in area, is located south of the former Steel Plant parcel, and is jointly owned by LTV and HFC. The plant was used to manufacture coke for steel manufacturing. By-products such as tar and manufactured gas were generated during the conversion of coal to coke and temporarily stored on-site prior to distribution. Many of the structures were demolished in the late 1980s and the site was then leveled and graded. A small parcel of land owned by August Feine, Inc., and two larger parcels owned by Conrail

Figure 1-3: Former Republic Steel Plant Area Regional Map

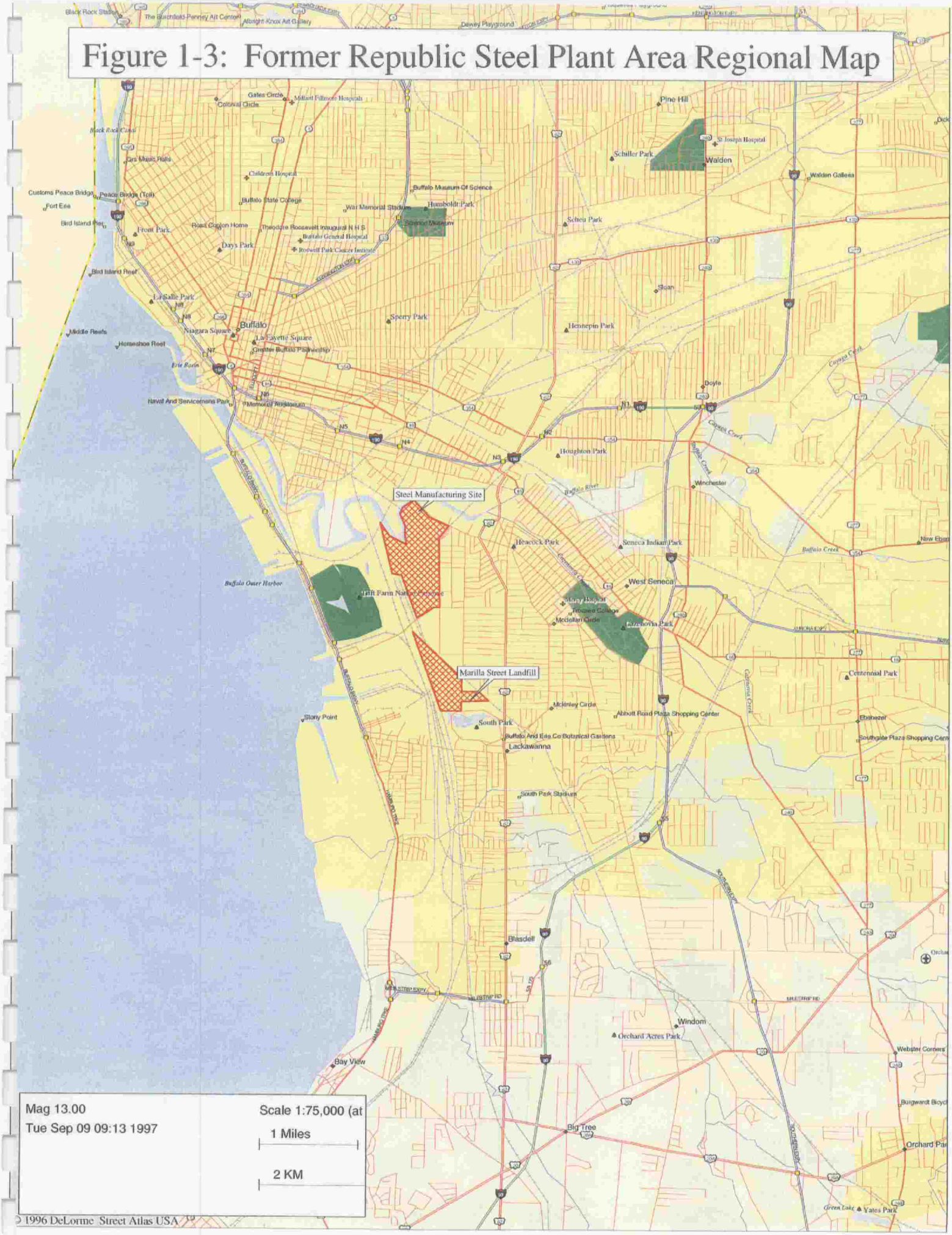


Figure 1-4: Steel Manufacturing Site Vicinity Map

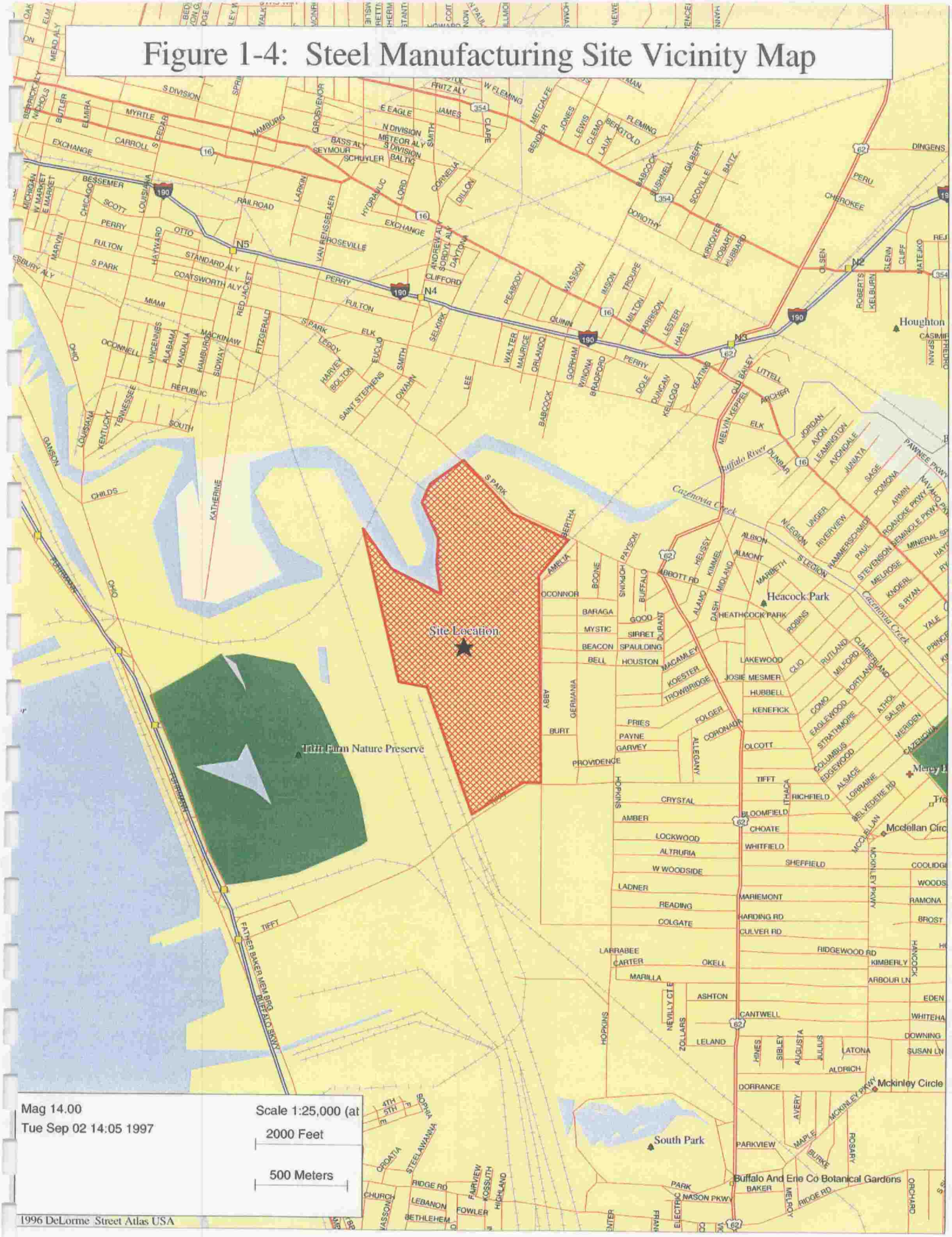
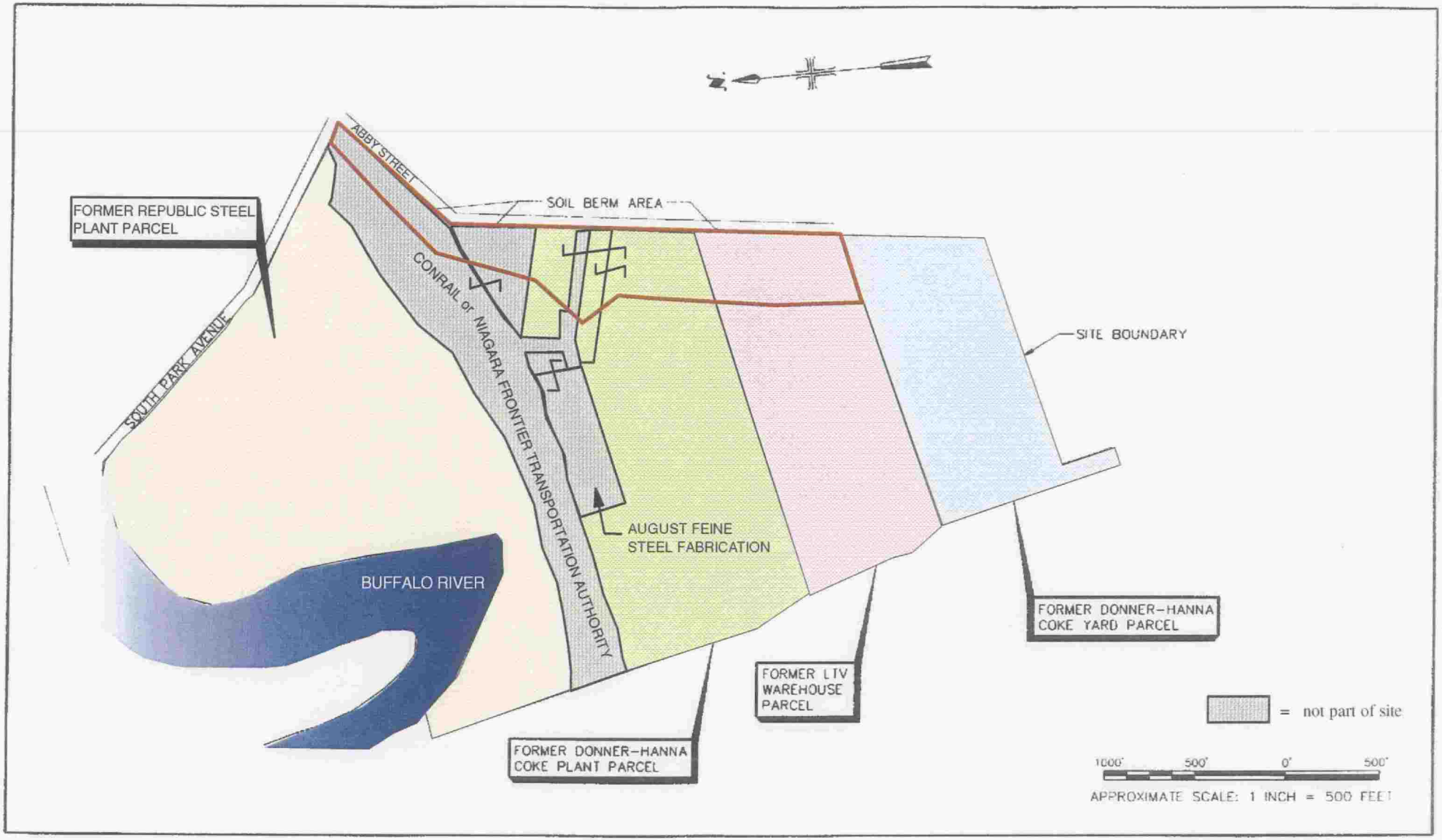


Figure 1-5



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LTV-A

FORMER REPUBLIC STEEL PLANT AREA
STEEL MANUFACTURING SITE
SITE MAP

LTV STEEL COMPANY
BUFFALO, NEW YORK

JUNE 1997

or Niagara Frontier Transportation Authority (NFTA) separate Area I from Area II. The Feine and Conrail/NFTA properties are not addressed in this report.

Area III - Former Warehouse Parcel - The former warehouse parcel is currently owned by LTV, is approximately 43 acres in area, and is located to the south of the coke plant parcel. This parcel was used for storage of equipment and reportedly contained a coke tar pile south of the warehouse and a pelletized slag pile near the southern boundary of the site. The Warehouse parcel is currently being used as a staging/bioremediation area for petroleum contaminated soils excavated from the Truscon property (see Appendix C).

Area IV - Former Donner-Hanna Coke Yard Parcel - The former Donner-Hanna coke yard parcel is approximately 31 acres in size, is the southern-most parcel on the site, and is jointly owned by LTV and HFC. The parcel was allegedly used for the disposal of tar from the coke plant and the storage of coke and coal. The entire parcel is currently identified on the NYSDEC Inactive Hazardous Waste Site list with a "3" classification (i.e., the property poses no significant threat to human health or the environment). The assigned classification was determined from the results of a 1989 Phase II site investigation conducted by Recra Environmental as an agent for the NYSDEC.

Site-Wide Characteristics - The surface of the Steel Manufacturing Site is relatively flat and consists of graded soil and fill. There are small piles of soil and/or fill at various locations on the site. A large soil fill berm exists along a portion of the eastern site boundary between the Steel Manufacturing Site and Abby Street. Foundations associated with former buildings and storage tanks are sporadically visible at the ground surface. The entire Steel Manufacturing Site is surrounded by chain link fencing.

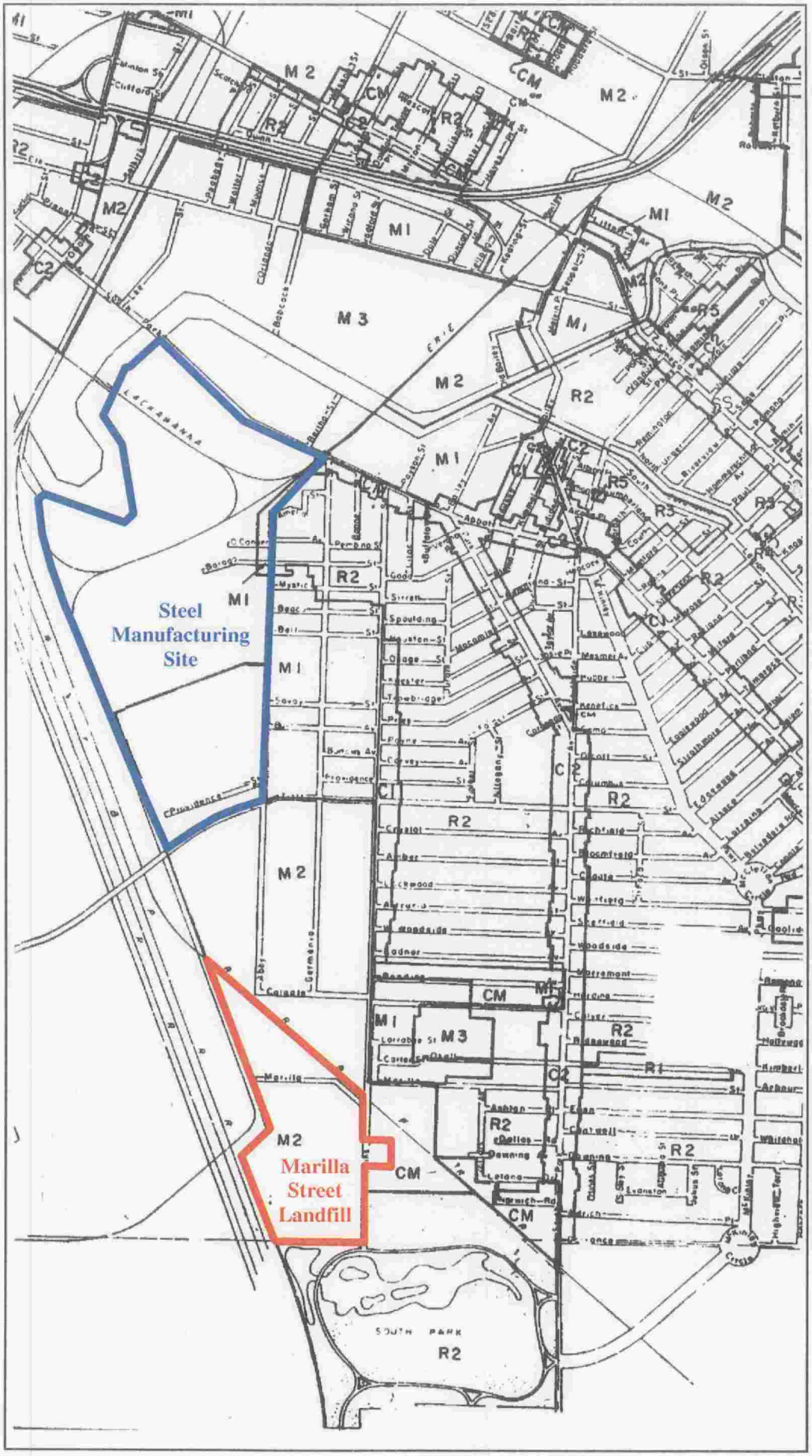
1.3 ZONING

Figure 1-6 illustrates the zoning classification for the Steel Manufacturing Site. The site is zoned industrial.

1.4 PURPOSE

This Voluntary Cleanup Site Assessment Report has been prepared to support a voluntary cleanup application for the Steel Manufacturing Site. The proposed remedial plan described herein has been prepared to clean up the site to the level necessary to permit and support the planned redevelopment of the site as a commercial/industrial park. The proposed remedial work plan has been prepared as an Appendix that can be attached to a Voluntary Cleanup Agreement.

Figure 1-6



M1 - Light industrial district
M2 - General industrial district

ZONING MAP

MALCOLM PIRNIE

2.0 SITE/REGULATORY HISTORY

2.1 STEEL MANUFACTURING SITE

The Steel Manufacturing site parcels are currently owned by LTV Steel Company based in Cleveland, Ohio or co-owned (the Donner-Hanna parcels) by LTV Steel Company and Hanna Furnace Corporation (HFC). Although the chain of title was not available for review, a review of records and photographs at the Buffalo History Museum, Erie County Department of Environment and Planning, Erie County Finance Department, Erie County Department of Public Works, and the New York State Department of Environmental Conservation indicates that the site has been used for the manufacture of steel and coke, as well as raw and finished materials storage throughout its history dating back to the early 1900s. Malcolm Pirnie, Inc. also interviewed long-time employees of the LTV Steel Corporation, Republic Steel and Donner-Hanna Coke. Mr. Edward Hartman was consulted to describe work activities at the Donner-Hanna Coke Plant and Mr. James Meredith was consulted to describe work activities and demolition work at the LTV (Republic) Steel Plant.

The Steel Manufacturing Site was partially developed in the early 1900s. By 1906, many of the bar mills and furnaces at the former Republic Steel Plant were operational and the former Donner-Hanna Coke Plant was present in 1917. The property currently owned by August Feine was developed prior to 1917. A description of the history of each of the four areas at the site is presented below. The basis for this discussion is developed from a review of 1927, 1951, 1960, and 1972 aerial photographs and Sanborn Maps from 1889, 1900, 1917, 1940, 1950, and 1986.

2.1.1 Former Steel Plant Parcel

The former Steel Plant began producing steel in 1906 and was operated by Donner Steel Company, Inc., from 1906 to 1931. In 1931, operations were turned over to Republic Steel. A summary of observations gathered during review of the aerial photos and Sanborn Maps is presented below:

- **1889 (Sanborn Map)** - Only a small portion of the extreme northern end of the plant site is visible on the Sanborn map in the vicinity of South Park Avenue (formerly Plank Road and Abbott Road) as it crossed the Buffalo River. R. Evans & Son Glue Factory is present on the site.

- **1900 (Sanborn Map)** - R. Evans & Son Glue Factory buildings are present at the same location as 1889; however, the buildings are indicated as vacant and dilapidated.

- **1917 (Sanborn Map)** - Steel plant used the name Donner Steel Co. Inc. and performed iron smelting and steel making. The plant was generally located east of the Buffalo River as the river meanders around the current Buffalo Color Corporation. Large structures on the property included four bar mills, an open hearth building, a roll shop, blooming mill, two shipping buildings, a heating furnace building, a brick shed, two power houses, gas producers, and a machine shop. Property southwest of the intersection of Abbott Road (South Park Avenue) and Abby Street between Abbott and the D.L.& W. Railroad was primarily residential with a business called Perry's Iron Works (Dryer Road area). Railroad spurs and tracks surrounded and were interspersed within the plant.

- **1927 (Aerial Photo)** - The plant site operations grew in size from 1917 to 1927. The aerial photograph indicates that the plant grew to the size and operation depicted in the 1940 Sanborn Map. The Dryer Road residential area southwest of Abby Street and South Park is still visible.

- **1940 (Sanborn Map)** - Republic Steel Corporation is the owner of the steel plant. The residential area on Dyer Road had been converted into a scrap iron and pig iron yard between 1927 and 1940. Newly installed structures included a die roll finishing shop, pickling and chipping building, pickling and heat treatment building, forge shop, a larger shipping building, stripper and extractor yard, locomotive repair, cleaning pits, a larger blooming mill, and a thickener (clarifier). The heating furnace building was changed to the pit furnace building. Three large oil tanks are present on the site near the southeast end of the meander of large bend in the Buffalo River. The Sanborn Map indicates that tanks were built in a concrete pit possibly providing secondary containment.

- **1950 (Sanborn Map)** - No significant changes were observed at the plant between 1940 and 1950.

- **1951 (Aerial Photo)** - The plant did not change significantly between 1950 and 1951.

- **1960 (Aerial Photo)** - The plant did not change significantly between 1951 and 1960. A stock house and other small buildings are present in the triangular area formed by the railroad tracks in the southeast portion of the plant site.

- **1972 (Aerial Photo)** - A few changes of note were made to the plant. The scale pit was built between 1960 and 1972 in the northern portion of the plant to the east of the railroad bridge. A laboratory is present south of the large oil tanks. The northernmost large oil tank has been removed.

- **1986 (Sanborn Map)** - LTV Corporation is the owner of the plant site. The Sanborn map indicates that operations have been suspended.

During a majority of the active history, the steel plant operated two blast furnaces where molten iron was produced from a charge of pellets (upgraded iron ore), scrap iron, limestone (flux) and coke. The molten iron was subsequently converted to steel in two basic oxygen furnaces. The steel ingots produced were sent to the blooming mill where heated ingots ranging from 5 to 6 tons in weight were passed back and forth in large steel rolls squeezing the ingots into heavy square or rectangular sections known as blooms. The 25-30 foot long blooms were then sent to the billet mill where hot rolling lengthened the blooms. The blooms were then re-heated in the bar mills and shaped to customer's requirements.

The plant also operated two sulfuric acid pickling processes. Intermediate pickling was performed on the hot rolled bar products and finishing pickling was performed to achieve final surface quality.

2.1.1.1 Wastewater Sources and Characteristics

The primary source of wastewater produced at the plant was from the Venturi scrubber used to clean the blast furnace gases. Scrubber water discharge contained suspended solids from the blast furnace gases, and may have contained significant levels of cyanides, phenol, and ammonia. Wastewater from the blooming mill was derived from direct cooling of the rolled product. The wastewater included suspended solids and oil and grease used for lubrication of the rolls. Similar wastewater was produced in the bar mill.

The pickling process used to chemically remove oxides and scale from the surface of the steel produced a spent sulfuric acid pickle liquor. Rinse water from both the intermediate and finishing pickling operations were discharged to the on-site wastewater treatment plant.

2.1.1.2 Wastewater Treatment and Disposal

Wastewater from the Venturi scrubber used for cleaning blast furnace gases was treated in a clarifier located in the northwestern portion of the site. Treated effluent was discharged into the Buffalo River. Wastewater from most of the other cooling processes was discharged into the Buffalo River following settling of suspended solids or skimming of oil. Spent sulfuric acid from the pickling operations was trucked to a 15,000 gallon storage tank on the plant property. The acid waste was used in neutralization and coagulation processes for the plant wastewater treatment system.

2.1.1.3 Other Potential Waste Sources

The plant had numerous aboveground and underground storage tanks containing lubrication oil, engine oil, valve oil, black oil, lithium grease, fuel oil, gasoline, quench oil, diesel fuel, and heating oil. A tank inventory was derived from a 1974 schematic of the Republic Steel Corporation plant oil lines prepared for their Spill Prevention Control and Control (SPCC) Management Plan. In addition to the tanks, there were two maintenance shops, a scale pit, two clarifiers and several roll finishing buildings.

2.1.2 Former Donna-Hanna Coke Plant Parcel

From 1919 until 1982, the Donner-Hanna Coke Plant produced coke from coal and recovered by-products from the manufacturing process. The coke production capacity was approximately 3,000 tons per day. Typical gas production at the facility was approximately 11,500 standard cubic feet per ton of coal. The manufactured gas was refined and sold to Iroquois Gas. A summary of observations gathered during review of the aerial photos and Sanborn Maps is presented below:

- **1917 (Sanborn Map)** - The Donner-Hanna Coke Plant site included only August Feine Co. Structural Steel Works located on W. Baraga Street. Railroad tracks are present to the north of the Feine building and to the west of the site. A number of streets are present south of the Feine building including Mystic Street, Beacon Street, Bell Street, Rochester and Pittsburgh Avenue. There are a total of fourteen residential dwellings located on the above-mentioned streets.

- **1927 (Aerial Photo)** - The Donner-Hanna Coke Plant site was operating with numerous visible aboveground tanks, buildings, and coal and coke piles. There is no evidence of the streets and homes that were present in 1917. The Feine building is the same size as in 1917. Railroad spurs traverse into the plant and tracks are located to the north and west of the site. A large manufactured gas holder is present east of the Feine building and four purifier boxes are located to the southwest of the gas holder.

- **1940 (Sanborn Map)** - Buildings, tanks and other site features have not changed significantly from previous years. Tank contents identified on the Sanborn Map include acid, tar, naphthalene, toluol, benzol, and ammonia. Koppers Company Whole Tar Products is present in the northeast portion of the site, south of Baraga Street. Tar tanks are present on this portion of the property. Iroquois Gas Company is present to the north of Koppers.

- **1950 (Sanborn Map) and 1951 (Aerial Photo)** - The Coke Plant site did not change significantly since 1940. Two minor changes include the presence of an additional smaller gas holder to the west of the large gas holder, and four additional purifier boxes to the east of the previously mentioned purifier boxes.

- **1960 (Aerial Photo)** - There appears to be no significant change in the plant operations and site features.

- **1986 (Sanborn Map)** - The only change appears to be that operations are suspended. Also, the original four purifier boxes had been removed from the Iroquois portion of the site.

Donner Hanna Coke Corporation produced primarily coke from coal. Coke production is a carbon removal process involving heating the coal to temperatures of 350 to 1000 degrees Centigrade in the absence of air forming impure carbon residue called "coke"

and some volatile products. The condensation of the volatile products from this destructive distillation produces black coal tar as light to heavy grade crudes.

The process also emits coal gas composed of a mixture of hydrogen, methane, carbon monoxide, ethane, ammonia, carbon dioxide, hydrogen sulfide, and other minor components. Recovered by-products from the coal to coke process included phenols as sodium phenolate, ammonia as ammonium sulfate, tars as heavy and light grade crudes, an unrectified light oil containing benzene, toluene and xylene, and naphthalene as a tar from the final cooler. The plant also had a large gas holding tank used to store processed coke oven gas prior to its reuse as fuel in the coke batteries and other plant areas. In addition, there were various piping and utility systems located both aboveground and below ground. Production, storage and handling were performed in the following areas:

- Gas Holder and Iron Oxide (Purifier) Box Area.
- Tar Storage Tank Area.
- Light Oil Area.
- Benzol Washer and Final Cooler Area.
- Locomotive Shed Area.
- Old Tar Tank Area.
- Tar Precipitator Area.
- Shop Area.
- Tar Decanter Area.
- Underground Piping near August Feine.
- Electrical Substation.

These areas were identified as areas of potential environmental concern for the purpose of focusing Phase II investigation activities. Structures were decommissioned and demolished to ground level in 1990 and 1991. Aboveground features were decontaminated and demolished with the resulting waste products reportedly managed in accordance with applicable local, State, and Federal regulations. Trenches and pits were cleaned, fractured, and backfilled. Underground piping and utilities were also removed.

2.1.3 Former LTV Warehouse Parcel

The warehouse parcel was reportedly used for storage and maintenance of equipment. The warehouse was present in a 1927 aerial photograph. A summary of observations gathered during review of the aerial photos and Sanborn Maps is presented below:

- **1917 (Sanborn Map)** - The warehouse site contained a Bridge Shop operated by Lackawanna Bridge Company. A paint shop was present in a small portion of the northern side of the building. Two electric cranes existed to the east of the Bridge Shop and two railroad spurs entered the site from the west.

- **1927 (Aerial Photo)** - The warehouse building was visible in the photograph and was the only building on the site at this time. A covered shipping yard is present on the western side of the building.

- **1940 (Sanborn Map)** - The warehouse, called Factory Main Shop at this time, was operated by Bethlehem Steel Company. Relatively small portions of the northern side of the building were used as a bolt & rivet shop, paint shop, machine shop and forge shop. A woodworking shop is also present on a portion of the east side of the building. Additional railroad spurs are located to the west of the building. An office building on the eastern side of the site was present with access to Abby Street. It appears that tractor trailer trucks or railroad cars were stored on this portion of the site.

- **1950 (Sanborn Map)** - There appears to be no change on the site since 1940.

- **1951 (Aerial Photo)** - In addition to the warehouse building, a pile of fill is noted to the south of the warehouse. A covered shipping yard was added on the southwestern corner of the warehouse building.

- **1960 (Aerial Photo)** - Either a building or a covered shipping yard was present to the south of the warehouse. Railroad spurs appear to traverse underneath the cover into the shipping yard. Piles of fill were noted to the southeast of the warehouse.

- **1972 (Aerial Photo)** - The warehouse building is present as is the small building with access off Abby Street. The covered shipping yard is no longer on the site. Small debris piles are noted on the entire site with dirt access roadways around the piles.

- **1986 (Sanborn Map)** - LTV Corporation owns and operates the parcel. Only the original warehouse structure and office are present on the site.

2.1.4 Former Donna-Hanna Coke Yard Parcel

The former Donner-Hanna coke yard parcel is the southern most parcel of the entire site. Hood Industries owns and operates property contiguous to the Donner-Hanna Coke Yard site on Tifft Street. The Donner-Hanna Coke Yard parcel was used for the storage of coke and coal and allegedly the disposal of acid sludges and tar from the steel plant and coke plant. A preliminary Phase I/Phase II Investigation was performed by Recra Environmental, Inc as agents of the NYSDEC in July 1990 on the former Donner-Hanna Coke Yard site (see Appendix B). The report indicates that large quantities of coke overlie native soil (generally consisting of lacustrine sand, silt and clay). The investigation detected benzene, as well as other volatile organic compounds, and polynuclear aromatic hydrocarbons (PAHs) in soil, groundwater and surface water. Also in the Phase II Investigation Report for the Donner-Hanna Coke Yard Site prepared by Recra Environmental it was reported that a 145-foot deep injection well was used during a four-year period prior to 1952 for the disposal of undocumented quantities of ammonia- and phenol-containing wastes. The location of this well was never identified. A well depth of 145 feet places the bottom of the well near the base of the Onondaga Limestone Formation. Since bedrock groundwater is not used as a source of potable water in the Buffalo area, potential historic disposal of these waste materials would have no potential to impact human health. Based on the preliminary findings of the Phase I/II Investigation, the Donner-Hanna Coke Yard site was listed on the New York State Department of Environmental Conservation (NYSDEC) Inactive Hazardous Waste Site list with a "3" classification (hazardous waste disposed of on the property with no significant threat to human health).

The parcel extensively filled over time while primarily being used for coke storage. A summary of observations gathered during review of the aerial photos and Sanborn Maps is presented below:

- **1917 (Sanborn Map)** - Three streets are present to the north of Tifft Street. The streets are not evident on the 1927 aerial photo.
- **1927 (Aerial Photo)** - It appears that this area was a meadow or wetland .
- **1940 (Sanborn Map)** - No change apparent since 1917 Sanborn Map.
- **1950 (Sanborn Map)** - A small building identified as 'welding' appears near the intersection of Abby and Tifft on what is now Hood Industries.
- **1951 (Aerial Photo)** - The site had been partially filled in the northern portion. Vegetative growth was noted to the east and south of the site. A wet area of the site is still visible.
- **1960 (Aerial Photo)** - Piles of fill were noted on most of the site. The wet area noted in 1951 is smaller.
- **1972 (Aerial Photo)** - The entire site is characterized by scattered piles. The piles appear to be coal or coke. Hood Industries building is present on Tifft Street south of the Donner-Hanna Coke Yard site.

2.1.5 Regulatory History

Most of the regulatory records for the LTV and Donner-Hanna properties were destroyed or lost at the time of facility decommissioning and are thus not available for review. However, the historical photo and Sanborn map review and former employee interviews provided a reliable and accurate basis for establishing type and location of former structures, utilities and processing operations which could have impacted the surrounding environment. There are currently no Orders, decrees or other legal documents citing any portion of the property to be in violation of the environmental conservation law or equivalent federal environmental statutes as confirmed through the full regulatory records review performed as part of a Phase I Environmental Site Assessment (see Appendix F) performed in March 1997. Regulatory information from the Lexis-Vista databases regarding LTV and Donner-Hanna operations in the Abby Street, South Park and Marilla Street areas is included as Appendix F.

Abandoned storm sewers from the Steel Manufacturing Site discharge to either the Buffalo Sewer Authority's (BSA's) POTW via a combined sewer at Tifft Street or to the

"terminal basin" (a below-ground retention basin in the NW corner of the site) which is pumped to BSA's POTW via a sewer along Abby Street. Flows from the August Feine facility are discharged to the terminal basin.

In accordance with the provisions of its sewer use ordinance, the BSA requires users of the POTW to apply for a discharge permit before they will accept new sources of flow. The permit sets forth limits regarding allowable discharge flow rates and waste characteristics. A copy of the BSA permit application and BPDES permit for the terminal basin are included in Appendix E.

2.1.6 Site Reconnaissance

As part of a Phase I Environmental Site Assessment, the site reconnaissance was conducted in March 1997. The site consists of 200 acres of relatively flat-lying graded fill from the demolition of former site structures. Vegetation was present during the site visit; however, as expected during spring weather, the vegetation was very sparse. Fences with locked gates surround the 200 acres of the site with the exception of a dirt road that traverses the site near the August Feine property. A large soil fill berm exists along a portion of the eastern site boundary between the site and Abby Street. All site structures were demolished when the plant operations were suspended in the 1980s. Therefore, no building interiors were inspected as part of the Phase I. During the site walkover, only three potential environmental impact areas were noted:

- Two fill ports on the edge of the Buffalo River at the major bend in Area I.
- A blue staining on the ground surface of an area approximately 100 square feet in Area III.
- Black coal/coke fill over much of Area IV.

As part of plant demolition operations, the ground surface was graded. This activity could have masked potential areas of environmental condition which could have been otherwise visually identified.

2.1.7 Areas of Potential Environmental Condition

Based on historical site information, information provided by former employees of the site, regulatory records search and site conditions assessed during a site walkover, the following specific areas of the site were identified as posing potential environmental conditions for the purpose of a detailed site assessment (Phase II Investigation - see Appendix F):

Area I

- Scale Pit Area.
- Fuel Oil Storage Area.
- Clarifier Area.
- Oil House and Pickling Area.
- Machine Shop/Electric Shop Area.
- Pickling Area.
- Gas Cleaning/Producer Area.
- Transformer Area.
- Locomotive Repair Shop Area.
- BOF Dust Precipitator Area.
- Fuel Oil Storage Area.
- Underground Piping Area.
- Area North of Skull Cracker Building.

Area II

- Gas Holder and Iron Oxide (Purifier) Box Area.
- Tar Storage Tank Area.
- Light Oil Area.
- Benzol Washer and Final Cooler Area.
- Locomotive Shed Area.
- Old Tar Tank Area.
- Tar Precipitator Area.
- Shop Area.
- Tar Decanter Area.
- Underground Piping near August Feine.
- Electrical Substation.

Area III

- Wood Shop Area.
- Maintenance Shop Area.
- Paint Shop Area.
- Sludge Disposal Area.
- Storage Area.
- Tar Disposal Area.

Area IV

- Entire area based on storage of coke and/or disposal of sludge and tar.

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3.0 PREVIOUS STUDIES

3.1 STEEL MANUFACTURING SITE

A preliminary Phase I/Phase II investigation was performed by Recra Environmental Inc. as agents of NYSDEC in July 1990 on the former Donna-Hanna Coke Yard site, Area IV of the Steel Manufacturing Site (see Appendix B). Based on the preliminary findings of the Phase I/Phase II investigation, the Donna-Hanna Coke Yard site was listed on the New York State Department of Environmental Conservation's (NYSDEC) Inactive Hazardous Waste Site list with a "3" classification (hazardous waste disposed of on the property posing no significant threat to human health).

In anticipation of transfer of ownership of all four Steel Manufacturing Site parcels, a Phase I Environmental Site Assessment (ESA) was completed in conformance with ASTM E1527-94 in March 1997 (see Appendix G). The Phase I ESA concluded that there were potential environmental conditions associated with the historical uses of the Steel Manufacturing Site. Therefore a Phase II site investigation was performed jointly by ICF Kaiser and Malcolm Pirnie Inc. during March and April 1997 to: characterize any potential resultant environmental conditions caused by former industrial activity, and characterize the geology and hydrogeology of the site. The results of the Phase II ESA are summarized in the following sections (See Appendix G for complete report).

3.1.1 Phase II Site Assessment Investigative Methodology

Field investigations for the Phase II Environmental Site Assessment were conducted during March and April 1997. The site was sub-divided into four separate areas based on existing physical boundaries and the site history described in Section 2.0. These areas include:

- Area I - Former LTV Steel Plant Parcel.
- Area II - Former Donner-Hanna Coke Plant Parcel.
- Area III - Former LTV Warehouse Area Parcel.
- Area IV - Former Donner-Hanna Coke Yard Parcel.

The site characterization program included the collection and analysis of soil gas, surface soil, subsurface soil, groundwater and surface water samples. Area-specific sampling and analysis programs were developed for each of the four areas to assess environmental conditions resulting from historic industrial uses of the properties. Since none of the former site structures currently exist (with the exception of the building owned by August Feine), area-specific sampling locations were selected using an overlay of a survey grid established for the site (400 foot centers) on a historic aerial photograph dated 1972. The aerial photo was scanned and digitized to create a CADD base map with the topographic and survey grid data input as a CADD-based overlay. Using this survey grid/aerial photo map, accurate sampling locations associated with each specific-area of interest identified as a result of the Phase I were selected. Sample locations were selected by matching survey grid coordinates to site-specific areas of interest. Field activities performed to characterize the site included:

- Geophysical reconnaissance survey.
- Passive soil gas investigation.
- Surface soil sampling.
- Installation of boreholes, monitoring wells, and piezometers with subsurface soil characterization;
- Development of all newly installed monitoring wells.
- Test pit excavation.
- Surface water sampling.
- Groundwater sampling.

A detailed discussion of these activities is presented in the full Phase I/Phase II Environmental Site Assessment Report prepared by Malcolm Pirnie Inc., July 1997 (see Appendix G).

3.1.2 Site Geology/Hydrogeology

Heterogeneous fill material overlies native soils across the entire Steel Manufacturing Site. As shown in the cross-section on Figure 3-1, the fill thickness ranges from 6 to 10 feet. At the Former Donner Hanna Coke Yard (Area IV) portion of the site up to 6 feet of coke overlies fill. The fill material is generally coarse-grained and is comprised of mixtures of slag, ash, coal, and construction and demolition debris in a matrix of sand and gravel. The berms on the eastern side of the Steel Manufacturing Site are composed of fill material and are approximately 10 feet in height. Tar material is intermixed with the coke fill in the northwestern portion of Area IV and extends into fill material located in the extreme southwest corner of Area III. The fill material is underlain by native glaciolacustrine sand, silt, and clay. These black to gray unconsolidated sediments are dense and organic-rich, and minor amounts of peat were encountered in soil borings completed in the coke yard area. The presence of peat below the fill material indicates that wetland-type areas were in-filled to create the coke storage yard. Alluvium consisting of black to gray silty sand with traces of clay underlies the fill proximal to the Buffalo River. Information presented in the Remedial Investigation of the Buffalo Color site (1990), located directly across the river from the Steel Manufacturing Site, identified glaciolacustrine silty clay and clayey silt deposits underlying the alluvium and the sand, silt, and clay deposits.

Groundwater occurs in the overburden fill material at relatively shallow depths in the southern portion of the Steel Manufacturing Site (1 to 2 feet below grade) and at depths greater than 10 feet in the northern portion of the site. Due to low permeability, the clay-rich glaciolacustrine deposits underlying the more permeable fill act as a barrier to the vertical migration of groundwater, causing shallow water table conditions and groundwater flow in the fill that is primarily horizontal. The differences in permeability between the two types of material are evidenced in Table 3-1, which shows the results of particle size distribution tests for both fill material and native soil. These tests indicate that the fill material is composed of a much greater fraction of larger particles than the native glaciolacustrine deposits. Additionally, due to the techniques used to collect the soil samples, it was not possible to collect any particles present in the fill with diameters greater than 3 inches. These

FIGURE 3-1

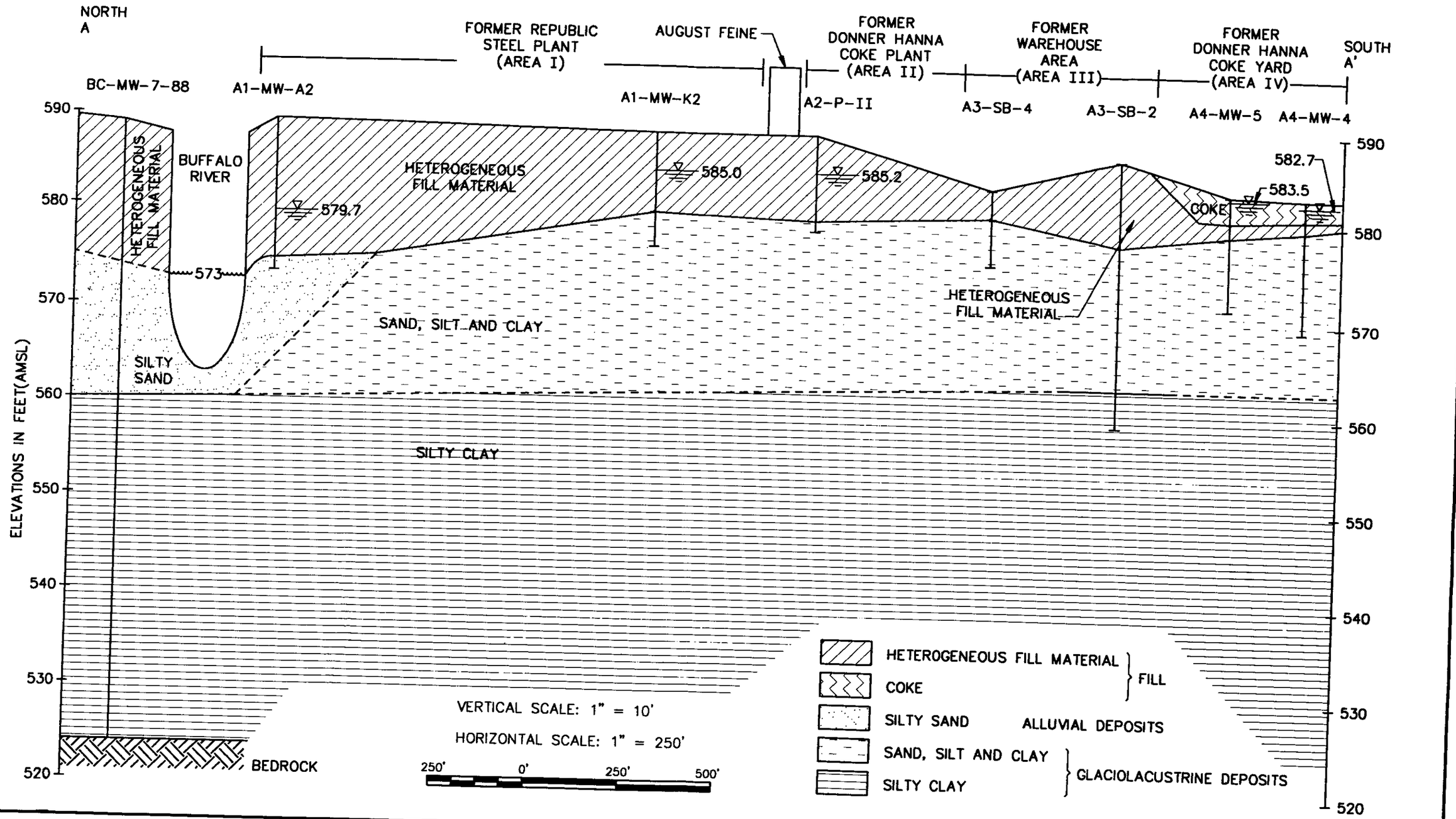

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FIG4-2A

STEEL MANUFACTURING SITE
FORMER REPUBLIC STEEL PLANT AREA
VOLUNTARY CLEANUP SITE ASSESSMENT REPORT
GEOLOGIC CROSS SECTION ALONG LINE A-A'

LTV STEEL COMPANY
BUFFALO, NEW YORK

JUNE 1997

MALCOLM PIRNIE

TABLE 3-1

FORMER REPUBLIC STEEL PLANT AREA
"STEEL MANUFACTURING SITE"

SUMMARY OF PARTICLE SIZE DISTRIBUTION TESTS

PARTICLE SIZE DISTRIBUTION IN PERCENT				
AREA	**SOIL TYPE**	**GRAVEL**	**SAND**	**SILT and CLAY**
I	Native	0.3	21.9	77.8
I	Fill	30.4	64.3	5.3
II	Native	2.0	31.5	66.5
II	Fill	20.1	57.9	22.0
III	Fill	33.7	59.5	6.8
IV	Native	3.3	13.4	83.3

tests, therefore, do not quantify the size of construction and demolition debris such as cobble-sized bricks that are present in the fill.

Plate 3 shows groundwater elevations and inferred flow directions based on depth-to-groundwater measurements collected April 3, 1997. The groundwater in the shallow water-bearing zone migrates toward the Buffalo River in the northern portion of the Steel Manufacturing Site, and towards the south in the southern portion of the Steel Manufacturing Site. The more closely-spaced groundwater isopotential lines in the northern portion of the Steel Manufacturing Site and the greater depth to groundwater indicates a hydraulic connection between the permeable fill and the river. The groundwater in the southern portion of the Steel Manufacturing Site migrates to the south due to a smaller gradient caused by the gradual thinning of the shallow water-bearing zone occurring in the more permeable fill. As the fill thins to the south, the land surface elevation also decreases, causing a gradient to produce groundwater flow towards the lower topographic elevations to the south.

3.1.3 Environmental Sampling Results

The environmental sampling program at the Steel Manufacturing Site included the collection and analysis of soil gas, surface soil, subsurface soil, groundwater and surface water samples. Area-specific sampling and analysis programs were developed for each of the four areas identified in the Phase I ESA to assess potential environmental impacts associated with historic uses of the site. A total of 65 subsurface soil samples, 23 surface soil samples, 3 surface water samples, and 17 groundwater samples were collected and analyzed.

The planned end use for the Steel Manufacturing Site is the development of a mixed light industrial/corporate park (warehousing and distribution focus) (see Appendix A). Large areas of the site will likely be covered by site structures, parking lots and roadways. Therefore, while contamination is present above TAGM 4046 soil clean-up objectives, the detailed analysis of the Phase II ESA data was performed by comparing the data to USEPA Region III Risk-Based Concentrations for industrial sites. Where EPA risk-based concentrations have not been established for certain inorganic parameters, background inorganic parameter concentrations detected in the Truscon property soils located

immediately north of Area I were identified for comparison. These comparisons served as a screening tool to identify areas/subareas of the site which posed a potential environmental condition. A detailed discussion of the environmental sampling results for each area of the site can be found in the Phase I/Phase II ESA report for the site (Appendix G).

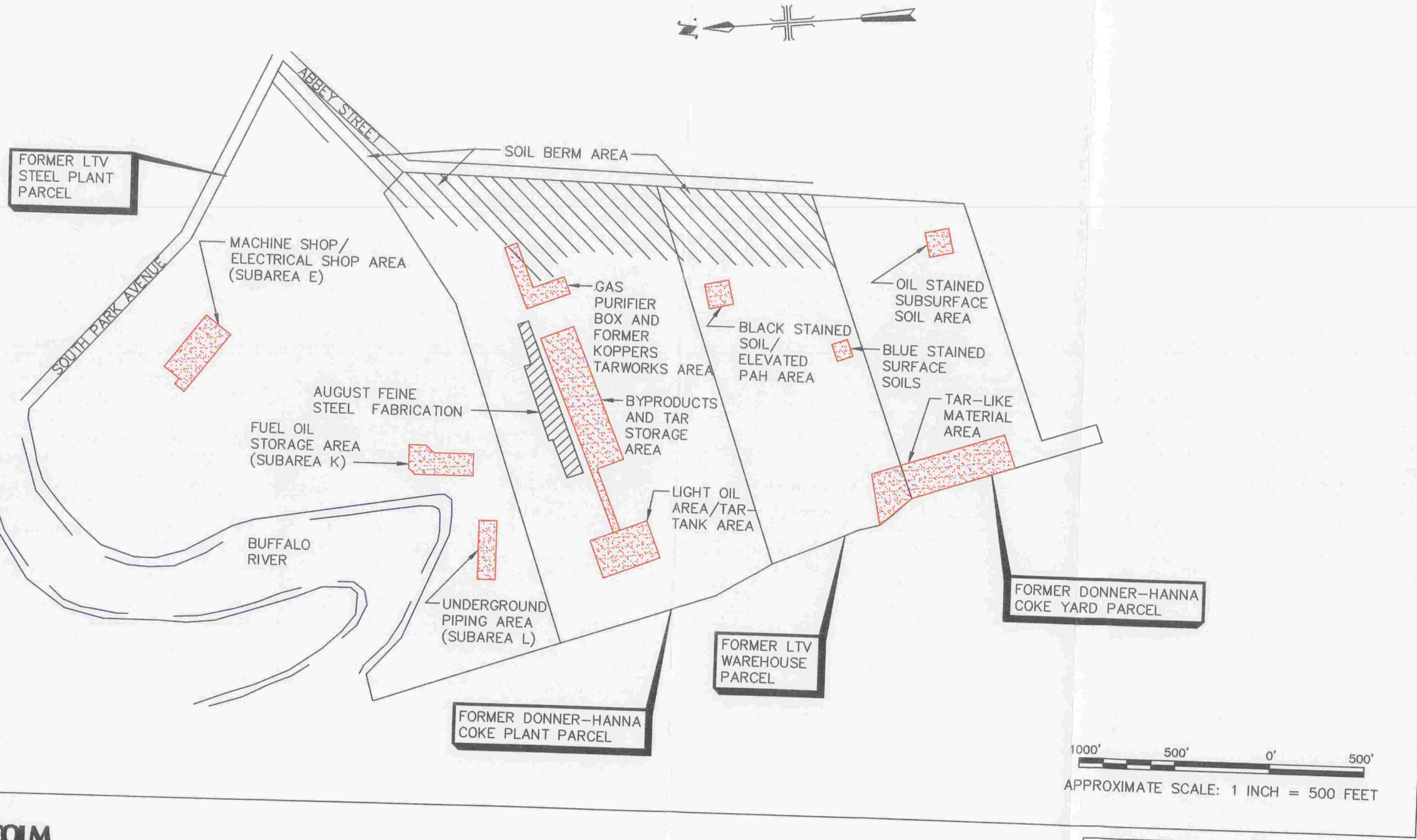
Groundwater investigations performed as part of the Phase II Investigation identified site operations related contaminant concentrations in excess of New York State Class "GA" Groundwater Quality Standards in the shallow groundwater (uppermost saturated zone) present in the on-site fill materials. The contaminants identfied and their concentrations were locally specific to the former steel-making operations. Since groundwater is not used for water supply in South Buffalo, since groundwater yields from fine-grained soils present on the site are low, and since there are no sensitive downgradient receptors, the potential environmental impacts are limited to the on-site fill material and can be mitigated for the intended site use through source removal and treatment or containment of highly contaminated soil/fill, possibly with groundwater collection/treatment (Area II only), if warranted. Therefore, this discussion of site conditions focuses on surficial and subsurface soil contamination. A summary of the findings for each area (see Figure 3-2) of the Steel Manufacturing Site is presented in the following subsections.

3.1.3.1 Area I - Former Steel Plant Parcel

Surface soil sampling results identified concentrations of several PAH compounds above EPA risk-based concentrations in over half of the samples analyzed; however only a limited number of surface samples were collected and analyzed relative to the size of the Area.

Subsurface soil sampling during the Phase II ESA identified three subareas with subsurface soil contamination. These three subareas include:

- The former machine shop/electric shop subarea (Subarea E).
- The former fuel oil storage subarea (Subarea K).
- The tar/fuel oil underground piping subarea (Subarea L).



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LTV-B2

STEEL MANUFACTURING SITE
FORMER REPUBLIC STEEL PLANT AREA
VOLUNTARY CLEANUP SITE ASSESSMENT REPORT
AREAS OF ENVIRONMENTAL CONDITION

LTV STEEL COMPANY
BUFFALO, NEW YORK

JUNE 1997

Subsurface contamination was characterized by elevated PAH compounds associated with the former storage and transport of fuel oil. Stained soils and/or tar-like oil were observed in several boreholes in these three subareas.

3.1.3.2 Area II - Former Donner-Hanna Coke Plant Parcel

The surface soil analytical results identified several PAH compounds exceeding EPA risk-based concentrations in Area II. The results of the Phase II ESA also identified eleven subareas with subsurface contamination. These subareas include:

- The light oil area.
- Underground piping area.
- Old tar tanks.
- Benzol washers and final coolers area.
- Tar decanters.
- Gas holder and iron oxide (gas purifier)boxes.
- Possible tar unit.
- Primary cooler area.
- Northeast soil gas plume (the area in the vicinity of former Koppers Tar Works).

The subsurface soils were contaminated with aromatic hydrocarbons (BTEX) and PAHs. Many of the PAH compound concentrations exceeded EPA risk-based concentrations. Black stained soils, elevated PID readings, and olfactory evidence of contamination were apparent at these subareas.

3.1.3.3 Area III - Former LTV Warehouse Parcel

The results of the Phase II ESA surface soil sampling identified limited surface soil contamination. PAH compounds exceed EPA risk-based criteria in the western portion of the parcel where tar-like materials existed on the ground surface. Also, in the south central portion of the parcel (approximately 100 foot by 100 foot area in the vicinity of sample location A3-SS-23), a tar-like material existed on the ground surface.

The results of the Phase II subsurface soil sampling identified three of the five subareas identified in the Phase I ESA with soil contamination. The southwest corner of

Area III is contaminated with BTEX and PAH compounds. Cyanide concentrations detected in the blue stained surface soils in the south-central portion of Area III did not exceed EPA risk-based concentrations for industrial sites, but the potential of higher cyanide concentrations in this subarea exists and its potential impact on groundwater presents an environmental concern. Black stained soils and elevated PAH concentrations were detected in the northeastern portion of Area III.

3.1.3.4 Area IV - The Former Donner-Hanna Coke Yard Parcel

The coke in Area IV is planned for removal as part of a coke recovery program. The Phase II ESA characterized the media remaining following coke excavation. As a result, surface soils were not characterized. The investigation identified benzene contaminated subsurface soils, groundwater and surface water in the northwestern corner subarea. In the same area, tar-like materials are observed at the ground surface and intermixed with the coke in the subsurface. Although TCLP extraction analysis indicates that the tar-like material does not leach appreciable quantities of benzene, other materials in this portion of Area IV are a potential source of benzene. TCLP extraction analysis of materials present in the western portion of Area IV indicates that approximately 10,000 cubic yards of material could be TCLP Characteristic hazardous wastes. TCLP extraction analysis of soil collected from oil stained soils in the southeast portion of the area indicate that the soils in this area could also be TCLP characteristic hazardous wastes.

3.1.3.5 Abby Street Berm

During the investigation of the four Areas, the soil berm along Abby Street was investigated to characterize the soils (reportedly owned by the City of Buffalo) in the berm to determine if environmental concerns were present. Although PAH concentrations exceeded EPA risk-based concentrations in several samples collected from the berm, the depth of the contamination and lack of visual and olfactory evidence of contamination suggests that the soil berm is not an area of environmental concern.

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4.0 PROPOSED REMEDIAL PLAN

4.1 STEEL MANUFACTURING SITE

4.1.1 Remedial Action Objectives

As discussed in Section 3 (and Appendix G), the detailed site assessment indicated the presence of NYSDEC TAGM 4046 constituents in surface and subsurface soils above the recommended clean-up levels for residential use. Constituents were also detected in the groundwater above New York State Class "GA" Water Quality Standards. However, since the South Buffalo Redevelopment Plan (See Appendix A) targets the Former Republic Steel Plant Area for redevelopment as a light industrial/commercial park, the focus of the detailed site assessment is on comparisons of site-specific characterization data to USEPA Region III Risk-Based Concentrations for industrial sites as a screening tool to identify the areas/subareas of the site which pose a potential environmental condition. Figure 3-2 illustrates the locations of the areas/subareas of the site which have been identified as having a potential environmental condition and will require remediation in order to support development of the site in accordance with the South Buffalo Redevelopment Plan.

In order to establish remedial action objectives for the areas of potential environmental condition as well as the entire site, potential exposure scenarios were identified. The potential exposure scenarios following redevelopment of the parcels as a light industrial/commercial park are:

- Incidental ingestion of and dermal contact with surface soil by industrial park employees, trespassers and occasional park visitors.
- Incidental ingestion of and dermal contact with all soil (surface and subsurface) by site/utility construction workers performing soil intrusive work. Also, there is the potential for inhalation of soil particles during excavation activities as well as contact with shallow groundwater (viz. within 10-feet of the surface).

The following remedial action objectives have been identified to mitigate the potential exposure scenarios:

- Minimize the potential for off-site groundwater degradation associated with the areas/subareas of concern.
- Minimize the potential for human contact with surficial soils.
- Minimize the need for and extent of excavation required during and after site development in order to minimize exposure potential to site/utility construction workers.
- Perform remedial construction activities so as to minimize contact with and/or release of contaminants.

The Buffalo Urban Renewal Agency (BURA) is proposing to redevelop an approximately 50-acre site in Buffalo's University District. Investigation and health risk assessment activities have indicated that some form of remediation of on-site soils is required to support the proposed redevelopment plan (URS Greiner, Inc., 1997). The soil characterization data (see Appendix H) indicate that the types and levels of contamination (i.e., low-level metal and PAH contamination) present in these soils are similar to the general character of the surface soils on the Steel Manufacturing Site. Therefore, these soils are proposed for use as general fill to support the proposed remedial actions for the Steel Manufacturing Site.

4.1.2 Remedial Action Work Plan

A Remedial Action Work Plan for the Steel Manufacturing Site has been prepared and is attached as Appendix I. The work plan describes the remedial approach, additional investigations/evaluations required to support the remedial approach and presents a schedule for implementation of the work plan elements.

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