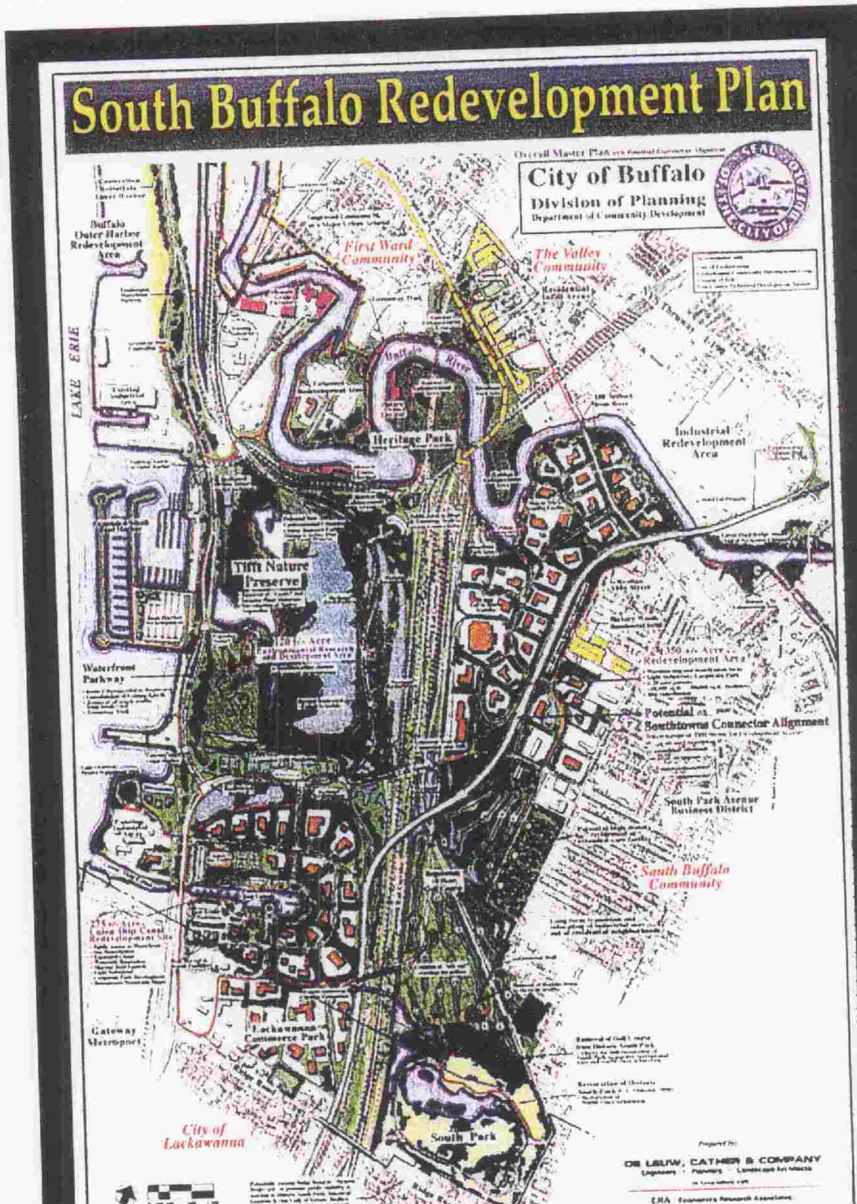
LTV Steel

HANNA FURNACE CORPORATION

South Buffalo Redevelopment Plan: Steel Manufacturing Site



Voluntary Cleanup Site Assessment Report
Volume 2: Appendices A through F

MALCOLM PIRNIE

September 1997

0848-263-302

MALCOLM PIRNIE

SOUTH BUFFALO REDEVELOPMENT PLAN
STEEL MANUFACTURING SITE

VOLUNTARY CLEAN-UP SITE ASSESSMENT REPORT

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MALCOLM PIRNIE

APPENDIX A

SOUTH BUFFALO REDEVELOPMENT PLAN

0848-263/VCSA

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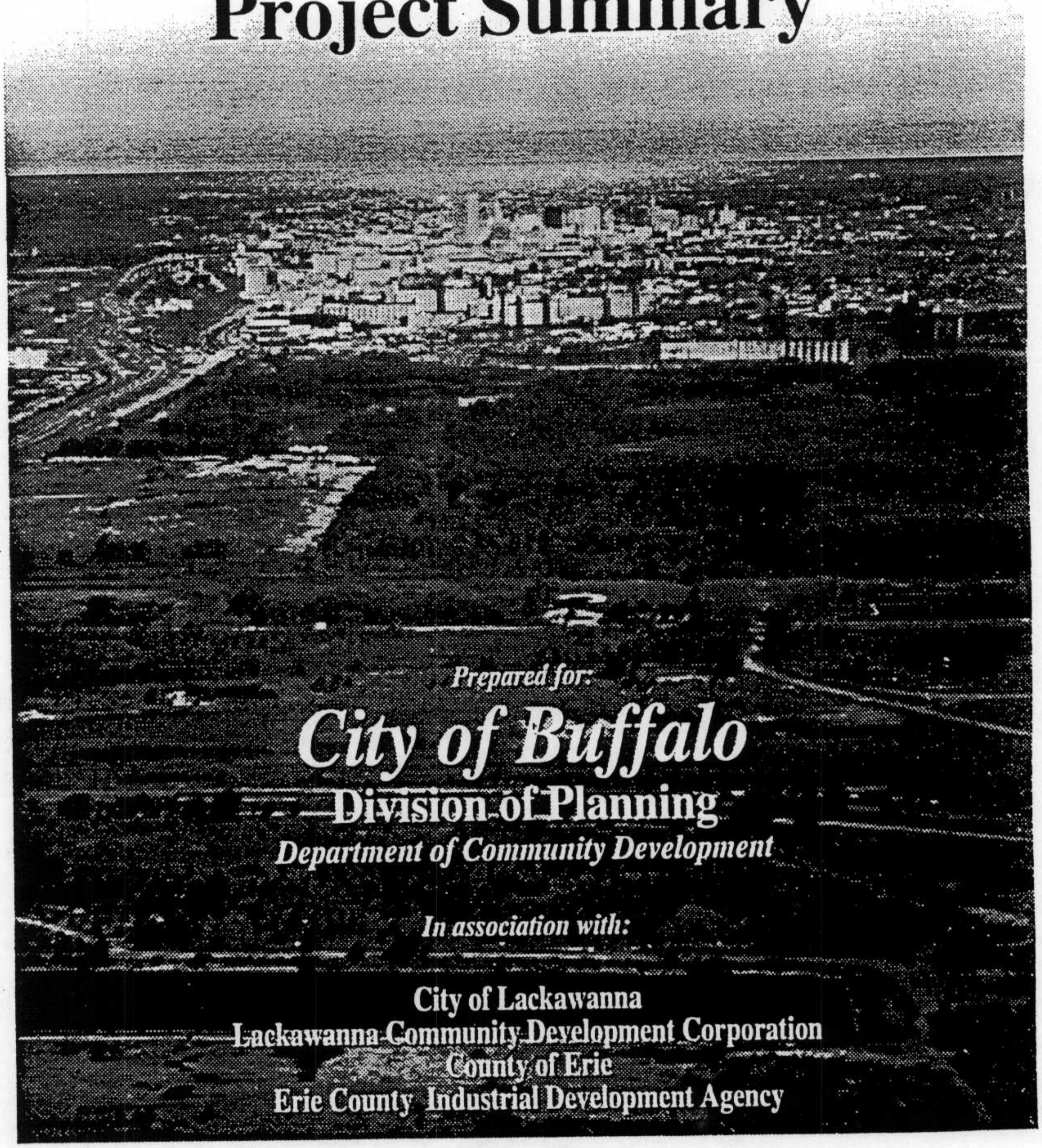
Brownfields Redevelopment Study

South Buffalo Redevelopment Plan

Project Summary



Prepared for:

City of Buffalo

Division of Planning

Department of Community Development

In association with:

City of Lackawanna
Lackawanna Community Development Corporation
County of Erie
Erie County Industrial Development Agency

Prepared by:

DE LEUW, CATHER

Engineers, Planners and Landscape Architects

A member of the Parsons Transportation Group

ERA • Economics Research Associates

February, 1997

Project Summary
South Buffalo Redevelopment Plan

Background

Heavy "Smokestack" industry once dominated the landscape near Lake Erie in South Buffalo. Thousands of employment opportunities with local industries made this area of Buffalo a center of industrial growth and trade. Buffalo's prominence as a national crossroads of multi-modal transportation gave the city a competitive edge in the production and transport of goods. Lake Erie, Niagara River, Erie Canal, Buffalo River and Union Ship Canal once provided the means for transporting goods and raw materials by ship to and from vital industries; while Buffalo's position as a national rail hub connected Buffalo's powerful industries to the rest of the country. More recently in the 1950s and 60s, with the development of the National Highway System, Buffalo was transformed into an important crossroads for the trucking industry.

Changing times and market forces have caused these heavy industries to decline. By the 1980s all that was left in this area were empty shells of factories where the hum of machines and pillars of smoke used to dominate the landscape. Today, the same areas are largely vacant and left with a legacy of challenging environmental conditions. The jobs are gone, as are most of the structures once housing them. In many areas, various plant species are revegetating the land. As we look forward, the North American Free Trade Agreement and a stronger regional economy has positioned Buffalo once again at an important crossroads for trade and commerce.

Conceptual Redevelopment Master Plan

The City of Buffalo, in partnership with the City of Lackawanna, Erie County, and Erie County Industrial Development Agency and other stakeholders, is developing a conceptual comprehensive master plan for over 1,200 acres of "brownfields" properties. The plan establishes a program for growth into the 21st Century. Adjacent to Downtown Buffalo, the South Buffalo Redevelopment Plan area is at the center of regional growth within the Niagara Frontier. With the assistance from the New York State Clean Water / Clean Air Bond Act, Federal "brownfields" redevelopment programs, and other sources, light industries and employment opportunities will prosper in this expansive area. In addition, a strong focus on environmental remediation will allow for land redevelopment while open space conservation, habitat enhancement, parks and recreation development and public waterfront access will add an unmatched level of quality to the area. No other development site in Western New York offers so many unique attractions and amenities for development.

Planning Process

The **process of planning** for this intensive project effort project included:

1) **Physical Site Analysis** to study the site redevelopment opportunities and constraints;
2) **General Market Research and Analysis** to study regional market trends and to provide examples of similar developments from across the country;
3) **Preliminary Concept Alternatives** which provided various land use scenarios for the overall site;
4) **Final Concept Master Plan** following review and selection of preferred preliminary concept plan;
5) **Developing Cost Estimates** for public infrastructure investment; and

Extensive input was received throughout the planning period from many interested parties and area stakeholders. All work was reviewed by a regional project Steering Committee, consisting of representatives from the City of Buffalo, Erie County, City of Lackawanna, City of Buffalo Brownfields Task Force, Erie County Industrial Development Agency, Lackawanna Community Development Corporation, Erie County and New York State Legislature, NYS Department of Environmental Conservation, New York State Department of Transportation and other area stakeholder groups and agencies. Additional input was received from various interested groups and civic leaders.

Plan Overview

The **South Buffalo Redevelopment Plan** represents one of the largest single-site development projects in Western New York and New York State, and is one of the largest recent land development projects in the Northeastern United States. This project proposes the revitalization and redevelopment of over 1,200 contiguous acres of property formerly utilized for heavy industries. The planning process balances a number of issues including market research, existing environmental conditions, unique existing site characteristics and location. An array of comprehensive land uses are proposed including light industrial, "clean" manufacturing, warehousing, distribution, and traditional corporate offices, set within a natural environment linked with greenway trails. The recreational components include an 18-hole golf course, marinas and public boat launches, and passive natural open space preservation. A "total" community plan is supported with residential "infill" and enhanced neighborhood amenities.

The new development is laid out in a flexible "campus"-like setting, with unique emphasis on supporting amenities and the creation of an attractive and inviting environment, similar to those found in satellite cities or suburban areas. The total potential build-out includes over 2.5 million square feet of light industrial, warehousing, distribution and other employment creating uses over a 5-20 year period. Depending upon the type of businesses attracted, it is estimated that there will be 4,500 to 10,500 new jobs created within the South Buffalo Redevelopment Area.

The Plan capitalizes on the North American Free Trade Agreement (NAFTA), the site's strategic regional location, access to major highways, environmentally-rich setting and proximity to waterways and railways. The City of Buffalo, City of Lackawanna and Erie County, as an integrated team, will quickly become major competitors in the warehousing/distribution and manufacturing industry by tapping into the goods movement between the United States and Canada. The South Buffalo Redevelopment Plan aims to fill an important void in the international trade market, as well as complement the downtown business core and suburban market.

Project Location

The approximate **project limits** of the South Buffalo Redevelopment Plan extend from the Buffalo River corridor on the north, Hopkins Street on the east, Lackawanna's Ridge Road on the south and Lake Erie to the west. The site predominantly lies within the City of Buffalo, yet straddles the municipal boundary with the City of Lackawanna (near its southern limits). Existing features and/or attractions located within the Plan project area are: *Tifft Nature Preserve (275 acres), South Outer Harbor area along Lake Erie, Union Ship Canal, Historic Grain Elevators, Buffalo River corridor, and Historic South Park (155 acres) with its nationally-renowned Botanical Gardens.*

Investment and Project Benefits

The project has been designed to deliver a wide range of benefits and to provide a maximum return for each dollar of public monies invested. Preliminary cost estimates for the conceptual plan have calculated a public investment of roughly $75 to $100 million over a 10-20 year period to complete the framework for the project *(Environmental remediation and property acquisition are not known at this time).* An extensive analysis of the total cost and private investment will be completed in the next phase of project planning.

The benefits of the project are immense, and in terms of scale, rank the property as one of the most important in the region's history. The comprehensive benefits of the project cover a wide variety of land uses that include, but are not limited to:

- **Jobs/employment opportunities** *with new businesses and industries, including "campus-like" development areas with flexible 5-25 acre parcels, accommodating 20,000 to over 300,000 sq. ft. facilities, and located within a unique amenity-rich, environmental setting. An estimated 4,500 to 10,500 jobs are created with final project build-out.*
- **Retail/commercial development opportunities**
- **Parks and recreation development, and historic preservation**
- **Environmental enhancement and open space preservation**
- **Transportation initiatives and opportunities**
- **Housing opportunities**

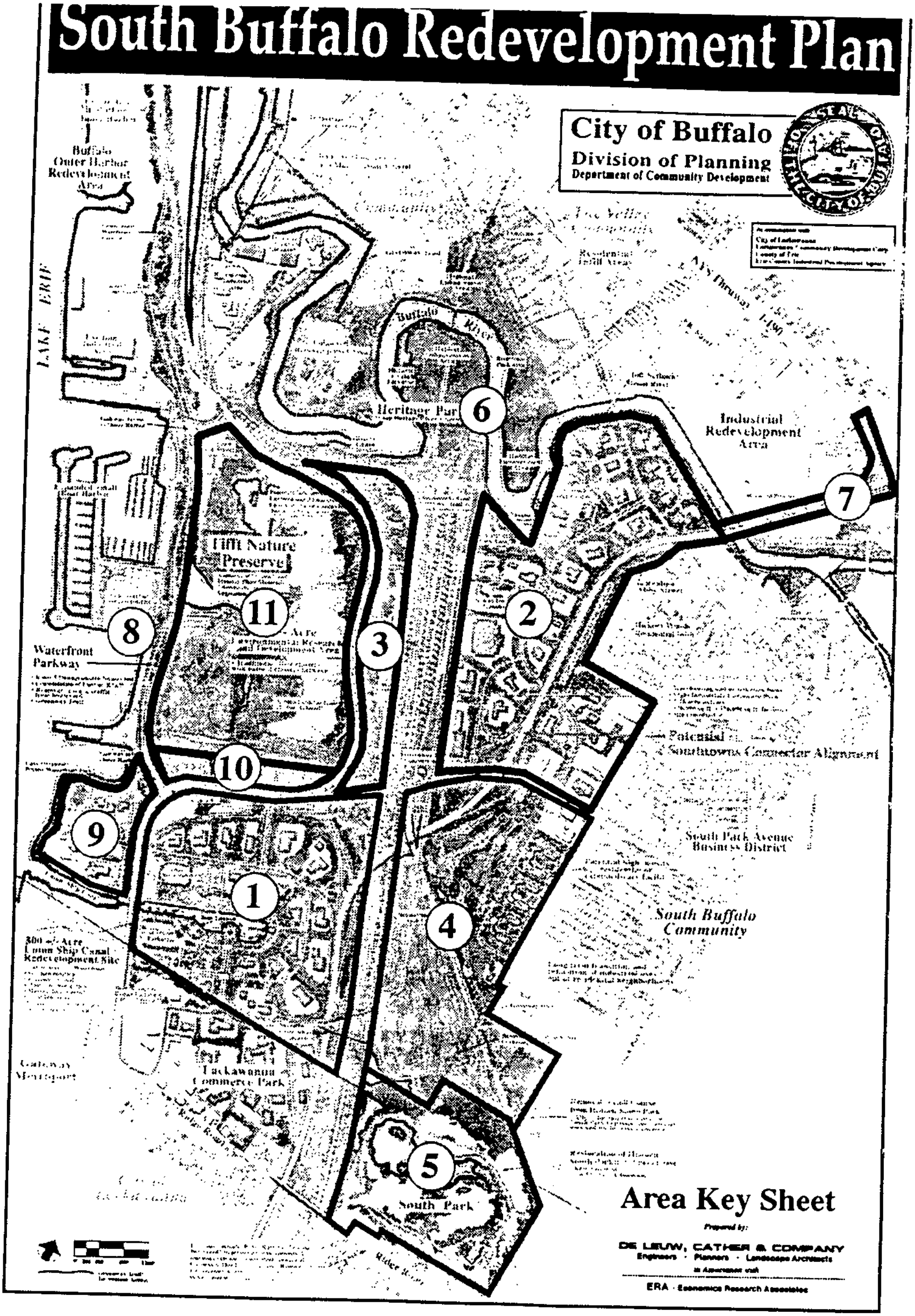
Master Plan Summary by Sub-area

Given the unique aspects of the plan, the following is a description of the plan broken down area-by-area as it corresponds to the specific development areas *(Refer to key map following)*.

Area 1 - Union Ship Canal Area

Following extensive environmental remediation and "clean-up" of this former heavy-industrial site, the Union Ship Canal area is transformed into a new 275-acre development campus setting, with a total "build-out" potential of over 900,000 square feet of building footprint. Central to the proposed development is the expansion and enhancement of the canal itself.

The area immediately surrounding Union Ship Canal provides the opportunity for a major Lakefront recreational facility including a full service marina, public boat launch, indoor / outdoor boat storage and maintenance facilities, waterside park with passive uses and picnic areas, public promenade with overlooks along the canal edge, athletic fields, potential indoor sports facility and public parking areas, etc. This regional waterfront attraction will provide an important amenity for the new development. In addition, this canal area will be particularly welcoming to the residents of Lackawanna, who have limited lakefront access at their own Lake Erie shoreline. This is all surrounded by a new light industrial / corporate development campus, all within a landscaped setting with communal open space, wetlands and greenway trails.



South Buffalo Redevelopment Plan
City of Buffalo
Division of Planning
Department of Community Development
Buffalo Outer Harbor Redevelopment Area
LAKE ERIE
Buffalo River
Heritage Park
6
Industrial Redevelopment Area
7
Tifft Nature Preserve
11
8
Waterfront Parkway
3
2
Potential Southtowns Connector Alignment
10
9
South Park Avenue Business District
1
4
South Buffalo Community
300 +/- Acre Union Ship Canal Redevelopment Site
Gateway Metroport
Tackawanna Commerce Park
5
South Park
Area Key Sheet
Prepared by:
DE LEUW, CATHER & COMPANY
Engineers · Planners · Landscape Architects
ERA · Economics Research Associates

Waterfront/marina related commercial development opportunities also exist around the Union Ship Canal area and out on the Lake shoreline. This could include waterside restaurants, shops, boat supply stores, jet ski and surf rentals, etc.

Area 2 - Former Republic Steel Plant Area

Following continued environmental remediation and site clean-up, the former Republic Steel properties and adjacent areas extending along the rail corridor from the Buffalo River to Tifft Street are transformed into a 350 acre development campus setting, with a total "build-out" potential of over 1.58 million square feet of building footprint. Development amenities include a "ship to truck" transfer facility area along the Buffalo River, and a "rail to truck" transfer facility along the main railroad corridor. Other individual development sites allow ample room for "truck to truck" goods transfer and light industrial or corporate office development.

A highlight to this development area would be the direct linkage to the New York State Thruway by a new roadway (urban arterial) crossing the Buffalo River along the abandoned Seneca Rail Corridor. This direct roadway access would allow for the removal of heavy commercial traffic from adjacent residential neighborhood streets. As a long-term potential development, this same corridor would be expanded to accommodate an expressway *(Southtowns Connector)* which would link directly to this highlighted development area. The adjacent land uses would be buffered from the proposed corridor.

Area 3 - Lehigh Valley Railroad Property *(Behind Tifft Nature Preserve)*

Three development options have been considered for the former Lehigh Valley railyard property adjacent to the Tifft Nature Preserve. The alternatives include:

1) Following an environmental remediation and site clean-up program, the former Lehigh Valley Railyard property area behind Tifft Nature Preserve would be sensitively developed to include a divided landscaped boulevard *("Lehigh" Boulevard)* providing public access to environmentally sensitive areas along the Buffalo River and allowing for an alternative route for traffic away from the lakefront into the City. "Lehigh" Boulevard would have a wide naturally landscaped median with a closed drainage system so as not to disturb the nearby wetland ecosystem. Also, this park-like boulevard allows for the redesign and downgrading of Fuhrmann Boulevard along Lake Erie to a slower speed attractive lakefront parkway.

   Complimenting the Lehigh Boulevard development, alternative land uses within this property include transforming the linear site into a 120 acre "Environmental Research" development corridor, supporting a total "build-out" of over 200,000 square feet. Traditional office uses focused on the restoration of the environment would be sought after for this unique setting. Utilizing the adjacent Buffalo River, Tifft Nature Preserve and wetlands as an outdoor research laboratory, this environmental research and development corridor could support businesses focused on studying and cleaning up a "Brownfields" environment, including water quality, habitat enhancement and ecosystem reclamation. Expanded facilities for both the Nature Preserve, Buffalo Museum of Science, and Industrial Heritage Committee are potential uses for this development area. Also a "Great Lakes Science Research Center," as was once discussed for the Inner Harbor, would be a complimentary use within this area.

2) A second alternative includes developing the boulevard as mentioned above and utilizing part of the property as an expansion to the Tifft Playfields for active recreation. The remaining property would be preserved for habitat reclamation and involve site remediation efforts to restore the existing wetlands and wildlife habitats.

   In support of the goals found within the Buffalo River Greenway Plan, the plan provides for public access to the waterfront and preserves and protects extensive green areas along the Buffalo River. A public access area and habitat enhancement area would be located along a new "Lehigh" Boulevard in back of Tifft Nature Preserve. This facility would allow for public access to the River areas and add an important piece to the Industrial Heritage Trail by providing access close to two historically-significant Grain Elevators. This habitat enhancement area also provides a natural connection between the Tifft Nature Preserve and the Buffalo River corridor for wildlife.

3). A third alternative preserves the existing setting, and connects or incorporates the property into the adjacent Tifft Nature Preserve. No roadway is proposed as a part of this "do-nothing" scenario. Environmental remediation and habitat reclamation are necessary as part of a Tifft Nature Preserve expansion.

In addition, in support of initiatives by the Buffalo Olmsted Parks Conservancy with their Buffalo Greenways Master Plan, Greenway trails would be developed as part of all three options listed above.

Area 4 - All-Tifft & Marilla Street Landfill Sites, etc.

Covering most of the 220 acre area south of Tifft Street on the east side of the rail corridor are landfills and automobile junk yards. Due to the site conditions, most uses are precluded on this property. A positive development approach is recreational uses and greenspace enhancement.

In support of this limited use potential, a major Golf Course development is envisioned. A long-term restoration program for this century old park includes transitioning the existing 9-hole golf course out of the park, allowing for a return to more passive park uses with less conflicts and safety problems. The first phase includes preserving 2 holes in the park, maintaining the existing clubhouse, and constructing 7 new holes on a landfill area and junk yards just north of the park. A later phase removes all remaining holes from the park and constructs a full regulation 18-hole course with a new clubhouse on Tifft Street. Given the adjacency to existing and active rail lines, safe crossings for golfers will be needed to make this course development possible.

Also, a termination of Hopkins Street to vehicular traffic at Marilla Street would cut down on through-traffic in the area and allow for safer build-out of the golf course facility. The Hopkins Street Bridge could be maintained for a pedestrian and bicycle access into the Park.

Area 5 - Historic South Park

A restoration program for this 155-acre historic "Olmsted" Park includes removing the existing 9-hole golf course from the park, allowing for a return to more historic passive park uses and horticultural practices. A highlight of the restoration efforts would include re-cultivating the world-class arboretum that made the park so special from the early Olmsted days. Many other specific restoration initiatives are included within the South Park Restoration Master Plan, prepared by Bruce Kelly and David Varnell in 1986.

Within historic South Park lies the world-class Buffalo and Erie County Botanical Garden, a magnificent Victorian-era conservatory structure made of glass and steel. The structure is designated for full restoration as a part of this plan. Combined with a full restoration of the world-class arboretum and botanical gardens, South Park would once again become a tourist destination unmatched in Western New York. Another world-class architectural treasure complementing the Park is the Our Lady of Victory Basilica within a short walk from South Park.

Adjacent to South Park, at the southern limits of the project area, lies Ridge Road, a main thoroughfare through the City of Lackawanna, and a link from the NYS Thruway to Lake Erie. As a part of an effort to bring more recognition and tourism to the world-class "Victorian-era" facilities of historic South Park, the Botanical Gardens and Our Lady of Victory Basilica, it is recommended that Ridge Road be renamed ***"Victoria Boulevard."*** This proposal has been made previously by other groups or individuals, as well as similar proposals for renaming the street "Father Baker Boulevard." The name change to "Victoria Boulevard" would give a distinguished address to these important locations and improve the name-recognition for tourists and travelers along the mainline Thruway (I-90). In addition, an improved signage and streetscape enhancement program along this street would support an important marketing initiative for this nationally significant tourist destination and support economic development initiatives within the City of Lackawanna.

Area 6 - Buffalo River Corridor

The Buffalo River remains an active shipping channel for a few remaining industries along its shoreline. However, many industries have disappeared, allowing the River to naturalize. Unfortunately, the legacy of industrial spoils is still evident along the river shoreline and will need to be addressed as part of an overall environmental remediation effort. The South Buffalo Redevelopment Plan preserves most of the shoreline land for natural habitat enhancement. The plan envisions an overall **"Heritage Park,"** highlighting the area's prolific industrial heritage and creating a naturally preserved park setting to allow the public to enjoy the scenery of the River and be educated as to its history. Interpretive displays and exhibits could highlight one's walk along this Heritage Park corridor. This also includes maintaining a minimum 100' development setback to the River shoreline for non-water-dependent uses as set forth under previous planning initiatives.

A Riverwalk "Greenway" trail would be developed along the River, creating a major linear park which would tie into the existing "Industrial Heritage Trail" and link to the proposed Inner Harbor development, thus becoming an overall regional "Heritage Park" attraction. These trails would also allow for public access to environmentally sensitive areas and habitat preserves intertwined throughout the new master plan development.

A new Riverfront park would be developed along the Buffalo River at the east edge of the Concrete Peninsula. This park would allow public access to the River's edge, including a public boat launch for non-motorized craft (canoes, etc.), fishing access, parking, and access to the River Greenway trail system.

Another highlighted attraction along the Buffalo River is Buffalo's impressive collection of Grain Elevators. Two of these historically significant structures lie within the immediate project area along the banks of the Buffalo River. It is a goal of this plan to preserve these historic structures for economic reuse or as an Industrial Heritage Park features and allow for public access and viewing along a linear greenway trail and waterfront park.

Area 7 - Seneca Rail Corridor

At the northeastern most corner of the plan lies the Seneca Rail corridor, an abandoned rail corridor bisecting the Mobil Oil property which once served the industries in the area. The South Buffalo Redevelopment Plan proposes a direct roadway (Urban Arterial) linkage from the Thruway (I-190) to the proposed development area via this abandoned Seneca Rail Corridor. It is important to note that since this crossing point is at the end of the officially-maintained shipping channel of the

Buffalo River, a low level, fixed bridge is feasible for this roadway access, thus creating a much more cost-effective solution than a high-level "Skyway-style" bridge, a tunnel or moveable bascule style bridge. This point of crossing of the River is also considered less disruptive to adjacent communities such as the Valley and First Ward, follows a previous transportation corridor right-of-way and avoids environmentally sensitive habitats further west along the River. The adjacent Hickory Woods Community would be buffered from any new road or highway improvements by a large planted greenspace zone (± 300 feet) and solid barriers that are found throughout other parts of the country.

Should a capacity demand develop in the future, a location for a urban expressway serving the Southtowns with direct access into the development area is incorporated into this area's master plan. In support of the North American Free Trade Agreement with its emphasis on International Trade, this highway provides direct linkages to the I-190 with an interchange location at Tifft Street, serving both major development areas and lakefront areas. This highway would allow for local businesses to access both Canadian and Southern U.S. markets by way of the Peace Bridge, QEW, I-90 and US Route 219. *This plan is the City's preferred alternative for the New York State Department of Transportation's Southtowns Connector Major Investment Study.*

Area 8 - Waterfront Boulevard and Tifft Street

The South Buffalo Redevelopment Plan supports a regionalized effort to remove heavy traffic volumes from the Outer Harbor Waterfront area. A re-directing of major Route 5 traffic away from the Lake Erie waterfront would allow for development of the lakefront for recreational, residential and commercial purposes. It is proposed that northbound traffic would travel past the Union Ship Canal, curve east onto an upgraded Tifft Street, travel through on a new landscaped divided boulevard ("Lehigh" Boulevard), along the existing active railroad corridor, and onto widened and improved Ohio and Louisiana Streets towards Downtown and the I-190. This proposal allows for a redesign of Fuhrmann Boulevard to an attractive, low speed Waterfront Parkway, and creates dramatic welcoming "gateways" to the Outer Harbor.

Area 9 - Independent Cement Area on Lake

Opportunities for access to Lake Erie exist at the northern half of the Independent Cement peninsula. Current recreational uses along the shoreline would be expanded and enhanced as a part of this effort. In addition, waterfront/marina related commercial development opportunities exist around the Union Ship Canal and out on the Lake shoreline. This could include waterside restaurants, shops, boat supply stores, jet ski and surf rentals, etc. The existing industrial uses at the Independent Cement site would be preserved as a part of this plan.

Area 10 - Tifft Playfields

The existing Tifft Playfields between Tifft Street and the Nature Preserve are proposed to be expanded by adding additional soccer fields and upgrading the existing athletic fields and support facilities. New lighting would be added to expand the park's recreational use after dark, as well as to create a safe and secure park environment.

Area 11 - Tifft Nature Preserve

The Tifft Nature Preserve is a major "anchor" attraction for the proposed redevelopment area. The plan recommends preserving all existing land and functions of the Nature Preserve with its environmental and educational focus. Also the plan recommends improving the natural ecosystem within the preserve by removing invasive species of vegetation and introducing native species indigenous to Western New York. The preserve is a former industrial site that has "naturalized" over the years under natural secession, and as a result should be considered for continuing environmental remediation and habitat enhancement.

MALCOLM PIRNIE

APPENDIX B

PHASE I/PHASE II INVESTIGATION REPORT
DONNER-HANNA COKE
SITE NO. 915017

0848-263/VCSA

Printed on Recycled Paper

915017

ENGINEERING INVESTIGATIONS AT INACTIVE HAZARDOUS WASTE SITES

PHASE II INVESTIGATION

Donner-Hanna Coke — Site No. 915017

City of Buffalo — Erie County

DATE: July 1990

RECEIVE
NOV 15 1990
BUREAU OF HAZARDOUS SITE CONTROL DIVISION OF HAZARDOUS WASTE REMEDIATION

DEPARTMENT OF ENVIRONMENTAL CONSERVATION • NEW YORK STATE •

Prepared for:

New York State Department of Environmental Conservation

50 Wolf Road, Albany, New York 12233
Thomas C. Jorling, *Commissioner*

Division of Hazardous Waste Remediation
Michael J. O'Toole, Jr., P.E., *Director*

BY:

Recra Environmental, Inc.
and
Lawler, Matusky, & Skelly Engineers

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ENGINEERING INVESTIGATIONS AT
INACTIVE HAZARDOUS WASTE SITES

PHASE II INVESTIGATION

DONNER-HANNA COKE
CITY OF BUFFALO

SITE NO. 915017
ERIE COUNTY

Prepared For:

New York State Department of Environmental Conservation
50 Wolf Road
Albany, New York 12233-7010
Thomas C. Jorling, Commissioner

Division of Hazardous Waste Remediation
Michael J. O'Toole, Jr., P.E., Director

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In Association With:

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One Blue Hill Plaza
P. O. Box 1509
Pearl River, NY 10965-8509

July 1990

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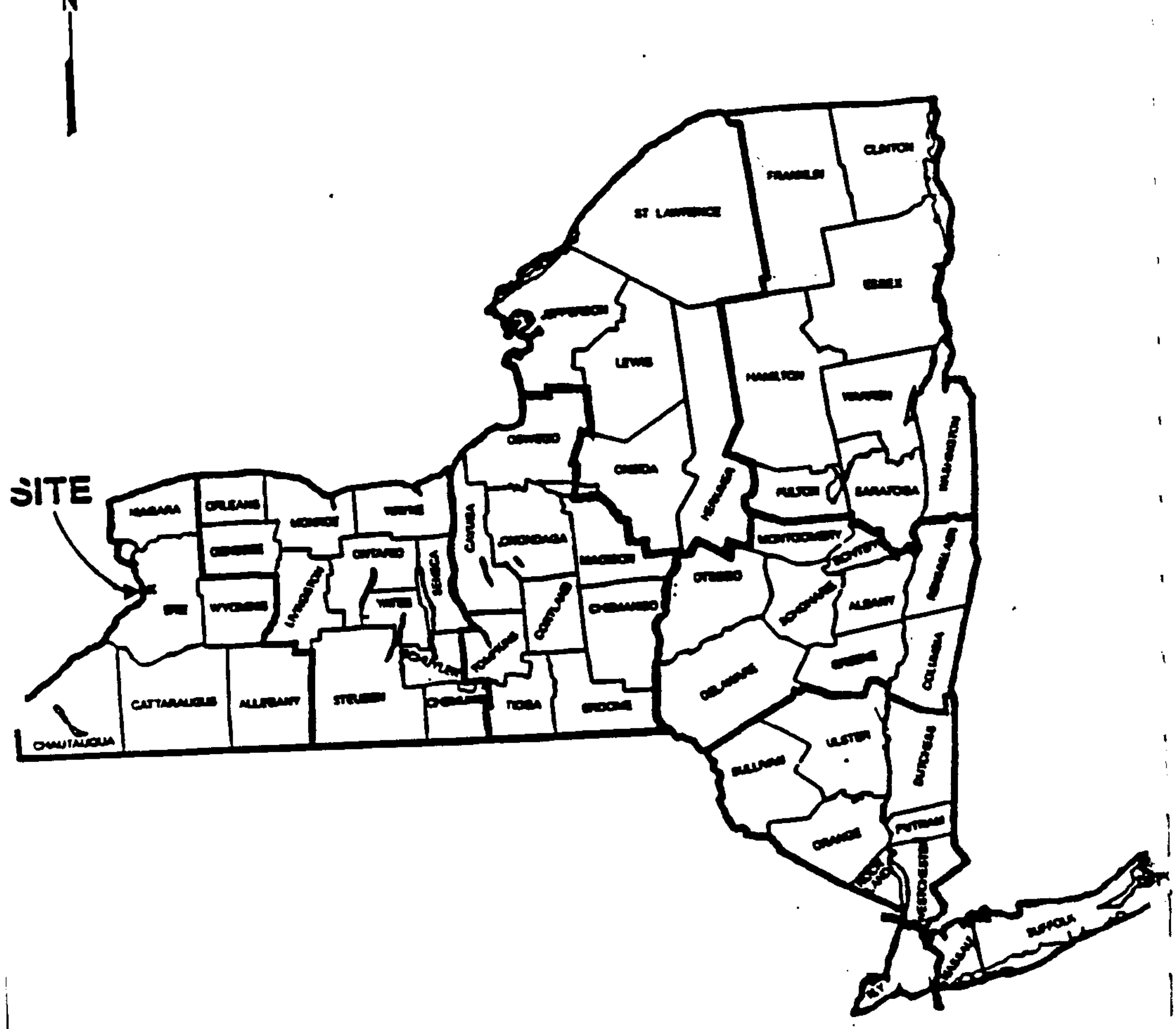
1.0 EXECUTIVE SUMMARY

The Donner-Hanna Coke site is located in an industrial area in the southern portion of the City of Buffalo, Erie County, New York (Figures 1-1 and 1-2). Altogether the Donner-Hanna property totals approximately 50 acres which is separated into two parcels by property owned by Republic Steel. The plant facility is located to the north and the study area for this investigation lies to the south of the Republic Steel property. The area investigated covers approximately 33 acres and is roughly bounded by a series of railroad tracks to the west; a fence and Republic Steel property to the north; a swampy area to the east; and a fence and commercial property to the south (Figure 1-3). The site is presently owned by Republic Steel Corporation and Hanna Furnace Corporation of Pittsburgh, PA, but was previously owned by Republic Steel and National Steel and operated under the name Donner-Hanna Coke Joint Venture. Plant operations began in 1919 and primarily involved the production of coke from coal (coal pyrolysis) until operations ceased in the early 1980s.

The grounds investigated, located south of the plant itself, were the scene of extensive fill activities over the years. The 33 acres were originally a large pond and wetland which was filled and later used for coke storage. Evidence of fill activities was first noted in 1951 aerial photographs. The fill material reportedly consisted of construction and demolition debris, slag, and sediments dredged from settling ponds through which passed effluent process waters.

By-products produced from the coal pyrolysis were handled in one of two ways. Sodium phenolate and ammonium sulfate were extracted through the use of solvents such as toluene and xylene. These two products were then

STATE OF NEW YORK



RECRA ENVIRONMENTAL, INC.

Scale:	NTS		DONNER HANNA COKE Buffalo, NY NYSDEC SUPERFUND PHASE II INVESTIGATION	LOCATION MAP
	By	Date		
Dwn.	JJC	3/89		
Ckd.	RES	4/89		
Ap'vd.	JRS	5/89	Project No. 8C1301G	B FIGURE NO. 1-1
Rev.				

USGS TOPOGRAPHIC MAP
BUFFALO, N.Y. SE QUAD 1965
LATITUDE 42°50'46"
LONGITUDE 78°51'12"
7.5 MIN.

SCALE 1:24 000

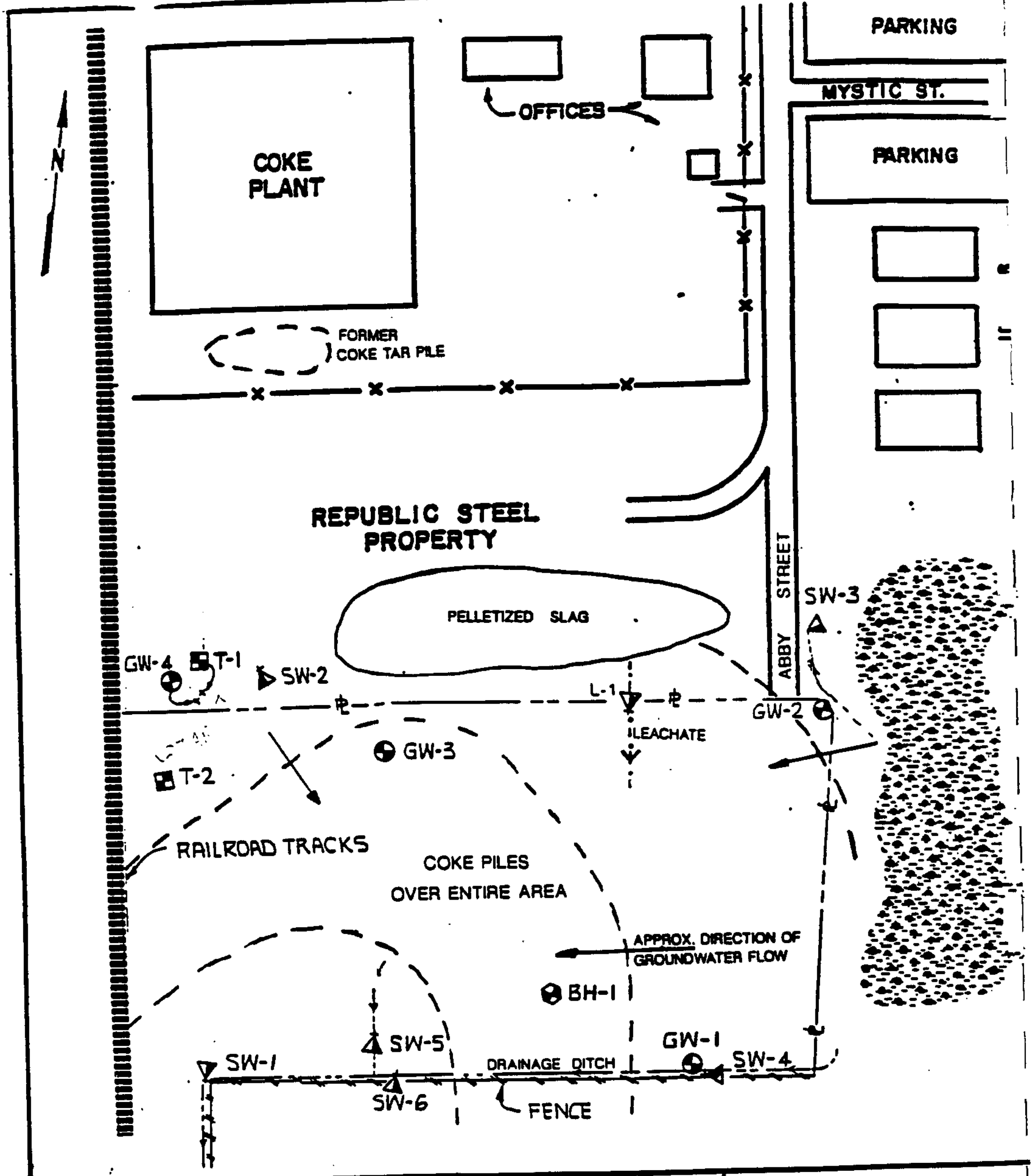
1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

RA
IRONMENTAL

Scale: 1:24,000			DONNER HANNA COKE Buffalo, NY NYSDEC SUPERFUND PHASE II INVESTIGATION	VICINITY MAP
	By	Date		
Dwn.	JJC	3/89		
Ckd.	RES	4/89		
Ap'vd.	JRS	5/89		
Rev.			Project No. 8C1301G 1-3	B FIGURE NO. 1-2



RECRA

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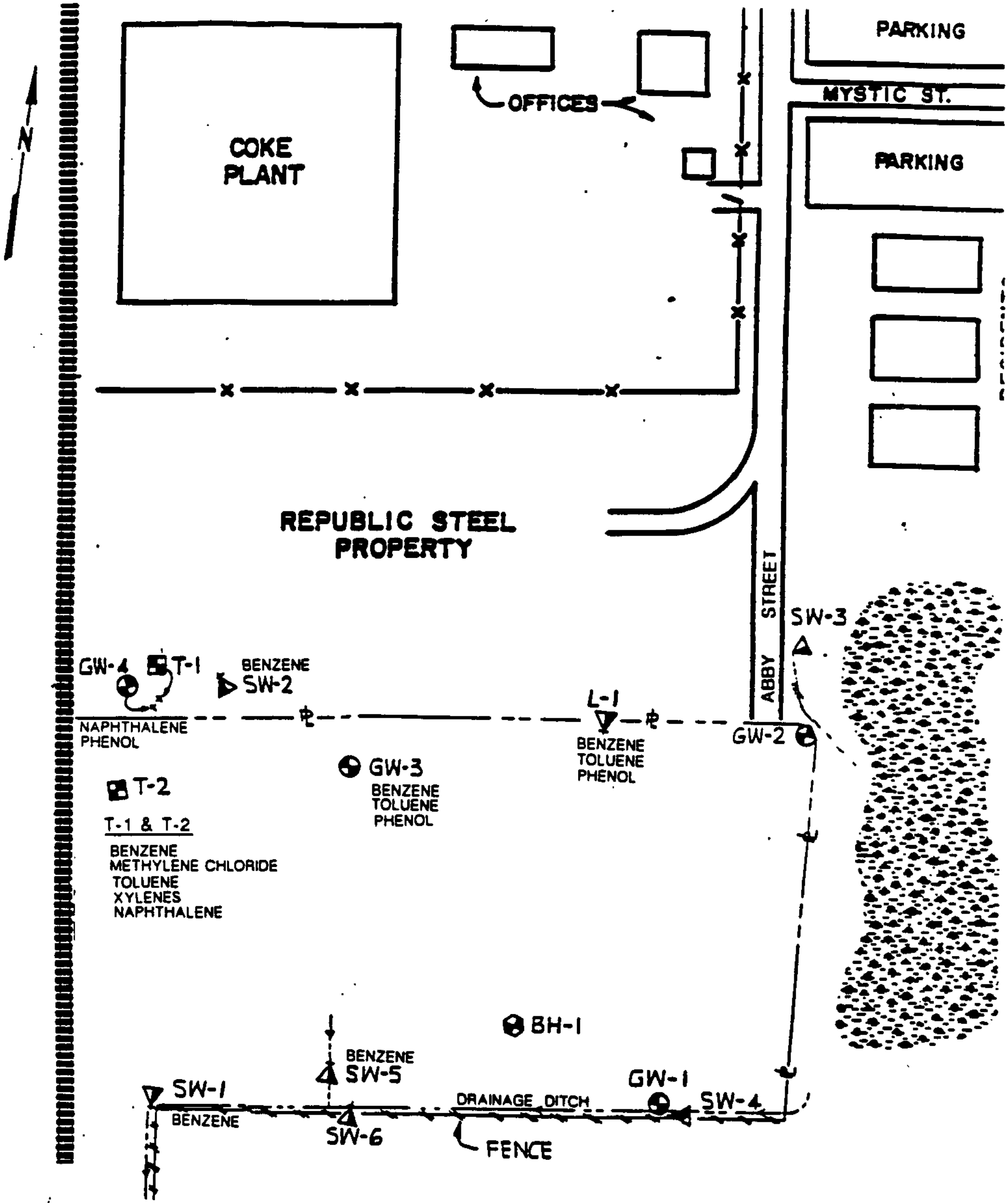
	By	Date
Dwn.	E.D.	2/89
Ckd.	RES	4/89
Ap'vd.	URS	5/89

DONNER HANNA COKE
BUFFALO, N.Y.
NYSDEC SUPERFUND
PHASE II INVESTIGATION

SITE SKETCH

File No. 1-3



RECRA ENVIRONMENTAL INC.	Scale: approx. 1"=270'			DONNER HANNA COKE BUFFALO, N.Y. NYSDEC SUPERFUND PHASE II INVESTIGATION	SITE SKETCH (WITH MAJOR CONTAMINANTS)
		By	Date		
	Dwn.	E.D.	2/89		
	Ckd.	RBS	4/89		
	Ap'vd.	JRS	5/89		
	Rev.			Project No. 8C1301 G	B Figure No. 1-4

reportedly sold. Heavier hydrocarbon wastes such as tar decanter sludge and wash oil sludge were reportedly mixed with coal, stored outdoors, and used as raw material for coke production. In response to a consent order signed by Donner-Hanna Coke Joint Venture on February 3, 1983, this material was removed from the site.

A New York State designated wetland is located approximately 2,000 feet west of the site. The Buffalo River, a Class "D" water resource, flows westward approximately 2,000 feet north of the site and empties into Lake Erie.

An inspection conducted on June 9, 1981 by the Erie County Department of Environment and Planning found no signs of leachate or past leachate outbreaks.

Sampling by the New York State Department of Environmental Conservation (NYSDEC) in 1982 found no contravention of standards for the effluent stream of process waters. Samples of the landspread sludges collected at this time passed the EP Toxicity Criteria. A NYSDEC Phase I Investigation was conducted by Recra Research, Inc. in 1983 to collect and evaluate information regarding past on-site activities and previous inspections, and to prepare a preliminary Hazard Ranking System (HRS) score.

The United States Geologic Survey (USGS) conducted a soil investigation at the site in 1982 and 1983. Analyses of four boring samples collected in May 1983 indicated concentrations of priority pollutant organic compounds ranging from 2.5 (toluene) to 51.8 (benzene) ug/kg. Non-priority pollutant compounds ranged from 3.7 (xylene) to 399 (acetone) ug/kg.

The Phase II Investigation activities presented in this report involved completing the requirements for a final HRS score, evaluating the geologic and hydrogeologic site conditions, and identifying and evaluating the presence and nature of contamination.

The test borings advanced for the Phase II Investigation revealed the uppermost layer of sediments to consist of up to 7 feet of fill consisting predominantly of coke. Beneath the coke fill, the sediments consisted of a heterogeneous combination of sand, silt and clay. These are interpreted to represent dredged sediments from industrial settling ponds which were landspread in the area and sedimentary deposits of proglacial Lake Warren.

Groundwater was observed to occur under water table conditions at depths as shallow as 1.5 feet below ground surface. The top of the water table was variable across the site with the highest elevation located at the northeast part of the site. The direction of horizontal groundwater flow appears to be toward the southwest.

Chemical analyses of groundwater, surface water and sediments have revealed concentrations of volatile organic and semi-volatile organic compounds ranging from 1 to 240 ug/g (Tables 4-4, 4-7 and 4-10). NYSDEC water quality standards (6NYCRR 703.5) for Class GA groundwater have been exceeded for arsenic, cyanide and manganese. NYSDEC Class D surface water standards (Part 701) have been exceeded for iron, lead and zinc. Sediments were found to contain a number of inorganic constituents including beryllium, calcium, and mercury exceeding concentrations in non-contaminated soils from similar environments.

New York State Department of Health drinking water standards were exceeded in the groundwater by acetone, benzene, and toluene. Several inorganic compounds also exceeded these standards including: arsenic, cadmium, chromium, iron, lead, manganese, and zinc.

Chemical analyses were also performed on two samples of a tar-like substance and one leachate sample. Results of the analysis of the tar revealed the following volatile organic compounds: acetone (11 to 200 mg/kg), benzene (50 to 140 mg/kg), and xylenes (49-210 mg/kg).

USEPA uses a Hazard Ranking System (HRS) to apply uniform technical judgement in evaluating the relative hazards presented by sites being considered for federal superfund remediation. HRS addresses only relative hazard. It does not assess the feasibility, desirability, or degree of cleanup required, and does not address all potential environmental or health impacts.

Under the HRS, three numerical scores are computed for each site to express the relative risk or danger from the site, taking into account: the population at risk; the hazardous potential of substances found at the site; the potential for contamination of drinking water supplies, for direct human contact, and for destruction of sensitive ecological systems; and other appropriate factors. The three scores are:

a. S_M, reflecting the potential for harm to humans or the environment, from migration of a hazardous substance from the facility by groundwater, surface water or air. It is a composite of separate scores for each of the three routes.

b. S_{FE}, reflecting the potential for harm for substances that can explode or cause fires.

c. S_{DC}, reflecting the potential for harm from direct contact with hazardous substances at the facility.

The HRS scores for the Donner-Hanna Coke Site have been calculated as follows:

S_M = 5.45

S_{gw} = 5.42

S_{sw} = 7.72

S_a = 0.00

S_{FE} = Not Scored

S_{DC} = 50.00

Despite the observed release of a variety of organic and inorganic contaminants, the migration route score (Sm) is low due to the apparent lack of receptors via the groundwater (Sgw) and surface water (Ssw) routes. Based on this Phase II and previous studies at the site, further investigative activities are recommended which should provide the following information:

Source characterization including types of contaminants and horizontal and vertical extent of source(s).

Site specific hydrogeologic conditions regarding a basal till upper bedrock water bearing zone and intermediate water bearing zone(s) if present.

Examination and location of scource of tar-like substance which was observed extruding on the surface. Analysis according to TCLP protocols to determine potential hazardous characteristics.

Further sampling and analysis of surface waters and sediments from drainage ditches to determine potential for off-site migration via this route.

Based on supplemental investigative tasks, it will be possible to determine whether or not and to what extent hazardous substances are present at the site and what remedial measures need be taken.

2.0 PURPOSE

The purpose of this Phase II Investigation is to address specific concerns regarding past waste disposal practices at the Donner-Hanna Coke site and to provide additional information for scoring the site utilizing the Hazard Ranking System (HRS). The HRS is the standard numeric ranking system adopted by the NYSDEC for the ranking of inactive hazardous waste sites for state Superfund projects. A preliminary HRS score of the site was obtained through a Phase I Investigation conducted by Recra Research, Inc., in 1983, and this Phase II Investigation is intended to fill data gaps and substantiate previous findings for a final HRS score.

The objectives of the Phase II Investigation are:

- provide a preliminary geologic and hydrogeologic site assessment.
- identify and evaluate the presence and nature of contamination.
- based on conclusions formulated by accomplishing the objectives identified above, evaluate the environmental significance and potential impact on public health.
- provide additional information for scoring the site utilizing the 1982 Mitre Model Hazard Ranking System (HRS).
- prepare a report document in accordance with NYSDEC's Phase II report format.

3.0 SCOPE OF WORK

The scope of work for the Donner Hanna Coke Phase II Investigation has been defined in a work plan prepared by Recra Environmental, Inc. (Recra) in association with Lawler, Matusky and Skelly Engineers. Included in the workplan were the data collection requirements and procedures identified to fulfill the investigation's objectives. These data collection activities included the following tasks:

- o Literature Review
- o Site Reconnaissance
- o Geophysical Investigation
- o Subsurface Investigation
- o Monitoring Well Installation
- o Permeability Testing
- o Sampling and Analysis
- o Surveying

Details of the specific procedures used in performing each work task are presented in the following sections.

3.1 Literature Review

Prior to initiating field work, a literature review was performed to review available data pertinent to the site. As part of this process, the Phase I report was examined for completeness, information gathered prior to its' development was verified, and information that had been generated after its' completion was evaluated. The literature review included examination of site sketches, aerial photographs, utility maps (water and sewer) and correspondence between state and local agencies. For the Donner Hanna Coke

Site, the agencies contacted for information were: Erie County Real Property Tax Assessors Office, Erie County Department of Health, Erie County Department of Environment and Planning, City of Buffalo Director of Water and NYSDEC Region 9 Office, Buffalo, New York. The NYSDEC Phase II Investigation report of the Alltift Realty Site and the USEPA report entitled Preliminary Evaluation of Chemical Migration to Groundwater and the Niagara River from Selected Waste-Disposal Sites were also reviewed. The information gathered during this review was used primarily to assist in making adjustments to the proposed monitoring well and sample point locations, verify fill depths and saturation levels, and identify property ownership.

3.2 Site Reconnaissance

On August 22, 1988, Recra conducted a site reconnaissance prior to the commencement of drilling and/or sampling activities. During this time, information pertinent to performing a drilling program was obtained. This included locating potable water, evaluating site accessibility, communicating with property owners whose property was being considered for drilling locations, and noting overall conditions at the site.

Based on these observations and previous studies, Recra developed and submitted to NYSDEC a site specific Health and Safety Plan which identified the responsibilities of authorized personnel, criteria for medical surveillance, requirements for training, specifics for a protection program requiring a minimum level D personnel protective equipment, decontamination procedures, monitoring requirements, action levels, and emergency information.

Prior to commencement of the drilling program, upwind and downwind air monitoring was conducted with an organic vapor analyzer (O.V.A.) and wind directions were noted.

3.3 Geophysical Investigation

3.3.1 Introduction

On August 22, 1988, a geophysical survey was conducted by Dunn Geoscience Corporation (subcontractor to Recra) using a terrain conductivity technique. This survey was performed in an attempt to define the limits of fill material, to characterize the electrical conductivity of the site, and to determine the possible presence of conductive groundwater contaminant plumes.

The geophysical information obtained was used to minimize the number of drill sites, assist in determining the location of monitoring wells, and reduce the risk associated with drilling into unknown terrain and waste.

3.3.2 Methodologies

The terrain conductivity survey was performed utilizing a Geonics Model EM-31 DL terrain conductivity meter. The EM-31 can measure the subsurface conductivity to an average depth of approximately 6 meters (18 feet). It measures the apparent conductivity of the ground in millimhos per meter and has a noise level of <0.1 millimho per meter. An EM-31 terrain conductivity survey is valuable for obtaining initial information in areas which consist of unknown materials. The instrument is generally sensitive to underground conductors (i.e., metallic objects, large pipes, buried drums, etc.) and can also reflect lateral changes in the conductivity of materials in the subsurface. In some cases, contaminated groundwater can also be identified using geophysical techniques. Groundwater contamination as detected by the EM-31 is based upon the presence of electrolytes in solution; primarily the presence of chloride ions. Although such electrolytes are commonly not of primary concern, they are frequently transported with other constituents such as organic chemical compounds, of which few are conductive.

Prior to data collection, traverses were selected to encompass the perimeter of the suspected fill area. Base stations were established at each turning point with a 300 ft. tape measure. After calibrating the instrument, readings were taken at 20 foot centers, both parallel and perpendicular to the direction of travel. The 300 foot tape was extended along the path of each traverse to insure accurate station location. All readings were taken with the instrument in the "operational" mode which measures the quadrature-phase component of an induced magnetic field. This component is linearly related to actual ground conductivity.

3.3.3 Field Survey

A total of four (4) traverses were completed using the terrain conductivity technique. The total length of terrain conductivity survey lines completed at the site was approximately 4,600 linear feet. An initial base station was located on the northeast corner of the site. Subsequent base stations or turning points were situated throughout the site as depicted on Drawing No. 2 (Appendix A). Turning points and base stations were tied into two existing structures, where possible. The length of the individual profiles varied.

A report of the geophysical survey methodologies, techniques, and results is presented in Appendix B (Dunn Geoscience Report).

3.4 Subsurface Investigation

Five test borings were drilled during the period September 21 to September 23, 1988, by Empire Soils Investigations, Inc. of Hamburg, New York. All work was conducted with field supervision by a Recra geologist. Each boring location was selected by Recra and approved by NYSDEC based upon review of the geophysical survey data, historical landfilling operations, existing subsurface utility information, and physical obstructions. An initial boring (BH-1) was advanced to a depth of eight feet in order to locate the approximate upper limit of the saturated zone and to derive stratigraphic information. This borehole was then backfilled with grout. Four subsequent borings were designed to penetrate the top ten feet of the zone of saturation. Boring locations are presented on Drawing No. 1, Appendix A.

Test borings were advanced with 4¼-inch inside diameter (I.D.) hollow stem augers driven by a CME-45B truck mounted drill rig. Continuous soil samples were collected with a two inch outside diameter (O.D.) split barrel sampler advanced in accordance with the standard penetration test procedure (ASTM D-1586). All samples were monitored for the presence of volatile or explosive gases immediately after the sample barrel was opened by using an O.V.A. and combustible gas and oxygen alarm. Each sample was visually described in the field by the geologist and placed in a labeled, screw cap glass jar.

Drilling and stratigraphic information specific to each boring is presented on subsurface logs in Appendix C.

3.5 Monitoring Well Installation

3.5.1 Well Construction

The four subsequent borings discussed in Section 3.4 of this report were converted to monitoring wells upon completion of each advancement/sampling sequence (September 21 thru 23, 1988). These were installed in the overburden material to depths ranging from 12.5 to 14.0 feet as dictated by the occurrence of a water-bearing zone. Decisions for each specific well construction were made after a review of the test boring data in the field by Recra in concurrence with the NYSDEC.

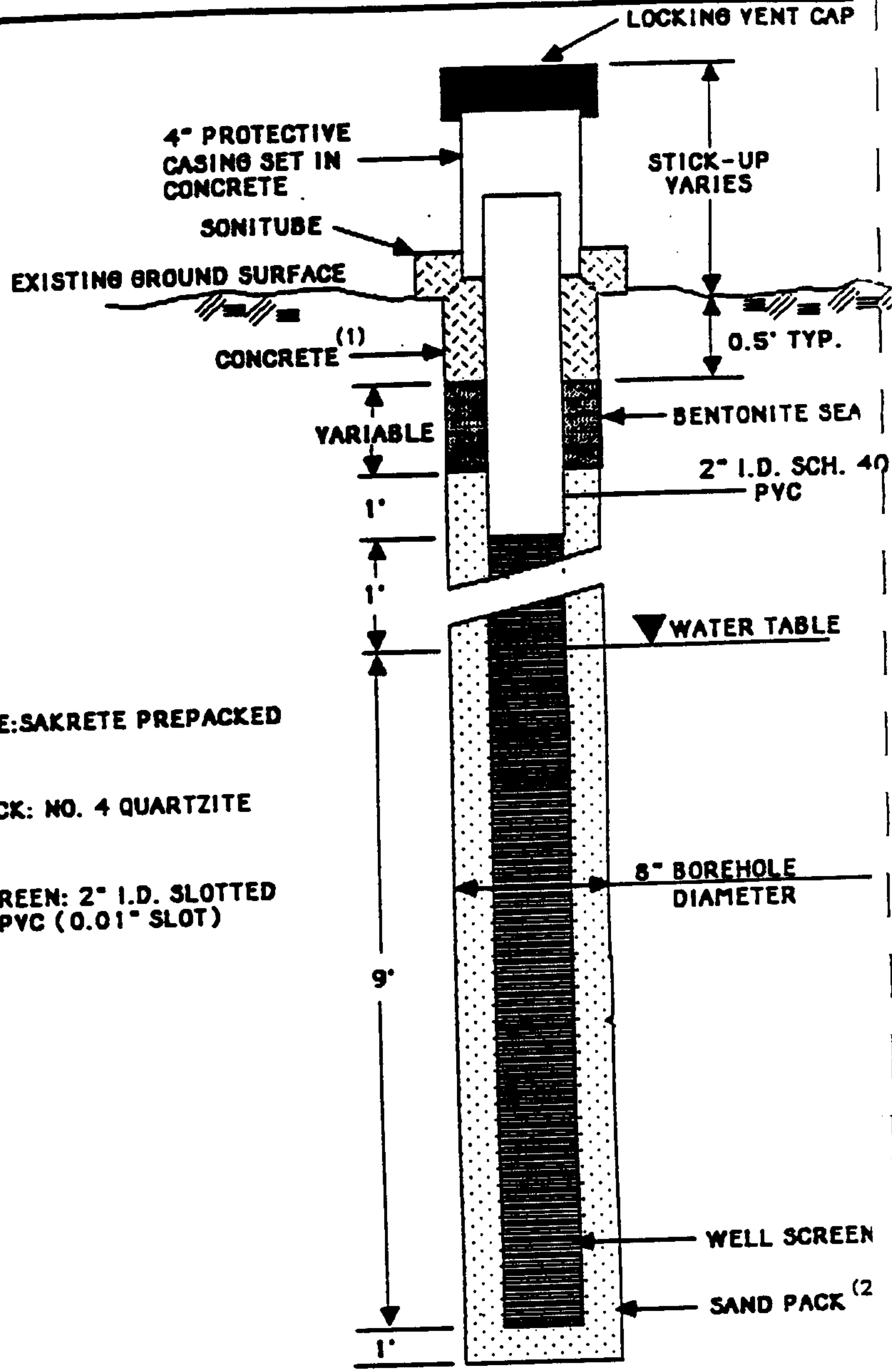
The monitoring wells were constructed with 10 foot long, 2 inch I.D., threaded flush jointed, Schedule 40 PVC, 0.010 inch well screen and equivalent riser casing. Well screens were installed with the top of each screen located one foot or more above the encountered water table to allow for fluctuations in groundwater elevations. All installations included a washed and graded sand pack surrounding the well screens and extending approximately one foot above the screen top. A 1.0 to 1.5 foot-thick bentonite seal was placed above each sand pack. Since the seals were very close to the ground surface, construction-grade sonitube about 1 foot high was placed around each well and filled with SAKRETE. At this time, a four-inch diameter steel casing with locking cap was placed over each well. A typical monitoring well of the type installed at the Donner

Hanna Site is illustrated in Figure 3-1. Individual well construction details are presented in Appendix C of this report.

3.5.2 Well Development

Well development was initiated at least 24 hours subsequent to the completion of grouting. Well development was performed to correct any clogging of the water bearing formation which may have occurred as a side effect of the drilling and to remove drilling water from the water table such that each well would yield water which was representative of the in situ conditions. Prior to initiating each well development, the static water level was recorded using an electric level sounder and engineer's ruler. The well bottom was measured using a fiberglass tape. Wells were evacuated and surged with pre-cleaned, dedicated PVC bailers and an ISCO peristaltic pump with separate polyethylene tubing.

The development process was continued until measurements of pH and specific conductance had stabilized and a turbidity measurement of less than 50 Nephelometric Turbidity Units (NTU) was obtained. A 50 NTU measurement was unattainable at GW-3 due to suspended clays in the water at this location. Static water level measurements were made following well development. Tabulated well development data is presented in Appendix D. The purgings, breathing zone, and interior of the riser pipe were monitored throughout development with an O.V.A.



NOTES:

(1) CONCRETE:SAKRETE PREPACKED MIX

(2) SAND PACK: NO. 4 QUARTZITE SAND

(3) WELL SCREEN: 2" I.D. SLOTTED SCH. 40 PVC (0.01" SLOT)

PB.00335

SCALE:	NTS	
	BY	DATE
DWN.	PCB	5/8/89
CKD.	RES	5/9/89
PRVD	JRS	5/23/89

DONNER HANNA COKE
NYSDEC SUPERFUND
PHASE II INVESTIGATION
SITE NO. 915017

3-8

TYPICAL

MONITORING WEL

FIGURE 3-1

3.5.3 Permeability Testing

In situ permeability testing of the newly installed monitoring wells was conducted by Recra on November 17 and December 22, 1988. Initial static water level measurements were made in wells GW-2, GW-3, and GW-4 followed by the injection of a weighted slug of a specific volume. An instantaneous head displacement associated with the slug volume was created and the subsequent decline in water level was measured with an electric water level sounder. Once head conditions reached a static state or attained 10% of the initial displacement, the slug was removed. The subsequent rise in water level was then measured with an electric water level sounder. Recharge from GW-1 was too rapid to allow a variable head test to be conducted as described above. Therefore, a constant head test was performed using the following technique. The well was pumped at a constant rate (ISCO peristaltic pump), while personnel recorded the discharge rate and water level periodically. When the head conditions reached a static state (variance within ± 0.02 ft.), the discharge rate and subsequent water level were recorded five times within a 26-minute time period.

Data analysis for either test involved the determination of the coefficient of permeability. The analyses performed utilized techniques provided by Harry R. Cedergren in Seepage, Drainage and Flow Nets, 2nd Edition. For each variable head test, the head ratio (dependent variable) was logarithmetically plotted with respect to elapsed time (independent variable). Data points for the permeability determination were then obtained from a linearization of these plots and utilized in appropriate equations. For the constant head test, the average of the five discharge rates and corresponding head measurements were utilized in an appropriate equation.

This testing provided data on the permeability of the soils at the top of the water table. These values were subsequently extrapolated to approximate permeability in the unsaturated zone as required in scoring under the HRS. All data and calculations are presented in Appendix E.

3.6 Sampling and Analysis

3.6.1 Groundwater Samples

To aid in the groundwater investigation two existing wells located at the southwest corner of the site were utilized to gather water table elevations and groundwater samples. These wells (CW-6A and CW-6B) were installed as part of a 1986 NYSDEC Phase II Investigation for the Alltift Realty Site. This site is a former landfill which had been in use since the 1930's. It is located approximately 400 ft. south of the Donner-Hanna Coke site across Tifft Street (Figure 1-2).

Following the equilibration of water levels within the newly installed wells, water elevations were measured to determine the water table surface. Measurements were taken on November 9, 1988. Water level measurement of well CW-6B was taken on December 12, 1988. A complete set of water level measurements was not collected at this time due to damage of well GW-2.

Representative groundwater samples were collected from the newly installed wells and CW-6A by Recra on October 25 and 26, 1988. On December 21, 1988, a sample was collected from well CW-6B. Groundwater samples were collected after the completion of development and attainment of 50 Nephelometric

Turbidity Units (NTU). At well GW-3 the 50 NTU criteria was not attained due to fine sediments suspended in the groundwater. All wells recovered rapidly and were evacuated of three times the borehole contents. Evacuation of water from GW-1, GW-3, and GW-4 was accomplished with dedicated PVC bailers and new ½-inch polyethylene rope. Well GW-2 was evacuated by using an ISCO peristaltic pump with new polyethylene and silicon rubber tubing. A new stainless steel bailer was used to evacuate CW-6B. Sample collection for volatile organics was accomplished at each well using dedicated bailers and rope. At wells GW-1 thru GW-4 sampling for the remaining parameters was completed with a peristaltic pump and new polyethylene and silicon rubber tubing.

Upon collection of each sample, field pH, temperature, specific conductance, and turbidity measurements were recorded. Each sample was placed in an appropriate pre-cleaned bottle or septa vial, labeled, chilled and returned daily to Recra Environmental, Inc. laboratories in Tonawanda, New York, for analysis. Chain of custody records were maintained by authorized sampling personnel from the time of collection to delivery to the laboratory. Specific sample collection data is presented in Appendix F.

3.6.2 Surface Water Samples

A total of seven surface water samples were collected on October 26 thru 28, 1988. Five were collected from drainage ditches around the perimeter and interior of the site. The drainage ditch at the northeast corner of the site from which SW-3 was sampled appeared to originate from the marshy area bordering the east side of the site. Although flow was almost non-existent, the water did appear to be moving northerly towards the Buffalo River.

The drainage ditch along the southern border of the site was observed to have a westerly flow and did also appear to originate from the marshy area east of the site. This ditch would also have received runoff percolating through the 2 to 3 feet of porous coke material present at the surface of the site. Sample SW-4 was collected near the origin of this drainage channel and SW-6 was collected out of the same ditch approximately 670 feet west of SW-4. A north-south trending drainage channel flowed into the southern ditch about 50 feet west of SW-6. This feature originated in and received surface runoff from much of the central portion of the site. Sample SW-5 was collected from the north-south trending ditch. Approximately 550 feet further west the southern drainage channel made a 90 degree turn and flowed to the south. Sample SW-1 was collected at the bend in the ditch. After flowing off-site, the ditch appeared to enter the storm drainage network along Tifft Street.

Another sample was collected from a standpipe located at the northwest corner of the site (SW-2). One other, considered a leachate sample, was collected from an apparent leachate outbreak located at the northeast corner of the site (L-1). All samples were collected to aid evaluation of possible contaminant migration from the site via the surface water route. The final selection of these sampling locations was made in conjunction with NYSDEC recommendations and approval after the literature review and site reconnaissance. All sampling locations are presented on Drawing No. 1 (Appendix A).

Most surface water samples were collected directly into the sample containers by manual immersion into the water. The standpipe sample was collected with a stainless steel bomb sampler and the leachate sample was collected in part with a peristaltic pump. At the time of collection, samples were analyzed for pH, specific conductance, and temperature. Each was then chilled and returned daily to Recra Environmental, Inc. laboratories for analysis. Chain of custody records were maintained as previously described. Specfic sample collection data is presented in Appendix F.

3.6.3 Sediment/Soil/Tar Samples

A total of nine solid matrix samples were collected on October 26 thru 28, 1988. Six were sediments (SED-1 thru 6) collected from the previously mentioned drainage ditches and standpipe adjacent to their companion surface water sample locations. Two additional samples of a tar-like substance were collected in separate locations in the vicinity of GW-4 (Tar-1, 2). All sediment samples were collected to aid evaluation of possible contaminant migration via the surface water route. A soil sample composite was also collected from BH-1 during drilling.

Samples SED-1, 3, 4, 5, 6 and Tar-1,2 were collected by utilizing pre-cleaned hand trowels. Sediment was excavated from the upper 1 to 2 feet at each location and placed in pre-cleaned glass sampling containers. Sample SED-2 was collected with a ponar dredge from the standpipe. The composite sample at BH-1 was collected from successive split barrel samples. Upon collection, all sediment/soil/tar samples were chilled and returned daily to Recra Environmental, Inc. laboratories in Tonawanda, New York, for analysis. Chain of custody records were maintained as previously described. Specific sample collection data is presented in Appendix F. Sample locations are illustrated on Drawing No. 1 (Appendix A).

3.6.4 Chemical Analytical Methods

Samples collected during this Phase II investigation for chemical analysis were evaluated for the parameters listed in Table 3-1.

All samples were analyzed at Recra Environmental, Inc. laboratories. The organic analyses were performed in accordance with the 1987 New York State Contract Laboratory Protocol (CLP). For the inorganics analyses, the 1986 New York State CLP was followed.

Sediment samples SED-1, SED-2, SED-3, SED-4, SED-5 and SED-6 were also extracted by the EP Toxicity Method and analyzed for a select group of pesticides, herbicides, and metals.

Groundwater, surface water, soil composite, and leachate samples were analyzed for ammonia in accordance with USEPA Method 350.3. Soil composite and leachate samples were analyzed for sulfate in accordance with USEPA Method 9038.

3.6.5 Geotechnical Test Methods

Soil samples selected for geotechnical evaluation were prepared and tested in accordance with procedures from the American Society for Testing and Materials (ASTM), Annual Book of ASTM Standards, Section 4 Construction,

TABLE 3-1

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
PHASE II INVESTIGATIONS
CHEMICAL ANALYSES

Site Name and I.D. #: Donner Hanna Coke #915017

Type of Sample	Class 1	2	3	4	5	6	Remarks	No. of Samples
Groundwater	X	X	X			X		6
Surface Water	X	X	X			X		6
Sediment	X	X		X				6
Soil	X	X	X		X		Composite	1
Tar Like Material	X	X						2
Leachate	X	X	X		X	X		1

1) Hazardous Substance List organics, volatile and base/neutral/acid fractions, in accordance with Contract Laboratory Protocol.

2) Hazardous Substance List metals in accordance with Contract Laboratory Protocol.

3) Ammonia
4) E.P. Toxicity Test Extracts for Organics and Metals.
5) Sulfate
6) Specific Conductance

Volume 04.08 Soil and Rock; Building Stones, C-1988. The following standard test methods were utilized in whole or in part for select split spoon samples collected during boring advancement:

- o moisture content (ASTM D-2216)
- o grain size analysis (ASTM D-422)
- o hydrometer analysis if 20% of the sample would pass through a No. 200 sieve
- o liquid and plastic limit determination (ASTM D-4318).

All geotechnical evaluations were performed by Buffalo Drilling Company, Inc. located in Buffalo, New York. A report of these evaluations is presented in Appendix C.

3.6.6 Quality Assurance Program

The Quality Assurance Program implemented for this investigation utilized quality control procedures initiated at the time of drilling, continuing through with the sampling and into the actual analysis.

Prior to initiating drilling activities, the drill rig, augers, rods, appurtenant equipment, well pipe and screens were steam cleaned. This cleaning procedure was also used between each boring and prior to leaving the site. During the drilling and cleaning processes, any unnecessary direct contact between equipment and the ground surface was avoided by employing wooden pallets and plastic sheeting.

The split barrel samplers used for collecting soil samples during the advancement of test borings were steam cleaned prior to each use or cleaned by the following procedure:

- o initially cleaned of all foreign matter.
- o washed with a detergent and water mixture.
- o rinsed with deionized water.
- o allowed to air dry.

In the event that the borehole or monitoring well had to be left unattended prior to completion, it was properly secured to ensure its integrity.

Once the well was installed, its integrity was upheld by making sure that only pre-cleaned dedicated bailers were used for development and sampling. Also, any other equipment such as slugs and measuring devices were cleaned prior to and after each use by washing and rinsing with deionized water.

All samples were collected into pre-cleaned containers and delivered by Recra Environmental, Inc. personnel under chain of custody. Copies of these documents are included in Appendix G.

One set of trip blanks was included for this sampling event. These blanks consisted of two (2) 40 ml vials with Teflon septa caps which were filled with volatile-free water at the laboratory and transported to and from the site in sample coolers. One trip blank was analyzed for HSL volatile organics. A field blank was collected on October 26, 1988. This was collected in the field as a PVC bailer rinsate sample. The blank sample was analyzed for the complete suite of groundwater parameters itemized in Table 3-1.

The quality assurance measures followed by the laboratory included those outlined in the 1986 and 1987 New York State Contract Laboratory Protocol, USEPA Methods 350.3 and 9038, and those outlined for the EP Toxicity Test Extracts.

3.7 Surveying

A Leitz SDM3F Total Station, transit-mounted Electronic Distance Measuring (EDM) System and Zeiss N-12 differential level and level rod were used to determine street layouts, monitoring well and surface water/sediment sample locations, and elevations. The bench mark used for this survey was Alltift Realty well CW-6A. It is located at the southwest corner of the Donner Hanna Site and has reported casing elevation of 564.37 feet. This information was obtained from a drawing included in a 1986 NYSDEC Phase II Investigation Report prepared by Engineering-Science. All field surveying, calculations and site plan drawing were performed by Edward O. Watts and Associates of Buffalo, New York, under subcontract to Recra.

4.0 SITE ASSESSMENT

4.1 Site History

The Donner-Hanna Coke plant was constructed on reclaimed filled land in 1918 (Ref. 17). In 1919, the Donner-Hanna Coke Corporation began producing metallurgical coke. Prior to closure, the company was called the Donner-Hanna Coke Joint Venture, when Republic Steel and National Steel each had a 50 percent interest in the company. Production at the plant eventually ceased in the early 1980s as a result of the depressed state of the steel industry. At the time of the Phase II investigation the plant and the 33 acre study area were the property of Republic Steel Corporation and Hanna Furnace Corporation.

Plant operations were centered around the pyrolysis of coal. This carbon-removal process involves heating the coal (usually bituminous) to temperatures of 350° to 1000°C in the absence of air. Along with the impure carbon residue called "coke", some volatile products are also formed. The condensation of the volatile products from this destructive distillation yields black viscous coal tar. This coal tar can be distilled into the fractions as outlined below (Ref. 18).

Coal Tar Fractions

Boiling Range	Name	Tar mass %	Primary Constituents
below 200°C	light oil	5	benzene, toluene, xylenes
200-250	middle oil (carbolic oil)	17	naphthalene, phenol, pyridine
250-300	heavy oil (creosote oil)	7	naphthalenes, and methyl-naphthalenes, cresols, quinoline
300-350	green oil	9	anthracene, carbazole
residue	-	62	pitch or tar

Coal gas is also emitted as a result of this process. This is reported as being a mixture of hydrogen (H_2), methane (CH_4), carbon monoxide (CO), ethane (C_2H_6), ammonia (NH_3), carbon dioxide (CO_2), hydrogen sulfide (H_2S), and other minor components (Ref. 18). Other by-products from the pyrolysis process include water containing phenol and ammonium chloride, and process wastes containing sodium phenolate, methylene chloride, and ammonium sulfate.

Disposal practices at the plant have varied over its years of operation. Reports indicate that a 145 foot well was used during a four year period prior to 1952 for the disposal of undocumented quantities of ammonia and phenol wastes (Ref. 19). After four years of use, the well was reportedly plugged and this procedure was abandoned. The location of this well has not been identified, but it was most likely located at the plant site and not within the area investigated during the Phase II Investigation.

In 1978, it was reported that the plant's wastewater stream contained ammonium chloride (3-5ppm) and low level phenol and cyanide concentrations (Ref. 5). Initially, the effluent flow was treated with lime followed by sedimentation in a newly constructed concrete settling basin and two ponds. The settled material was dredged and disposed of along with brick and other debris in a wetland area in the southern part of the plant. After drying, the material was graded level and the area was used to store raw materials and plant products. The dredgings were observed to be light brown and had a silty appearance. In 1975, the dredgings amounted to 255 tons. Through the installation of the concrete settling basin and by replacing lime with another alkaline material, the amount was reduced to 42 tons in 1977 (Ref. 5). This estimated quantity remained the same to the early 1980's when the plant ceased operations.

Plant engineers maintained that tar and oil residues which accumulated during operations were recycled by combining with raw material coal and utilized in the coking process (Ref.5). Reports indicate that a large concrete tank was utilized to mix the hydrocarbon sludges with fine coal. The hydrocarbon material was composed of tar decanter sludge and wash oil sludge. This coal/waste mixture was stockpiled outdoors. The tar decanter sludge characteristically contains elevated levels of phenol and napthalene which reportedly can be leached by rain water (Ref.18).

In 1959, a solvent extraction system was employed which included distillation, lime neutralization, and solvent extraction. The system first extracts phenol as sodium phenolate and then extracts ammonia as ammonium sulfate (Ref. 21). These two products were sold although the cost of purification exceeded their sale price. In 1976, the following compositional breakdown was given for the volume of solvents used and products resulting from the extraction system (Ref. 3).

Substances Used and Produced From Solvent Extraction System

Name of Substance	Average Annual Usage	Amount On Site (12/20/76)	Comments
Toluene Xylene	84,000 gallons	10,000 gallons	Used to extract phenolics from wastewater
Phenol	547,500 lbs.	547,500 lbs.	Produced from solvent extraction system
Coal Tar	10 million gallons	1 million gallons	Produced as above
Light Oil (aromatic crude)	4½ million gallons	100,000 gallons	Produced as above

The grounds in the southern section of plant property were the scene o extensive fill activities over the years. This area is approximately 3 acres in size and was originally a large pond and wetland which was fille and later used as a coke storage site. First evidence of fill activitie was noted in 1951 aerial photographs. Additional activity to varyin degrees was noted in 1958, 1960, 1972, and 1975 photographs. The fil material is reported to consist mainly of construction and demolitio debris, slag, and dredged sediments from process waters (Ref. 17).

The company employed the service of no waste haulers other than Downin Container Service, which provided and exchanged containers for garbage suc as paper, wood, etc. These materials had been incinerated at the plan prior to the prohibiting of open burning (Ref. 17).

In November 1978, the Erie County Department of Environment and Plannin requested Donner-Hanna Coke to submit a Part 360 permit application. Th company, however, did not agree that they were operating a solid wast disposal facility (Ref. 17), and subsequently did not submit a permi application.

Inspections of the facility have been conducted periodically since 1980. December 4, 1980 inspection conducted by U.S. EPA found no NYSPDES violations at the site (Ref. 24).

During this inspection, the EPA noted that the facility was being used fo the generation and storage of hazardous waste. This determination and th observation by EPA of several violations of EPA regulations 40CFR part 26 of the Resource Conservation and Recovery Act (RCRA), prompted EPA to issu Donner Hanna Coke Joint Venture a COMPLAINT COMPLIANCE ORDER, AND NOTICE O

OPPORTUNITY FOR HEARING (Docket No. II RCRA-81-0202) dated February 10, 1981 (Ref. 27). In response to a consent order signed by Donner-Hanna Coke Joint Venture February 3, 1983, removal of the hazardous materials consisting of the coal/tar sludge mixture was begun in March 1983 (Ref. 28).

A June 9, 1981 inspection by the Erie County Department of Environment and Planning noted that there was no leachate or signs of past leachate at the site and subsequently no visual basis for sampling (Ref. 25). Sampling and analysis from November 1980 indicated that the landspread sludges passed the EP Toxicity Test (Ref. 21). In early August 1982 and again in May 1983, samples were collected from test borings at the site by the U.S. Geological Survey and the NYSDEC. This testing was conducted in relation to a regional study on the impact of waste disposal sites on the Niagara River. Four (4) shallow test borings were completed in the fill area for this study with one (1) boring located in each corner of the property. Approximate boring locations and electro magnetic survey lines discussed in Section 4.3 are illustrated in Figure 4-1. Soil samples from these borings were analyzed for priority and non-priority pollutant organic compounds, iron and cyanide (Ref. 26). The samples collected in May 1983 revealed no cyanide, but twenty-one organic priority pollutants were detected and three were quantified as follows: benzene - 14.0 to 51.8 ug/kg; ethylbenzene - 3.8 ug/kg; and toluene - 2.5 to 21.6 ug/kg. Eighteen organic non-priority pollutant compounds were also detected. Of those detected, the ones quantified were acetone (346 to 399 ug/kg), carbon disulfide (83.7 ug/kg), 2-hexanone (41.5 ug/kg), and o-xylene (3.7 to 69.8 ug/kg). A complete summary of these analyses is presented in section 4.5.1.

4.2 SITE AREA CHARACTERISTICS

4.2.1 Environmental Setting

The Donner-Hanna Coke site is located just west of a densely populate portion of South Buffalo. The site includes about 33 out of approxima tely 50 total acres which comprised the Donner-Hanna Coke joint venture Landfilling reportedly took place throughout the approximately 33 acr site. This area is bounded by a series of railroad tracks to the west; fence and property owned by Republic Steel to the north; a swamp wit various owners to the east; and a fence and property owned by Stanle Doraski to the south.

A designated wetlands map of the Buffalo, SE Quadrangle prepared by th New York State Department of Transportation (NYSDOT) indicates that th area where fill activities have occurred used to be a wetland. This ma also indicates that a designated wetland (BU-15) is located approximatel 2,000 feet west of the site (Ref. 11). This wetland is included in a area known as the Tifft Farm Nature Preserve. Mean annual precipitatio reported by the Climatic Altas of the United States is 36 inches annuall (Ref. 2). The local mean annual lake evaporation interpreted from th Climatic Atlas of the United States is 27 inches (Ref. 2), allowing for net annual precipitation surplus (excluding transpiration) of 9 inches The one year, 24-hour rainfall is estimated at 2.1 inches (Ref. 10).

No critical habitat of an endangered species or national wildlife refug is located within two miles of the site.

4.2.2 Topography and Drainage

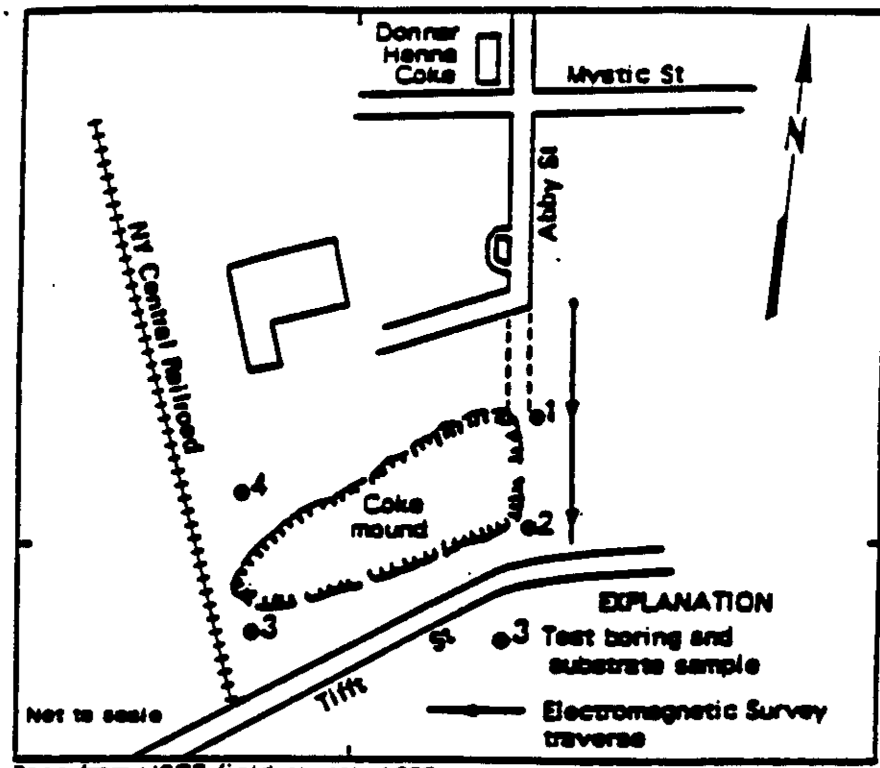
The topography in the area of the Donner Hanna Coke site is generally flat. The present day low-lying surface features have been formed by glacial lakes ancestral to the present Lake Erie, and by urban/industrial development. Regional slope, as determined from the U.S.G.S. Buffalo, S.E. topographic quadrangle, is approximately 0% (Figure 1-2).

The Buffalo River, a Class "D" water resource, is the nearest surface water located approximately 2,000 feet north of the site. Class D designation indicates protection for fishing and fish survival. Some surface runoff is directed toward the river by drainage ditches. The Buffalo River empties into Lake Erie approximately four miles downstream. Surface drainage along the southern part of the site is handled by a ditch which flows west along the south border of the site.

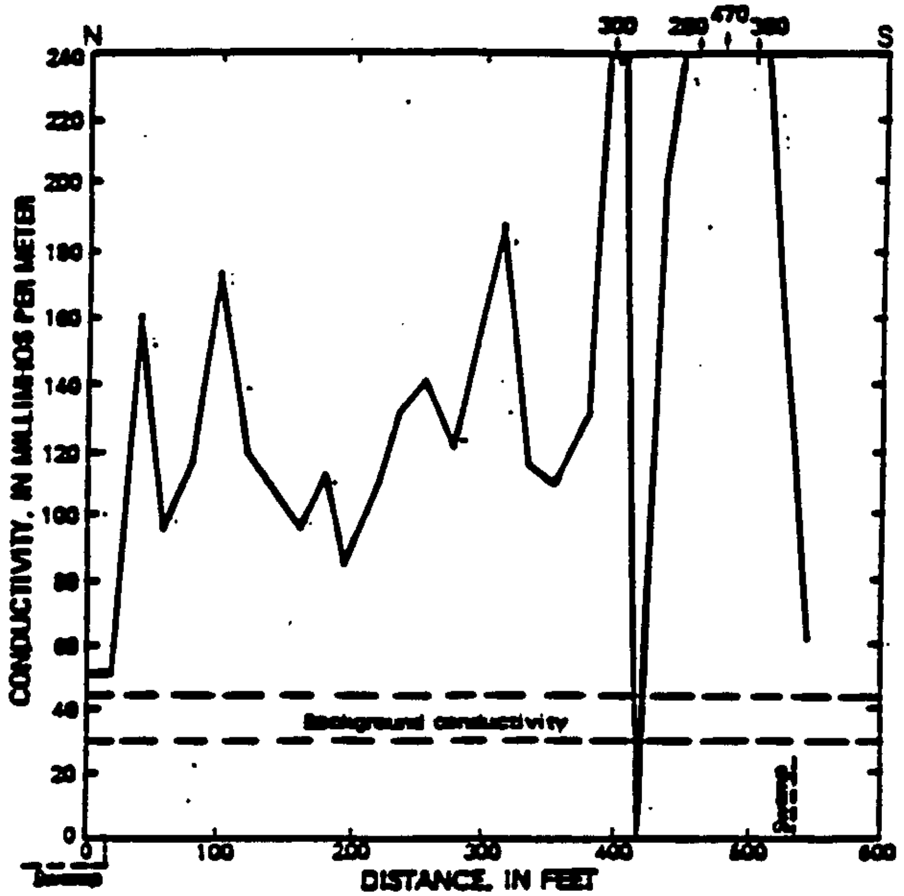
4.3 GEOPHYSICAL DATA EVALUATION

4.3.1 Previous Geophysical Survey

In November 1982, the U.S. Geological Survey conducted an electromagnetic survey just east of the site. The location of the survey traverse and a graph of the subsequent conductivities is presented in Figure 4-1. Conductivity values recorded within the wetland, as well as those outside the wetland, displayed high readings of conductivity that possibly indicated buried waste (Ref. 26). The anomaly around the 420 foot mark would have been translated as evidence of buried metal but in this case may reflect large quantities of coke present beyond the site boundary.



Base from USGS field sketch, 1982



RECRA ENVIRONMENTAL

Scale: NTS		
	By	Date
Dwn.	RS	4/89
Ckd.	JRS	5/89
Ap'vd.	JRS	5/89
Rev		

DONNER HANNA COKE
BUFFALO, NY

NYSDEC SUPERFUND
PHASE II INVESTIGATION
4-6

Project No. 8C1301-3

ELECTROMAGNETIC SURVEY A
TEST BORING LOCATIONS

U.S. GEOLOGICAL SURVEY
AUGUST 1982

FIGURE NO. 4-1

4.3.2 Phase II Geophysical Data Evaluation

The geophysical studies for this investigation were conducted primarily to aid in the placement of borings and monitoring wells. The intent was to avoid drilling through fill material and to attempt to locate monitoring wells to determine the presence of possible contaminant plumes. Four terrain conductivity profiles were completed for this investigation.

The stock-piling of coke at the site has appeared to result in large amounts of coke extending tens of feet outside the property boundary of the site. This situation is most evident along the eastern boundary of the site.

Coke, a form of carbon, has a conductivity similar to that of metal. Slag, most likely from the Republic Steel property to the north, appears to exist on parts of the Donner Hanna property. Slag can also yield high conductivities.

Readings observed along the four profiles at the site ranged from less than zero to greater than 1,000 millimhos/meter. These values can be related to the presence of the coke, slag, or possible buried metallic debris. The wide range in values is believed to be indicative of a change in thickness of the coke and variations in the amount of slag and metallic debris (Appendix B, Dunn Geoscience Report).

4.4 GEOLOGIC SETTING

4.4.1 Geology

The site is located in the Erie-Ontario Lowlands physigraphic province.

Locally, bedrock is predominantly limestone, dolostone, sandstone and shale of Devonian age. Most of the bedrock includes water-bearing zones with regional groundwater flow to the west and north.

In the past, most of New York State, including the site, has been repeatedly covered by a series of continental ice sheets. The last of the ice sheets retreated northward soe 10,000 to 12,000 years ago. The glacial activities widened pre-existing valleys, and deposited widespread accumulations of glacial sediments such as till and stratified drift. The melting of the ice resulted in large volumes of meltwater which subsequently shaped channels and deposited thick accumulations of stratified sediments.

As the glacial ice retreated, meltwater formed lakes in front of the ice margin. The region around the site was subsequently covered by lake sediments, the most recent being Lake Warren (Ref. 1). These sediments are predominantly sands which may be underlain by lacustrine silts and clays.

Coarse-grained, uniform textured deposits which are frequently encountered in the area often act as shallow aquifers. Lacustrine silts and clays like those found at the site are known to inhibit groundwater movement. It has been observed, however, that these fine-grained sediments may contain lenses of coarser materials. These lenses frequently allow groundwater to exist within otherwise low permeability sediments.

The five subsurface boring logs and geotechnical analyses generated as part of the Phase II Investigation and the Alltift Realty Phase II Report (Ref. 1) were the primary sources used to define geologic conditions immediately beneath the Donner Hanna Coke site. A series of geologic cross sections have been generated by utilizing this boring data and information from the NYSDEC Phase II Investigation conducted in 1986 at the Alltift Realty landfill site located approximately 400 ft. south of the Donner Hanna Coke site (Figure 1-2). This 1986 investigation was conducted by Engineering-Science in association with Dames and Moore (Ref. 1). The cross sections are presented on Drawing 5 (Appendix A). Two of these sections are oriented W-E (cross sections A-A' and C-C') and one is oriented SW-NE (cross section B-B'). A shallow boring, BH-1 was emplaced in the south-central part of the site. At the time of the drilling, the coke fill was found to extend four feet below the surface at this location. The stratigraphy underlying the site as observed during the present Phase II Investigation consists primarily of a relatively coarse layer of predominantly coke fill and a heterogeneous layer of fine grained sediments.

The fill was described as being moist, black sand and gravel-sized coke fill, little silt and a trace of organic debris.

Field observations and geotechnical test results indicate that the underlying finer sediments comprise a heterogeneous unit. Across the site and within individual borings, the amount of silt, sand and clay was variable. Most often, silt was found to be the primary component with subordinate amounts of sand and clay.

The cross sections indicate that the depth of the coke fill varies across the site from four to seven feet. Beneath the fill, no vertical or horizontal trend in sediments was identified. These sediments may be solids which were dredged from the effluent water settling ponds and landspread in the general area and/or lacustrine deposits which are indigenous to the general area. If they are of a lacustrine origin, they may correlate with the upper silt, fine sand and clay unit identified by Engineering-Science at the Alltift Realty Site.

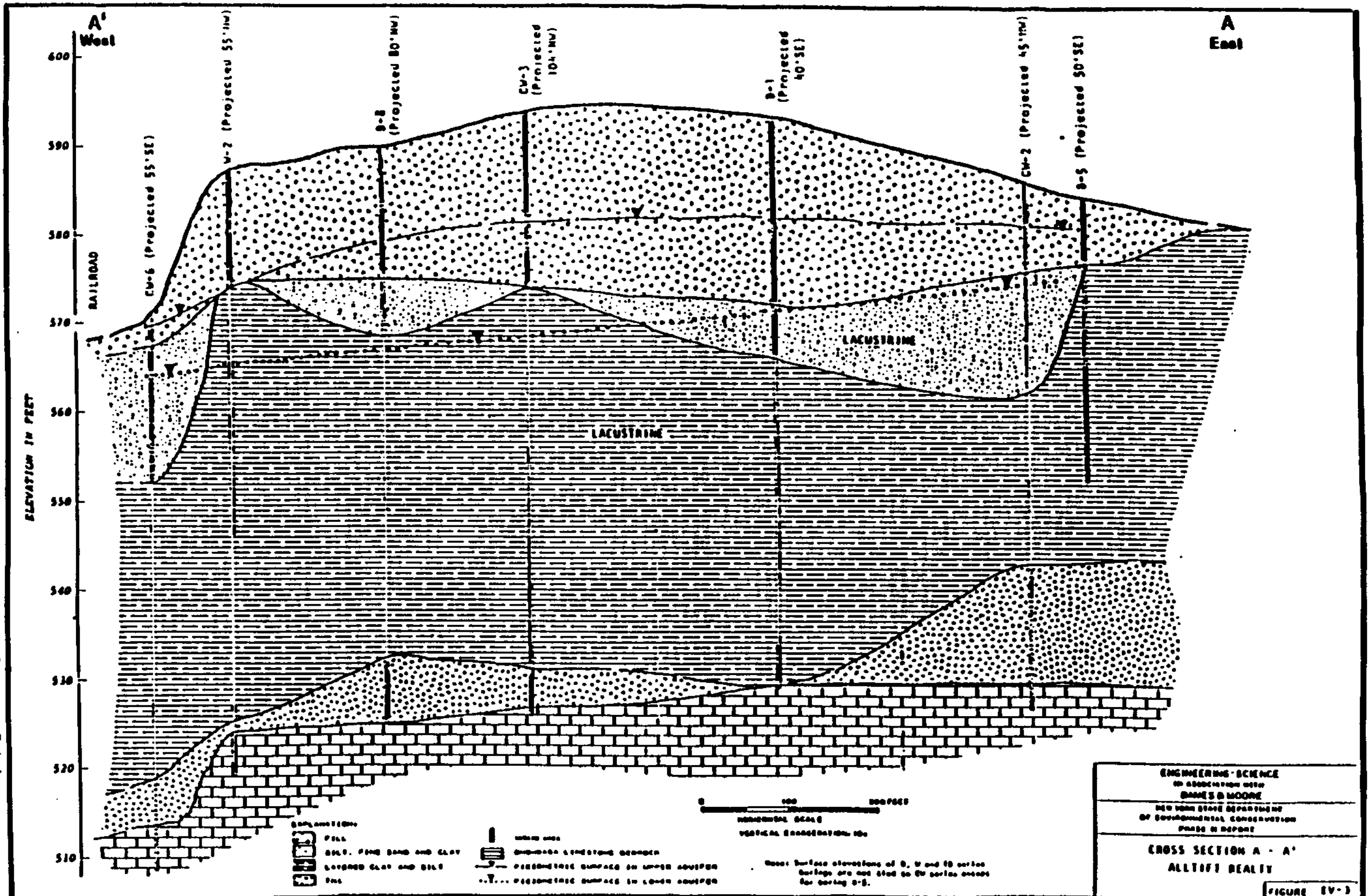
The work scope for the Phase II Field Investigation was prepared (in conjunction with the NYSDEC) to primarily examine and monitor the uppermost water-bearing zone beneath the site. The existing water table was relatively shallow across the site and therefore no subsurface information below 14 feet was gathered and no distinguishable contact between possible fill sediments and naturally occurring lacustrine sediments was identified. In order to obtain some understanding of the deeper overburden stratigraphy, the Phase II Investigation report generated by Engineering-Science in association with Dames and Moore conducted at the Alltift Realty site was used to provide additional geologic information (Ref. 1). Due to its proximity (about 400 ft. south) to the Donner Hanna Coke site (Figure 1-2), the conditions observed beneath the northern portion of Alltift Realty may also exist beneath the Donner Hanna Coke site.

Two wells, CW-6A and CW-6B (Drawing 1), emplaced during the Alltift investigation were located north of Tifft Street and adjacent to the southwest corner of the Donner Hanna site. The boring logs for these wells indicate that silt exists below the fill. The silt layer extended to 14 feet and was underlain by sand and clay. Limestone bedrock was encountered at approximately 58 feet and was interpreted to be the Moorehouse Limestone Member of the Onondaga Formation (Ref. 1).

Directly overlying the bedrock in the area is a sedimentary layer containing various amounts of sand, gravel and silt (till). The till was deposited directly from the melting glacial ice and is typically poorly sorted and dense. However, at Alltift, some stratification was observed throughout portions of the till and was thought to enhance fluid migration within the layer.

Overlying the till is a thick sequence of lacustrine deposits. For the most part, this sequence consists of fine-grained sediments that most likely were deposited in Lake Warren, the predecessor of Lake Erie. Much of the surficial geology along the eastern shore of present day Lake Erie consists of these sediments. This unit has been mapped by Muller (NYS Quaternary Geology May, 1977) and its presence in this area has been confirmed by drilling activities at other locations. At the Alltift site, the total thickness of this lacustrine sequence often exceeded 40 feet.

The lacustrine sediments found beneath both sites were believed to have a sedimentary origin similar to most lake deposits (Ref. 1). The lower segment of the sequence is composed mainly of gray clay and silt. Towards the base, the coloration of sediments becomes dominated by alternating red and gray layers. The sediments grade vertically upward into layers of silt, fine sand and clay. From a sedimentologic standpoint, this is interpreted to represent a shallower sedimentary environment subject to more intense wave activity as Lake Warren drained to form Lake Erie. The two units which comprise the lacustrine sequence are depicted on Figure 4-2 which is a cross section from the Alltift Realty Phase II report, oriented east-west just south of Tifft Street.



Scale: AS SHOWN		DONNER HANNA COKE	ALLTIFT REALTY
	By / Date	BUFFALO, NY	CROSS SECTION A-A'
Dwn.	RS / 4/89	NYSDEC SUPERFUND	

4.4.2 Hydrogeology

Groundwater at the Donner Hanna Coke site was found under water table conditions. The data collected at the site indicated components of groundwater flow to the southwest and southeast with general flow to the south. Regionally, groundwater flows westerly towards Lake Erie. The zone monitored for the Phase II Investigation is located in the upper unit of the fine grained sediments and the overlying coarse fill material, and is recharged by rainwater percolating downward through the fill.

A NYSDEC Phase II Investigation conducted at the Alltift Realty site in 1986 identified a second, deep water-bearing zone existing beneath the site. This aquifer is present in the basal till and upper bedrock and was reported as being hydraulically connected at some locations to the upper water bearing zone. The flow direction of this aquifer was determined to be northwest (Ref. 1).

Although the uppermost and deep bedrock aquifers may be connected, the potential for vertical nigration of contaminants at this site is reported as being minimal (Ref. 26). This is based on an extensive clay unit underlying the Donner-Hanna Coke site separating the shallow perched aquifer from the deep bedrock aquifer.

Four monitoring wells were constructed to intercept the uppermost water-bearing zone as part of the Donner Hanna Coke Phase II Investigation. Water level measurements from these monitoring wells were collected on November 17, 1988. These levels along with that of monitoring well CW-6B (Alltift Realty site) were related to a standard elevation datum to indicate the relative position of the water table surface across the site. Drawing No. 4 (Appendix A) depicts the plotted water table surface elevations and approximate horizontal flow directions from these data. Tabulated water surface elevation data are presented on Table 4-1.

The highest or maximum water surface elevation of 569.04 feet was found in the northeast part of the site with lower elevations towards the south and west, indicating a predominant horizontal component of flow towards the southwest.

In-situ hydraulic conductivity testing performed in each of the newly installed wells indicates a variation across the site of one order of magnitude. Values determined for this investigation range from 2×10^{-4} centimeters per second (cm/sec) at GW-4 to 3×10^{-3} cm/sec at GW-1 (Table 4-2). These moderate values are representative of silty sands and convert to approximately two to 21 gal/day/ft.^{2} (Ref. 1).

For the purpose of this investigation, monitoring well GW-2 was considered to be an upgradient or background groundwater monitoring location. This was based upon the following observations:

- well GW-2 had the highest relative hydraulic head.
- the chemical analytical data, discussed subsequently in the text, supports this hypothesis.

TABLE 4-1

WATER LEVEL MEASUREMENT DATA
DONNER HANNA COKE
SITE NO. 915017

Water Table Surface
(11/17/88)

Well No.	Depth From Ground Surface (Ft.)	Elevation (Ft.)*
GW-1	4.35	568.45
GW-2	1.46	569.04
GW-3	2.84	567.76
GW-4	3.23	568.77
CW-6B	3.97	565.63**

*Ref. Edward O. Watts and Associates Drawing No. 1.
**CW-6B - measured on 12/21/88 prior to sampling.

TABLE 4-2

SUMMARY OF HYDRAULIC CONDUCTIVITY DATA

DONNER HANNA COKE

SITE NO. 915017

Well No.	Test Method	Calculated Hydraulic Conductivit
GW-1	Constant Head	K=3 x 10-3
GW-2	Rising Head Falling Head	K=4 x 10-4 K=3 x 10-4
GW-3	Rising Head Falling Head	K=4 x 10-4 K=3 x 10-4
GW-4	Rising Head	K=4 x 10-4 K=2 x 10-4

4.5 ANALYTICAL RESULTS

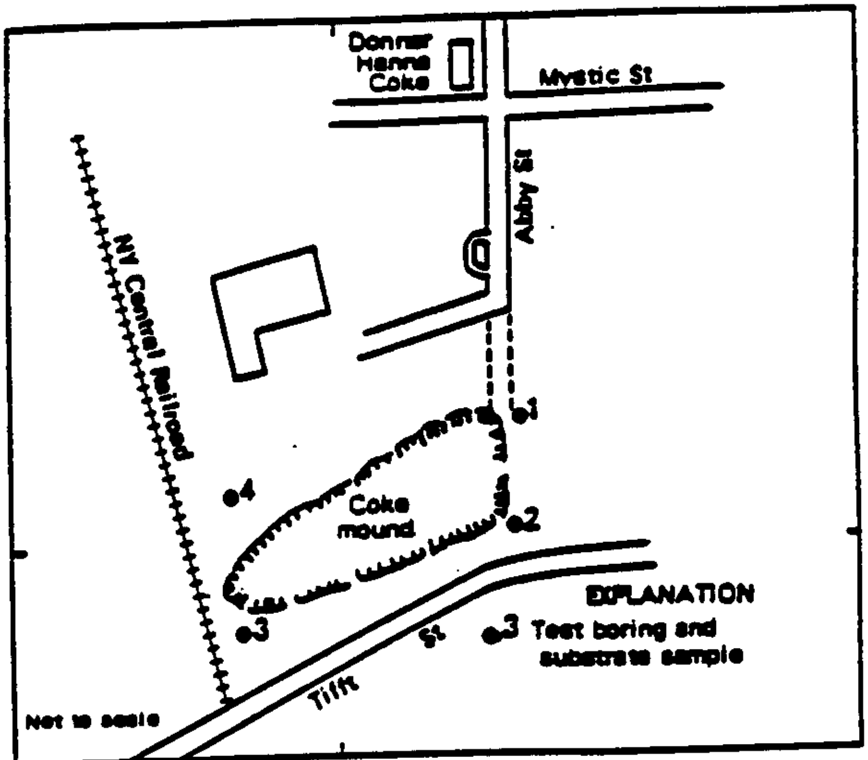
4.5.1 Previous Sampling and Analysis

In November of 1980, two samples of dredgings to be landspread were tested for EP Toxicity and three wastestream samples were tested for EP metals by Advanced Environmental Systems, Inc. for Donner-Hanna Coke. All of the samples were below EP criteria and were determined to be non-toxic (Ref. 19).

The U.S. Geological Survey drilled four test borings at the site in August 1982. The locations of those borings and substrate descriptions are shown in Figure 4-3. The U.S. Geological Survey collected a substrate sample from each test boring at depths ranging from 3.5 to 5.5 feet. Each sample was analyzed for cyanide, iron, and a variety of priority and non-priority pollutant organic compounds. The analysis revealed no cyanide but indicated 21 organic priority pollutants, 18 organic non-priority pollutants, and some indistinguishable hydrocarbons. Concentrations of quantifiable priority pollutants were as follows: benzene - 14.0 to 51.8 ug/kg; ethylbenzene - 3.8 ug/kg; and toluene - 2.5 to 21.6 ug/kg. Quantifiable non-priority pollutant values were: acetone - 346 to 399 ug/kg; carbon disulfide - 83.7 ug/kg; 2-hexanone - 41.5 ug/kg; and O-xylene - 3.7 to 69.8 ug/kg. The results of these analyses are listed on Table 4-3. These findings appear to indicate contamination which may have been introduced by the coal tar materials that were stored on site.

4.5.2 Phase II Air Analytical Data

As part of the Phase II Investigation, the site perimeter was initially



Base from USGS field sketch, 1982

Boring no.	Depth (ft)	Description
1	0 - 4.0	Black coke, fill material.
	4.0 - 5.0	Clay, dark olive green, wet.
	5.0 - 10.0	Clay, tan to yellowish, dry, tight, getting wet at about 8 ft and sandy. SAMPLE: 5 ft.
2	0 - 3.5	Topsoil and rubble, debris.
	3.5 - 6.0	Clay, sandy, gray-green, "soupy", becomes drier and tighter at 4.0. SAMPLE: 3.5 ft.
3	0 - 2.5	Topsoil and coke debris, black.
	2.5 - 5.0	Asphaltic-looking, watery material with gravel. Volatile sensing meter reading of 20 (2.5 background) Meter setting of 9 — calibrated for benzene. smells less asphaltic than in first hole.
	5.0 - 6.0	Clay, gray, green. SAMPLE: 3.5 ft.
4	0 - 3.0	Coke bed material, bricks, wood, etc.
	3.0 - 5.0	Sand, black, very coarse, damp.
	5.0 - 6.0	Soupy, black material. Sample would not burn.
	6.0 - 6.5	Clay, greenish, wetter than in other holes. SAMPLE: 5.5 ft.

Scale: NTS		
	By	Date
Dwn.	RS	4/89
Chd.	JRS	5/89

RCRA

DONNER HANNA COKE
Buffalo, NY

NYSDEC SUPERFUND
PHASE I INVESTIGATION

TEST BORINGS DRILLE
U.S. GEOLOGICAL SU
IN AUGUST 1982

TABLE 4-3

ANALYSES OF SUBSTRATE SAMPLES

COLLECTED BY U.S. GEOLOGICAL SURVEY
(ug/kg)

DONNER HANNA COKE

#915017

	Sample number and depth below land surface (ft)			
First sampling (08-05-82)	1 (5.0)	2 (3.5)	3 (3.5)	4 (5.5)
Inorganic constituents				
Cyanide	---	---	---	---
Iron	8,100,000	5,000,000	5,200,000	2,400,000

	Sample number (depths are same as in first sampling)			
Second sampling (05-18-83)	1A	2A	3A	4A
Inorganic constituents				
Molecular sulfurl	27,000	680	---	---
Organic compounds				
Priority pollutants				
Benzene	14.0	18.5	37.8	51.8
Ethylbenzene	--	--	3.8	--
Toluene	2.5	--	21.6	--
2,4-Dimethylphenol	--	*	--	--
Phenol	--	*	--	--
Acenaphthene	--	*	*	*
Fluoranthene	*	*	*	*
1,2-Dichlorobezene	--	*	--	--
Naphthalene	*	*	*	*
Benzo(a)anthracene	--	*	*	*
Benzo(a)pyrene	--	*	*	*
Benzo(b)fluoranthene and benzo(k)fluoranthene	*	*	*	*
Chrysene	--	*	*	*
Acenaphthylene	--	*	*	--
Anthracene	--	*	--	*
Benzo(ghi)perylene	--	*	*	--
Fluorene	--	*	*	*
Phenanthrene	--	*	*	*
Dibenzo(a,h)anthracene	--	*	--	--
Indeno(1,2,3-cd)pyrene	--	*	*	--
Pyrene	*	*	*	*

RA ENVIRONMENTAL, INC.

TABLE 4-3 (continued)

ANALYSES OF SUBSTRATE SAMPLES

COLLECTED BY U.S. GEOLOGICAL SURVEY
(ug/kg)

DONNER HANNA COKE

#915017

Second sampling (continued)	Sample number (depths are same as in first sampling) 1A	2A	3A	4A
Nonpriority pollutants				
Acetone	399	346	--	--
Carbon disulfide	--	--	83.7	--
2-Hexanone	--	--	41.5	--
O-xylene	3.7	5.7	69.8	4.7
2-Methylphenol	--	*	--	--
4-Methylphenol	--	*	--	--
Dibenzofuran	--	*	*	*
2-Methylnaphthalene	--	*	*	*
9H-Carbazole[1]	--	*	--	--
3-Methylphenanthrene[1]	--	*	--	--
Hexadecanoic acid[1]	--	*	--	--
1-Methylpyrene[1]	--	*	--	--
Trichlorofluoromethane[1]	--	--	*	--
Methylcyclohexane[1]	--	--	*	--
4-Methyl-2-pentanone[1]	--	--	*	--
2,6,6-Trimethyl-bicyclo(3.1.1)-hepten-2-ene[1]	--	--	*	--
1,3- and 1,4-Dimethyl-benzene[1]	--	--	*	--
1-Ethenyl-2methylbenzene[1]	--	--	*	--
Unknown hydrocarbons[1]	--	*	*	--

[1] Tentative identification based on comparison with the National Bureau of Standards (NBS) library. No external standard was available. Concentration reported is semiquantitative and is based only on an internal standard. GC/MS spectra were examined and interpreted by GC/MS analysts.

* Compounds detected but not quantified--Holding time exceeded before GC/MS acid-and base-neutral extractable compounds were extracted.

-- Constituent or compound was not found.

screened for airborne organic contaminants with a photoionization analyzer. All readings were below detection limits. Air monitoring was also conducted during the advancement of test borings with the photoionization analyzer and a portable oxygen and combustible gas alarm. No levels of explosive gases were detected, but some low levels (<5 ppm) of ionizable compounds were detected in a number of test borings, some of which may be due in part to atmospheric moisture and not reflective of site conditions.

During the advancement of GW-3, values of up to 40 parts per million (ppm) were detected from the auger cuttings and readings of up to 500 ppm were detected inside the augers at a drill depth of 13 feet. After advancing the augers 2 feet below the ground surface at GW-4, readings up to 35 ppm were observed. An alternate location was selected about 50 yards southwest of the original location of GW-4. While augering at the alternate location, readings of 4 ppm were detected over some of the auger cuttings.

4.5.3 Phase II Sediment Analytical Data

Five sediment samples were collected from drainage ditches around the site at the locations described below, and one (SED-2) was collected from a standpipe at the northwest corner of the site. The drainage ditch at the northeast corner of the site from which SED-3 was sampled appeared to originate from the marshy area bordering the east side of the site. Although flow was almost non-existent, the water did appear to be moving northerly towards the Buffalo River.

The drainage ditch along the southern border of the site was observed to have a westerly flow and did also appear to originate from the marshy area east of the site. This ditch would also have received run-off percolating through the 2 to 3 feet of porous coke material present at the surface of the site. Sample SED-4 was collected near the origin of this drainage channel and SED-6 was collected out of the same ditch approximately 670 feet west of SED-4. A north-south trending drainage channel flowed into the southern ditch about 50 feet west of SED-6. This feature originated in and received surface run-off from much of the central portion of the site. Sample SED-5 was collected from the north-south trending ditch. Approximately 550 feet further west the southern drainage channel made a 90 degree turn and flowed to the south. Sample SED-1 was collected at the bend in the ditch. After flowing off-site, the ditch appeared to enter the storm drainage network along Tifft St.

Chemical analytical testing of the sediment samples revealed elevated levels of some volatile organic compounds. Benzene was found at a concentration of 240,000 ug/kg (ppb) in sediment sample SED-2. Benzene and methylene chloride were found in all samples. These two compounds as well as some others were also detected in the method blanks (Table 4-4). The benzene concentration in the blank was estimated to be 100 ug/kg (ppb) and methylene chloride was present at a concentration of 1200 ug/kg (ppb). The concentrations of these analytes within the blanks were low enough to be within compliance of NYS CLP protocols, but do suggest a level of laboratory contamination that needs to be considered in evaluating the origin of these findings. A total of 21 semi-volatile organic compounds were detected at various concentrations within the samples analyzed. SED-6 contained fluoranthene at 120,000 ug/Kg, benzo(h)flouranthene at 110,000 ug/Kg, phenanthrene at 140,000 ug/Kg and pyrene at 100,000 ug/Kg. Sample SED-1 contained fluoranthene at 150,000 ug/kg (ppb). Certain compounds were detected at levels below the quantification limit and were

TABLE 4-4

SUMMARY OF VOLATILE ORGANIC COMPOUNDS
DETECTED IN SEDIMENT SAMPLES
(ug/kg)

DONNER HANNA COKE
#915017

VOLATILE ORGANICS

COMPOUND	BH-1 Comp	SED 1	SED 2	SED 3	SED 4	SED 5	SED 6	SED 2DL
Acetone	280BE	5,400B	11,000B		10,000B	5,100B	4,900B	
Benzene		1,900B	220,000BE	590BJ	330BJ	7,100	400J	240,000D
2-Butanone		3,200B	7,300B	3,700B	6,200B	4,800B	5,200B	
Carbon disulfide		1,600B	3,500B	4,300B	8,500B	2,600B	2,600B	
Ethylbenzene		740J			150J	4,200		
Methylene chloride	49B	2,300B	4,100B	2,700B	5,500B	5,500B	3,900B	12,000DJ
Styrene				120J		13,000		
Tetrachloroethylene				52BJ				
Toluene	1BJ	2,800B	1,000BJ	430BJ		580BJ	290BJ	1,500DJ
Total Xylenes		15,000B	3,400B	390BJ	440BJ	1,000J		

B - Analyte was found in the associated blank as well as in the sample.

J - Indicates an estimated value.

E - Elevated level of constituent requiring secondary dilution.

D - Value determined after performing secondary dilution. A separate aliquot of the sample was required and variances from the initial analysis are due to the heterogeneous nature of the sample.

Note - A blank indicates the compound was not detected.

TABLE 4-4 (continued)

SUMMARY OF SEMI-VOLATILE ORGANIC COMPOUND
DETECTED IN SEDIMENT SAMPLES
(ug/kg)

DONNER HANNA COKE
#915017

SEMI-VOLATILE ORGANICS

COMPOUND	BH-1 COMP	SED 1	SED 2	SED 3	SED 4	SED 5	SED 6
Acenaphthene		5,700J				16,000	2,500J
Acenaphthylene		34,000	2,800J	6,000	270J	9,400J	30,000
Anthracene	47J	33,000	3,000J	13,000	1,400J	15,000	52,000
Benzo(a)anthracene	120J	64,000	11,000J	24,000	6,800J	23,000	53,000
Benzo(a)pyrene	79J	50,000	12,000J	21,000	5,300J	22,000	43,000
Benzo(b)fluoranthene	120J	60,000	16,000J	22,000	16,000J	48,000	110,000
Benzo(g,h,i)perylene	110J	18,000	7,200J	9,300	2,500J	9,400J	14,000
Benzo(k)fluoranthene	120J	50,000	13,000J	22,000	7,500J	22,000	130J
Bis(2-ethylhexyl)phthalate	1500BJ				910J		
Chrysene	240J	57,000	12,000J	23,000	8,500J	22,000	46,000
Dibenzo(a,h)anthracene		2,100J	2,900J	750J	990J	3,300J	7,200J
Dibenzofuran	25J	18,000	2,100J	2,800J	440J	11,000J	21,000
Fluoranthene	260J	150,000	22,000	70,000	11,000J	58,000	120,000
Fluorene		34,000		6,100J		15,000	37,000
Indeno(1,2,3-cd)pyrene	110J	19,000	7,000J	9,200	2,600J	9,600J	15,000
2-Methylnaphthalene		4,200J	840J	330J	280J	4,000J	5,600J
Naphthalene	75J	19,000	11,000J	1,200J	2,000J	56,000	16,000
Phenanthrene	190J	120,000	10,000J	42,000	6,500J	52,000	140,000
Pyrene	260J	120,000	20,000	54,000	9,300J	47,000	100,000
Pentachlorophenol					6,600J		
Phenol							590J

B - Analyte was found in the associated blank as well as in the sample.

J - Indicates an estimated value

Note - A blank indicates the compound was not detected

TABLE 4-4 (continued)

SUMMARY OF PESTICIDES/PCB's
DETECTED IN SEDIMENT SAMPLES
(µg/kg)

DONNER HANNA COKE
#915017

COMPOUND	BH-1 Comp	SED 1	SED 2	SED 3	SED 4	SED 5	SED 6	SED 1DL
Gamma-BHC(Lindane)		44J	16J	5.6J		18J	66J	140JD
4,4'-DDD		850						

J - Indicates an estimated value.

D - Value determined after performing secondary dilution. A separate aliquot of the sample was required and variances from the initial analysis are due to the heterogeneous nature of the sample.

Note - A blank indicates the compound was not detected.

therefore reported as estimates (Table 4-4). The detected contaminants appear to be from the coal tar materials which were stored on site.

Two pesticide compounds were detected in sediment sample SED-1. Gamma-BHC (Lindane) was detected in 6 samples at levels below the quantification limits. Another pesticide, 4,4'-DDD was detected in sediment sample SED-1 at a concentration of 850 ug/kg. A summary of all organic compounds found in the sediment samples is provided in Table 4-4.

Sediment samples collected and analyzed for Hazardous Substance List (HSL) inorganic compounds displayed variable concentrations. Of these, sample SED-2 had the highest relative metals concentrations, and the greatest quantity which were above median elemental composition of soils (Table 4-5 and 4-6). The elevated levels of iron, calcium, and magnesium may be a result of the storage of coke or the fill activities in this area.

The sediment samples were extracted via the EP Toxicity Test Procedure and analyzed for select organic compounds and metals. As a result of these tests, none of the target compounds were found to be present at concentrations above the reported EPA maximum concentrations. This data is presented in Appendix G.

TABLE 4-5
SUMMARY OF INORGANIC COMPOUNDS
DETECTED IN SEDIMENT SAMPLES
(mg/kg)

DONNER HANNA COKE
#915017

INORGANIC COMPOUNDS

COMPOUND	BH-1 COMP	SED 1	SED 2	SED 3	SED 4	SED 5	SED 6	SED 5 DUP
Aluminum	14,500	9,940	8,600	11,800	1,600	8,660	3,250	8,202
Arsenic	8.2	19.9	8.4	10.3	8.0	18.2	3.8	17.9
Barium	156	161	146	107	171	119	144	112
Beryllium	1.0	1.3	1.9	2.5		1.2		1.2
Cadmium	1.5		5.8					
Calcium	120,700	48,000	148,000	117,000	1,680	25,090	6,350	23,500
Chromium	374	15.6	104	249	82.1	27.3	33.1	22.4
Cobalt	8.7		8.0			9.4	6.1	9.0
Copper	47.3	37.7	134	28.3	52.2	70.3	12.8	64.1
Iron	53,500	21,200	120,000	30,300	20,880	29,700	8,700	27,200
Lead	150	120	618	65.8	445	163	160	178
Magnesium	27,300	5,420	34,300	18,300	480	3,550	1,320	3,450
Manganese	2,220	1,570	5,590	6,490	266	816	355	783
Mercury		1.6	2.5	0.2	3.6	1.6	0.61	1.7
Nickel	37.2	10.6	71.9	11.8		23.6		25.4
Potassium	1,230	737	1,040	1,010	1,110	1,120	467	1,037
Selenium		1.1						
Sodium	1,650	843	4,930	1,560	1,020	1,034	373	1,120
Vanadium	145	13.5	46.6	76.4	45.8	22.1	6.8	22.3
Zinc	392	74.9	762	68.9	177	221	106	196
Cyanide, total	2.4	102	41	13.9	5,170	28.7	28.8	30.6
Ammonia (ug/g)	26							
Sulfate (ug/g)	370							

Note: A blank indicates the compound was not detected.

TABLE 4-6

MEDIAN ELEMENTAL COMPOSITION OF SOILS
CONCENTRATION IN SOILS
(mg/Kg ppm)

DONNER HANNA COKE
#915017

ELEMENT	RANGE	TYPICAL MEDIUM	SOURCE
Aluminum	10,000 - 300,000	71,000	1
Antimony	0.2 - 150	6	1,2,3, & 4
Arsenic	0.1 - 194	11	5
Barium	100 - 3,000	500	1
Beryllium	0.01 - 40	0.3	1
Boron	2 - 270	20	1
Bromine	1 - 110	10	1
Cadmium	0.01 - 7	0.5	6
Calcium	LT 150 - 500,000	24,000	1 & 7
Chlorine	8 - 1,800	100	1
Chromium	5 - 3,000	100	6
Cobalt	0.05 - 65	8	1
Copper	2 - 250	30	1
Fluorine	6 - 7070	270	5
Gallium	2 - 100	20	1
Germanium	0.1 - 50	1	1
Iron	100 - 550,000	40,000	1 & 5
Lanthanum	2 - 180	40	1
Lead	LT 1 - 888	29	5
Magnesium	400 - 9,000	5,000	1
Manganese	20 - 18,300	1,000	1,5 & 6
Mercury	0.01 - 4.6	0.090	5
Molybdenum	0.1 - 40	2	1 & 6
Nickel	0.1 - 1,530	50	1 & 5
Phosphorus	35 - 5,300	800	1
Potassium	80 - 37,000	14,000	1
Rubidium	20 - 1,000	150	1
Scandium	5 - 55	7	1
Selenium	0.1 - 38	0.4	1 & 6
Silicon	250,000 - 410,000	330,000	1
Silver	0.01 - 8	0.4	5
Sodium	150 - 25,000	5,000	1
Strontium	LT 3 - 3,500	278	5
Sulfur	30 - 1,600	700	1
Thallium	0.1 - 0.8	0.2	1
Thorium	2 - 13	9	8
Tin	1 - 200	10	1 & 6
Titanium	150 - 25,000	5,000	1

TABLE 4-6 (continued)

MEDIAN ELEMENTAL COMPOSITION OF SOILS
CONCENTRATION IN SOILS
(mg/Kg ppm)

ELEMENT	RANGE	TYPICAL MEDIUM	SOURCE
Tungsten	0.5 - 83	1.5	1
Vanadium	3 - 500	100	1,6 & 7
Yttrium	LT 10 - 200	40	1 & 7
Zinc	1 - 2,000	90	1 & 5
Zirconium	60 - 2,000	400	1

SOURCE:

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4.5.4 Phase II Groundwater Analytical Data

Groundwater monitoring well GW-2 is considered a source of background groundwater quality for the purpose of this investigation. Organic analysis of GW-2 indicated trace levels of acetone, toluene, and total xylenes. These compounds were detected below quantification limits and were therefore assigned estimated values. GW-3 yielded the greatest quantity of organic compounds including benzene and toluene at concentrations of >20,000 and 1,200 ppb, respectively. These compounds are characteristic of the coal tar materials stored on site. The following compounds were present at concentrations above levels of detection necessary to score a release to groundwater as specified in the HRS scoring procedure: acetone, benzene, 2-butanone, carbon disulfide, and toluene.

Two semi-volatile organic compounds were detected in the background well; bis(2-ethylhexyl) phthalate and napthalene. Both were detected below quantification limits. Well GW-4 yielded the highest number of semi-volatile compounds. Considering GW-2 as a background groundwater quality source, the following semi-volatile compounds can be considered as an observed release to the environment pursuant to the HRS: napthalene; 2,4-dimethylphenol; 2-methylphenol; 4-methylphenol; phenol. A complete summary of the organic compounds detected in the groundwater is given in Table 4-7. Napthalene and phenol compounds listed on page 4-1 under coal tar fractions most likely are a result of the coal/tar mixture stored on site.

Groundwater samples collected and analyzed for HSL inorganic compounds indicated that all of the monitoring wells exhibited some metals in varying concentrations. Five of the wells had manganese concentrations

TABLE 4-7

SUMMARY OF VOLATILE ORGANIC COMPOUNDS
DETECTED IN GROUNDWATER SAMPLES
(ug/l)

DONNER HANNA COKE
#915017

VOLATILE ORGANICS

COMPOUND	GW 1	GW 2	GW 3	GW 4	CW 6A	GW 3DL	CW 6B
Acetone			210E			880DJ	
Benzene	4J	3J	3,300E	2J		20,000DE	
2-Butanone			75				
Carbon disulfide			16				
Ethylbenzene			0.5J				0.1BJ
Methylene chloride			8B	8B		3,600BD	
Tetrachloroethene							0.6BJ
Toluene		0.7J	1,200E			1,200D	
Total Xylenes		4J	10				5

B - Analyte was found in the associated blank as well as in the sample.

J - Indicates an estimated value.

E - Elevated level of constituent requiring secondary dilution.

D - Value determined after performing secondary dilution. A separate aliquot of the sample was required and variances from the initial analysis are due to the heterogeneous nature of the sample.

Note - A blank indicates the compound was not detected.

TABLE 4-7 (Continued)

SUMMARY OF SEMI-VOLATILE ORGANIC COMPOUNDS
DETECTED IN GROUNDWATER SAMPLES
(ug/l)

DONNER HANNA COKE
#915017

COMPOUND	GW 1	GW 2	GW 3	GW 4	CW 6A	CW 6B
Acenaphthene				2J		
Acenaphthylene				7J		
Anthracene				1J		
Bis(2-ethylhexyl)phthalate	2J	5J		3J		
Dibenzofuran				5J		
Di-n-octylphthalate	0.06J					
Fluoranthene				1J		
Fluorene				5J		
2-Methylnaphthalene				7J		
Naphthalene		4J		130		
Phenanthrene				6J		
2,4-Dimethylphenol				88		
2-Methylphenol			25J	110		
4-Methylphenol			130	240		
Phenol	0.4J		1,500	210		

J - Indicates an estimated value.

Note - A blank indicates the compound was not detected.

ranging from 1,170 to 49,300 ppb which are all in contravention of NYSDEC quality standard levels for Class GA groundwaters. Arsenic, cadmium, iron, lead, zinc and cyanide were present in select wells at concentrations exceeding NYSDEC groundwater quality standards for Class GA groundwaters. The inorganic compounds detected in the groundwater may be a result of the coke or other fill deposited at the site, or from the pile of slag on the property immediately north of the site. Considering GW-2 as a background groundwater quality source, the following compounds can be considered as an observed release to the environment pursuant to the HRS: aluminum, arsenic, beryllium, cadmium, chromium, cobalt, magnesium, copper, iron, lead, manganese, mercury, nickel, vanadium, zinc and cyanide. Groundwater inorganic data and applicable NYSDEC groundwater standards are presented in Tables 4-8 and 4-9.

Due to historical use of an ammonia stripping still, The groundwater samples were also tested for ammonia. The results of these analyses indicate that ammonia concentrations ranged from 1.2 mg/l at CW-6A to 170 mg/l at GW-4. Groundwater standards for ammonia do not exist in NYSDEC regulations, but surface water used for a drinking water supply has a standard value of 2.0 mg/l. This value was exceeded for wells GW-1, 2, 3 and 4. These results are listed on Table 4-8.

T10595.6

TABLE 4-8

SUMMARY OF INORGANIC COMPOUNDS
DETECTED IN GROUNDWATER SAMPLES
(ug/l)

DONNER HANNA COKE
#915017

COMPOUND	GW 1	GW 2	GW 3	GW 4	GW 4DUP	CW 6A	CW 6B
Aluminum	470	310	7,000,000	2,300	2,340	1,290	230
Antimony	126	134				59	
Arsenic			7,420	10.4	8.4		56.7
Beryllium			244				
Cadmium			22				
Calcium	1,480,000	336,000	346,000	523,000	532,000	72,700	272,000
Chromium	7.0		1,460	17			15
Cobalt	110		2,905	76	73		
Copper		19	85	16	17	46	11
Iron	72,000	630	9,300,000	1,750	1,620	1,530	29,600
Lead			96.4				
Magnesium	182,000	99,900	2,970,000	697,000	682,000	19,600	41,300
M-nganese	2,160	836	17,800	49,300	45,800	50	1,170
Mercury			0.4				
Nickel	40		9,680	50	50		
Potassium	22,700	31,000	93,300	46,200	45,500	4,730	39,400
Silver			14		6.0		6.0
Vanadium	16	13	1,230	174	195		
Zinc	349	60	10,400	175	173	30	94
Cyanide, total	15,600	2,000	418	120	121		
Ammonia (mg/l)	7.3	39	22	170	160	1.2	
Barium		110	190		70	200	

Note: A blank indicates the compound was not detected.

TABLE 4-9

NEW YORK STATE QUALITY STANDARDS
FOR CLASS GA GROUNDWATERS
(ug/l)

DONNER HANNA COKE
(#915017)

COMPOUND	NYSDEC STANDARD (1)
Arsenic	25
Barium	1,000
Cadmium	10
Copper	1,000
Cyanide	200
Iron	300
Lead	25
Manganese	300
Mercury	2
Selenium	20
Silver	50
Zinc	5,000
Vinyl Chloride	5.0
Trichloroethene	10

(1) NYSDEC (1984) "Classes and Quality Standards for Groundwaters", 6NYCRR 703.5

New York State Department of Health (NYSDOH) drinking water standards were exceeded for various compounds. Two principle organic compounds (benzene and toluene) exceeded the DOH standard of 5 ug/l at GW-3. One unspecified organic compound (acetone) was detected above the DOH standard of 50 ug/l also at GW-3. Relative to inorganic chemicals, some maximum contaminant levels (MCLs) were exceeded by several of the wells: Arsenic (MCL = 50 ug/l) - 1,460 ug/l (GW-3); Iron (MCL = 300 ug/l) - all wells were over concentrations ranged from 630 ug/l (GW-2) to 9,300,000 ug/l (GW-3); lead (MCL = 50 ug/l) - 96.4 ug/l (GW-3). Manganese (MCL = 300 ug/l) - all wells except CW-6A were over values ranged from 836 ug/l (GW-2) to 49,300 ug/l (GW-4). Zinc (MCL = 5,000 ug/l) - 10,400 ug/l (GW-3). Although several standards were exceeded, the groundwater is not used as a residential water supply.

4.5.5 Phase II Surface Water Analytical Data

Six surface water samples were colleted from their corresponding sediment sample locations described in Section 4.5.3.

Benzene was found in all six surface water samples; in Samples SW-4 and SW-6 it was detected below quantification limits. The other four surface water samples had benzene concentrations ranging from 88 ug/l at SW-3 to 16,000 ug/l at SW-2. Methylene chloride was found in sampes SW-1, SW-2, SW-3 and SW-5; the highest concentration was 2,000 ug/l found in SW-2. Methylene chloride was also found in the trip and field blanks at trace levels, suggestive of some minor laboratory contamination. Samples SW-1, SW-2, SW-3, and SW-5 all indicated the presence of toluene. SW-5 had the highest concentration; 36 ug/l. The presence of volatile organics appears to coincide with the results of the sediment analyses. The contamination appears to be attributable to surface runoff transporting contaminants originating from the coke fill and coal tar materials stored within the site.

Few semi-volatile organic compounds were present in the surface water samples. Most were detected below quantification limits and concentrations were estimated. Compounds that were quantified included phenol and bis(2-ethylhexyl) phthalate. Sample SW-2 yielded a phenol concentration of 71 ug/l, Sample SW-4 contained 48 ug/l of bis(2-ethylhexyl) phthalate. The pesticide compound 4,4'DDT was found at trace levels in Samples SW-1, SW-2, SW-5, and SW-6. Since there isn't any agricultural land or pesticide manufacturers in the immediate vicinity of the site, the pesticide results may be attributable to the miscellaneous fill material deposited at the site. The organic compounds detected in surface water samples are presented in Table 4-10.

A significant number of inorganic compounds were found in the surface water samples. Aluminum, iron and total cyanide were found in all surface water samples at concentrations above those outlined in the NYSDEC, "Ambient Water Quality Standards for Class AA-Human, Aquatic Surface Waters." Other compounds that were present in one or more samples above these standards were ammonia, magnesium, manganese, and zinc. The presence of ammonia may potentially have been from the previous use of an ammonia stripping still which produced an effluent which was deposited at the site. The remaining inorganic compounds could have originated from the miscellaneous fill or the large pile of slag existing just north of

TABLE 4-10
SUMMARY OF VOLATILE ORGANIC COMPOUNDS
DETECTED IN SURFACE WATER SAMPLES
(ug/l)

DONNER HANNA COKE
#915017

COMPOUND	SW 1	SW 2	SW 3	SW 4	SW 5	SW 6	SW 1DL	SW 2DL	SW 5DL
Benzene	880E	3,400E	88	1J	1,300E	2J	820D	16,000D	1,400D
Ethylbenzene					0.6J				
Methylene chloride	0.9BJ	0.6BJ	0.7BJ		0.7J		32BD	2,000BD	53D
Toluene	19	2J	5		36		18DJ		36DJ
Total Xylenes	4J	4J			12				
1,2-Dichloroethene(total)						0.4DJ			

B - Analyte was found in the associated blank as well as in the sample.

J - Indicates an estimated value.

E - Elevated level of constituent requiring secondary dilution.

D - Value determined after performing secondard dilution. A separate aliquot of the sample was required and variances from the initial analysis are due to the heterogeneous nature of the sample.

Note - A blank indicates the compound was not detected.

TABLE 4-10 (continued)

SUMMARY OF SEMI-VOLATILE ORGANIC COMPOUNDS
DETECTED IN SURFACE WATER SAMPLES
(ug/l)

DONNER HANNA COKE
#915017

COMPOUND	SW 1	SW 2	SW 3	SW 4	SW 5	SW 6
Bis(2-ethylhexyl)phthalate				48		
Naphthalene	3J	4J				
2-Methylphenol	0.4J		0.4J		0.5J	
4-Methylphenol			0.5J			
Phenol		71				

J - Indicates an estimated value.

Note - A blank indicates the compound was not detected.

TABLE 4-10 (Continued)

SUMMARY OF PESTICIDE COMPOUNDS
DETECTED IN SURFACE WATER SAMPLES
(ug/l)

DONNER HANNA COKE
#915017

COMPOUND	SW 1	SW 2	SW 3	SW 4	SW 5	SW 6
4,4'-DDT	0.053J	0.33			0.046J	0.066J

J - Indicates an estimated value.

Note - A blank indicates the compound was not detected.

the site. A list of the inorganic compounds detected and applicable standards is presented in the Tables 4-11 and 4-12.

4.5.6 Other Phase II Analytical Data

In addition to the analyses performed on sediment, groundwater, and surface water samples, additional testing and analysis was performed on a leachate sample and two samples of a stiff, tar-like substance which was observed extruding to the surface from an unidentified subsurface source.

The leachate sample (GL-1) was taken from an observed outbreak along the northern edge of the coke storage area and was found to contain a number of volatile organic compounds with varying concentrations. The most significant of these include acetone(140 ug/l), toluene (150 ug/l), and benzene (610 ug/l). Some of the semi-volatile compounds that were present in the leachate sample were: benzoic acid, napthalene, and 4 different phenolic compounds. The organic compounds and their concentrations present in the leachate sample are shown in Table 4-13.

The two tar-like samples yielded high concentrations of a number of volatile organic compounds. The Tar-1 sample contained total xylenes at 210,000 ug/kg acetone at 200,000 ug/kg; benzene at 120,000 ug/kg and toluene at a level of 100,000 ug/kg. The Tar-2 sample also exibited similar characteristics as indicated on Table 4-13. Based on the appearance and analytical results for this material, it appears its presence may be due to the reported presence of coal tars at the site.

A variety of inorganic compounds with moderate concentrations were identified in the leachate and tar samples; these are shown on Table 4-14.

TABLE 4-11

SUMMARY OF INORGANIC COMPOUNDS
DETECTED IN SURFACEWATER SAMPLES
(ug/l)

DONNER HANNA COKE
#915017

COMPOUND	SW 1	SW 2	SW 3	SW 4	SW 5	SW 6
Aluminum	220	310	1,030	720	210	380
Antimony	56	211	38	49	58	60
Barium				110	90	100
Calcium	197,000	861,000	119,000	214,000	220,000	254,000
Chromium			7.0	8.0		
Copper				10	40	
Iron	1,430	48,400	1,030	13,400	1,600	2,240
Lead			8.0	7.0		8.0
Magnesium	10,200	96,500	9,100	25,100	7,430	44,700
Manganese	378	9,010	108	938	395	1,650
Potassium	26,700	185,000	12,200	6,630	29,400	10,700
Zinc	25	59,100	12	63	24	183
Cyanide, total	239	110	1,120	807	193	643
Ammonia (mg/l)	3.7	39	0.68	0.97	4.4	2.7
Cobalt		90				
Nickel					50	

Note: A blank indicates the compound was not detected

TABLE 4-12

SURFACE WATER QUALITY STANDARDS
FOR SELECT INORGANIC COMPOUNDS
(ug/l)

DONNER HANNA COKE
(#915017)

COMPOUND	NYSDEC QUALITY STANDARD CLASS D
Arsenic	360
Chromium	4765*
Iron	300
Lead	393*
Zinc	894*
Ammonia	29.5 (mg/l)**

NYSDEC (1985) "Ambient Water Quality Standards", 6NYCRR Appendix 31, Part 701.

*These Class D Standards were calculated using an average hardness value of 343 ppm.

**Total ammonia standard determined using pH and temperature from SW-2 which had highest concentration.

TABLE 4-13

SUMMARY OF VOLATILE ORGANIC COMPOUNDS DETECTED IN LEACHATE AND TAR SAMPLES

DONNER HANNA COKE
#915017

COMPOUND	*GL 1	*GL 1DL	**TAR 1	**TAR 2	**TAR 1DL	**METHOD BLANK
Acetone	140	120D		11,000BJ	200,000BD	2,500
Benzene	520E	610D	140,000E	50,000	120,000D	
Carbon disulfide			4,600B			1,500
Ethylbenzene	0.2J		6,700	1,300J		
Methylene chloride		8DJ	11,000B	19,000B	190,000BD	1,200
Styrene			18,000	12,000		
Toluene	130	150D	99,000B	27,000B	100,000BD	240J
Total Xylenes	15	130J	190,000E	49,000	210,000D	

* ug/l
** ug/Kg

B - Analyte was found in the associated blank as well as in the sample.

J - Indicates an estimated value.

E - Elevated level of constituent requiring secondard dilution.

D - Value determined after performing secondary dilution. A separate aliquot of the sample was required and variances from the initial analysis are due to the heterogeneous nature of the sample.

Note - A blank indicates the compound was not detected

TABLE 4-13 (Continued)

SUMMARY OF SEMI-VOLATILE ORGANIC COMPOUNDS
DETECTED IN LEACHATE AND TAR SAMPLES

DONNER HANNA COKE
#915017

COMPOUND	*GL 1	**TAR 1	**TAR 2
Acenaphthene		2,800J	1,600J
Acenaphthylene		7,200J	24,000J
Anthracene		11,000J	23,000J
Benzo(a)anthracene		18,000J	19,000J
Benzo(a)pyrene		13,000J	15,000J
Benzo(b)fluoranthene		27,000J	28,000J
Benzo(g,h,i)perylene		3,600J	4,400J
Benzo(k)fluoranthene		17,000J	17,000J
Benzoic acid	460		
Chrysene		17,000J	17,000J
Dibenzo(a,h)anthracene			1,100J
Dibenzofuran		16,000J	16,000J
Fluoranthene		44,000	51,000
Fluorene		26,000	24,000J
Indeno(1,2,3-cd)pyrene		4,200J	4,700J
2-Methylnaphthalene	3J	15,000J	8,500J
Naphthalene	90	110,000	81,000
Phenanthrene	0.9J	75,000	79,000
Pyrene		34,000	38,000
2-Methylphenol	34	2,100J	
4-Methylphenol	110	6,400J	
Pentachlorophenol	6J		
Phenol	310	6,400J	

* - ug/l

** - ug/Kg

J - Indicates an estimated value.

Note - A blank indicates the compound was not detected

TABLE 4-14

SUMMARY OF INORGANIC COMPOUNDS
DETECTED IN LEACHATE AND TAR SAMPLES

DONNER HANNA COKE
#915017

COMPOUND	*L-1	**TAR-1	**TAR-2
Aluminum	230	726	267
Arsenic		2.9	3.3
Barium	1,470	11.0	5.3
Cadmium	6.0	1.2	
Calcium	1,328,000	1,102	489
Chromium		1.5	0.98
Cobalt	90		
Copper		6.3	
Iron		1,870	759
Lead		41.3	17.8
Magnesium	370	88.2	32.0
Manganese	21	20.8	13.3
Mercury		0.23	0.25
Potassium	88,100		
Sodium	45,000	117	164
Thallium		1.0	
Zinc	21	42.9	13.2
Cyanide, total	50	7.1	4.5
Ammonia (mg/l)	8.2		
Sulfate (mg/l)	150		

* - ug/l
** - ug/Kg
Note - A blank indicates the compound was not detected

4.6 RECOMMENDATIONS

The presence and nature of contamination in the shallow groundwater system, surface water network, and soils at the Donner Hanna Coke site have been identified through this Phase II Investigation and earlier studies conducted by the U.S. Geological Survey as a preliminary site assessment. Since these studies were somewhat limited in scope, further investigative efforts are required to determine the extent of contamination and geologic/hydrologic site conditions. Additional investigation activities should supplement previous studies and should include the following tasks.

- Source characterization including the types of contaminants, the location and volume (horizontal and vertical extent) of the source(s), and the variation of concentration within the source volume(s). This will involve discrete sampling and analysis over three dimensions.

- Provision of details on site specific geologic and hydrogeologic conditions identifying the presence or absence, hydraulic properties, and chemical characteristics of a basal till/upper bedrock water bearing zone and intermediate water bearing zone(s), if present; the presence or absence and hydraulic characteristics of aquitard/aquiclude(s); and stratigraphic information. This will involve, at a minimum, test boring and piezometer/monitoring well construction along with hydraulic conductivity and porosity determinations to provide for a three-dimensional flow net analysis.

- Examination and location of the tar-like substance that was observed extruding on the surface and sampled yielded total volatile organic contamination of up to 820 mg/kg. This material has the potential to be a continuous source of contamination. Test pits should be excavated in an attempt to locate and determine the size of subsurface source of this material. Analysis of the tar-like substance soils should be performed according to TCLP protocols to determine potential hazardous characteristics.

- Further sampling and analysis of surface water and sediments within the drainage ditches should be performed to determine the potential for off-site contaminant migration via this route. Based on the results, corrective measures which may be considered include the dredging of the drainage ditches to achieve acceptable sediment concentrations and the collection and treatment of surface water run off.

- Additional hydrogeologic investigations should include the installation of the one upgradient and one or two downgradient test boring advanced to bedrock to determine if there is connection beneath the site between the shallow aquifer and the reported basal till/upper bedrock aquifer. Should connection be apparent, monitoring wells should be installed and tested for Target Compound List parameters in accordance with NYSDEC CLP protocols. An additional two piezometers each should be installed along the west and south sides of the site within the shallow aquifer to confirm the direction of groundwater flow.

- The results of the additional investigation will allow for the determination of whether or not and to what extent hazardous substances are present at the site and what remedial measures need be taken.

5.0 FINAL HAZARD RANKING SYSTEM

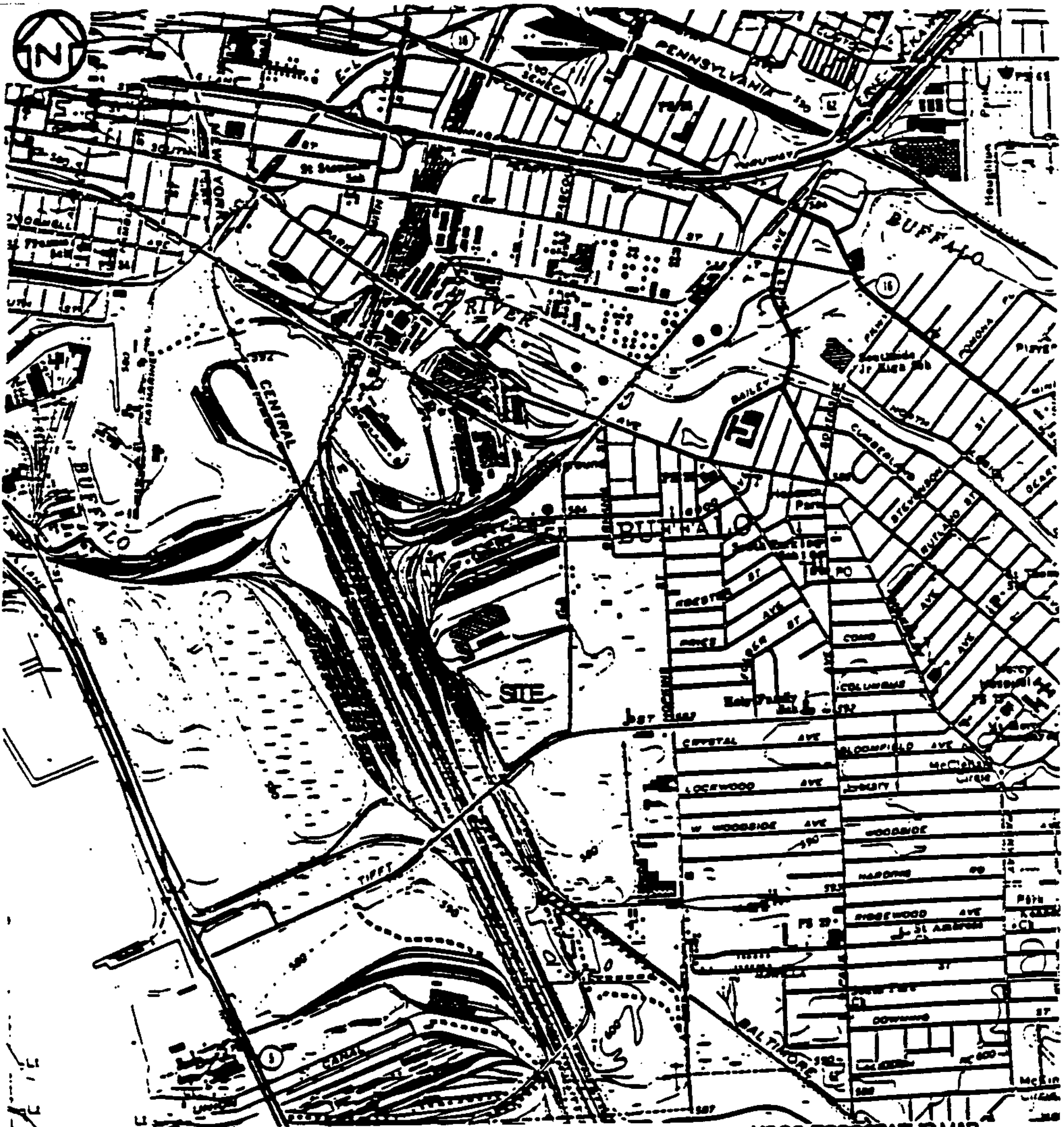
5.1 Narrative

The Donner-Hanna Coke site is located in an industrial area in the southern portion of the City of Buffalo, Erie County, New York. The site was operated as the Donner-Hanna Coke Joint Venture from 1919 to the early 1980's and was owned by Republic Steel and National Steel. Operations involved the production of coke by coal pyrolysis. The site is currently owned by Republic Steel Corporation and Hanna Furnace Corporation. A previously existing pond and wetland area of approximately 33 acres in the southern part of the plant was the site of extensive fill activities. The fill was reported to consist of construction and demolition debris, slag, and sediments dredged from settling ponds used for effluent process water sedimentation. In 1975, 255 tons per year of these sediments were deposited in this area, and by 1978 the amount was reduced to 42 tons. The fill was graded level and the area was then used to store coke and coal/tar sludge mixture recycled as a raw material.

Analytical data generated as part of the Phase II Investigation indicated that contamination of the groundwater, surface water, and sediments has occurred. Organic contaminants such as benzene, toluene and methylene chloride were detected in the groundwater and drainage ditches at concentrations up to 16 mg/l. These compounds were detected in sediment samples from the site at levels of up to 240 mg/kg.

Approximately 5,640 people live within 1 mile of the site, however, there is no known present usage of the surface water or groundwater for domestic water supplies. A New York State designated wetland lies approximately

2,000 feet west of the site. The Buffalo River flows westward approximately 2,000 feet north of the site.



USGS TOPOGRAPHIC MAP
BUFFALO, N.Y. SE QUAD 1965
LATITUDE 42°50'48"
LONGITUDE 78°51'12"
7.5 MIN.

SCALE 1:24000

1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

RA
IRONMENTAL,

Scale: 1:24,000		
	By	Date
Dwn.	JJC	3/89
Ckd.	RES	4/89
Ap'vd.	JRS	5/89
Rev.		

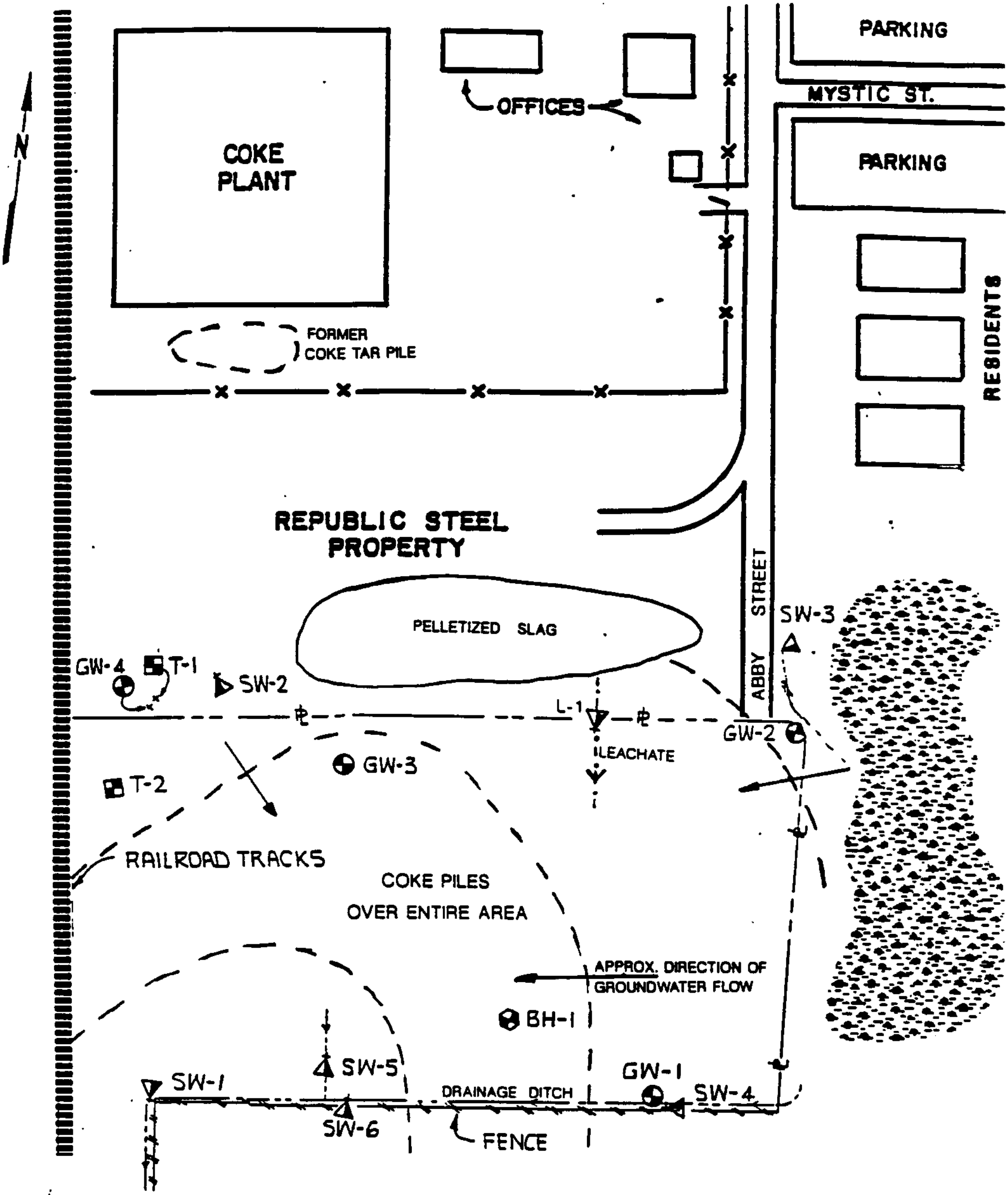
DONNER HANNA COKE
Buffalo, NY

NYSDEC SUPERFUND
PHASE II INVESTIGATION

Project No. 8C1301G 5-3

VICINITY MAP

B FIGURE NO. 5-1



RA
IRONMENTAL

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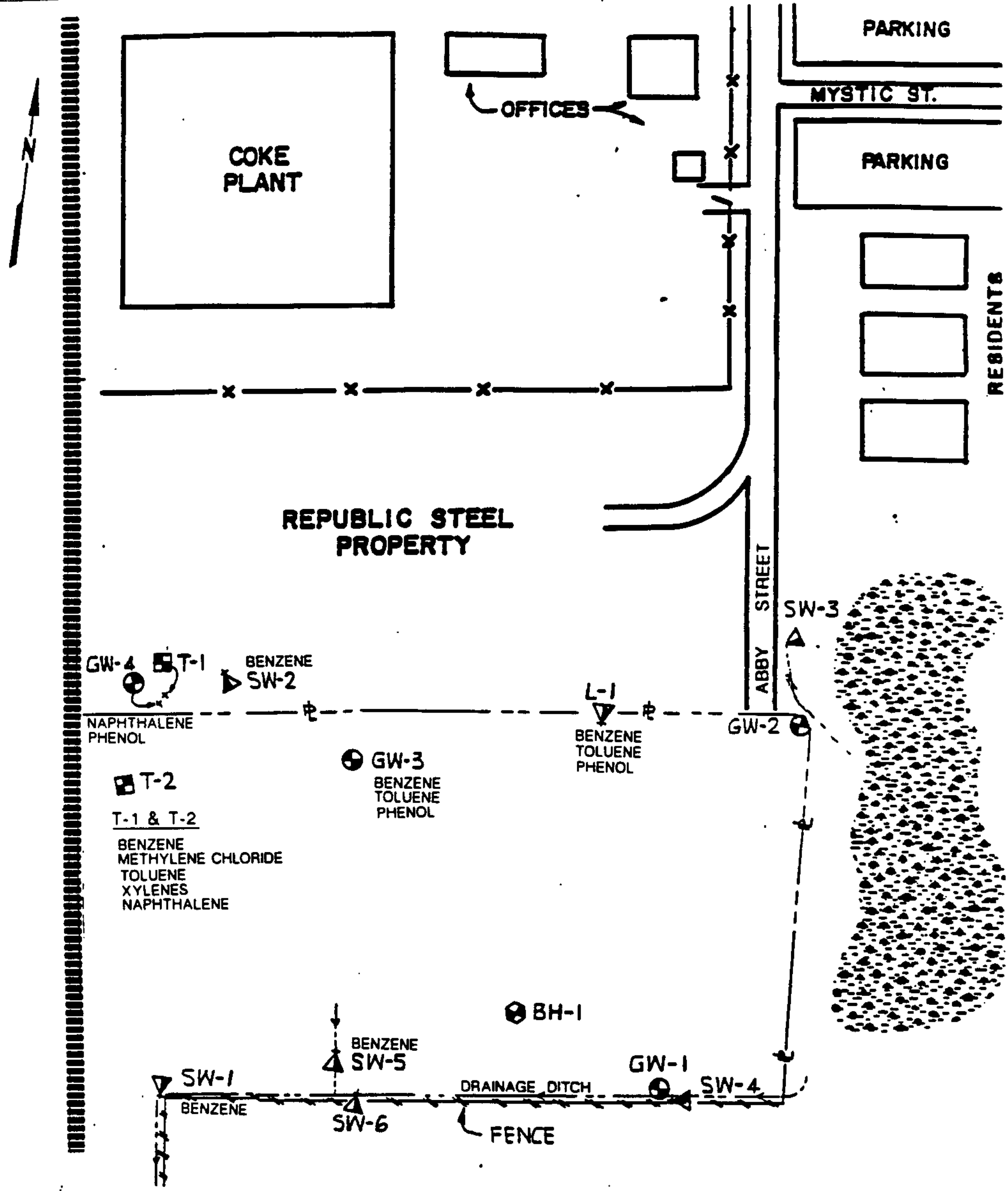
	By	Date
Dwn.	E.D.	2/89
Ckd.	RES	4/89
Ap'vd.	JRS	5/89
Rev.		

DONNER HANNA COKE
BUFFALO, N.Y.
NYSDEC SUPERFUND
PHASE II INVESTIGATION

SITE SKETCH

Project No. 8C1301 G 5-4

B Figure No. 5-2



ECRA ENVIRONMENTAL INC.

Scale: approx. 1"=270'		
	By	Date
Dwn.	E.D.	2/89
Ckd.	RBS	4/89
Ap'vd.	JRS	5/89
Rev.		

DONNER HANNA COKE
BUFFALO, N.Y.
NYSDEC SUPERFUND
PHASE II INVESTIGATION

SITE SKETCH
(WITH MAJOR CONTAMINANTS)

Project No. 8C1301 G 5-5

B Figure No. 5-2A

Facility name: Donner-Hanna Coke

Location: City of Buffalo, Erie County

EPA Region: 2

Person(s) in charge of the facility: Edwin J. Hartman (Superintendent)
Box A South Park Station
Buffalo, NY 14220

Name of Reviewer: Robert E. Steiner II Date: 4/27/89

General description of the facility:
(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action; etc.

Approximately 33 acres in the southern section of the plant property filled with construction/demolition debris and used for the storage of coke and raw materials. Fill material reportedly included sediments from process waters deposited between 1951 and 1978. EP Toxicity testing determined fill material to be within environmentally acceptable standards. A leachate outbreak and tar-like substance was observed extruding to the surface of the site. Sampling and analysis conducted during the 1988 Phase II Investigation revealed contamination of groundwater, surface water, and sediment. Compounds detected in each type of sample collected included volatile and semi-volatile organics and inorganics. Since the contaminated drainage ditches flow off-site and the contaminated groundwater exists in moderately permeable material, there is high likelihood that contamination may be migrating off-site.

Scores: S_M = 5.45 (S_{gw} = 5.42 S_{sw} = 7.72 S_a = 0)

S_{FE} = NOT SCORED

S_{DC} = 50

HRS COVER SHEET

5.3 HRS DOCUMENTATION RECORDS

DOCUMENTATION RECORDS
FOR
HAZARD RANKING SYSTEM

INSTRUCTIONS: The purpose of these records is to provide a convenient way to prepare an auditable record of the data and documentation used to apply the Hazard Ranking System to a given facility. As briefly as possible summarize the information you used to assign the score for each factor (e.g., "Waste quantity = 4,230 drums plus 800 cubic yards of sludges"). The source of information should be provided for each entry and should be a bibliographic-type reference that will make the document used for a given data point easier to find. Include the location of the document and consider appending a copy of the relevant page(s) for ease in review.

FACILITY NAME: Donner-Hanna Coke

LOCATION: Abby and Mystic Streets, City of Buffalo, Erie County, New York

SCORING COMPLETED ON: April 27, 1989

SCORING PERFORMED BY: Robert E. Steiner II

PRIMARY SOURCE(S) OF INFORMATION (i.e., EPA REGION, STATE, FIT, etc.): NYSDEC Region 9, Erie County Health Department

FACTORS NOT SCORED DUE TO INSUFFICIENT INFORMATION:

COMMENTS OR QUALIFICATIONS:

Ground Water Route Work Sheet					
Rating Factor	Assigned Value (Circle One)	Multi-plier	Score	Max. Score	Ref. (Section)
1 Observed Release	0 45	1	45	45	3.1
If observed release is given a score of 45, proceed to line 4 If observed release is given a score of 0, proceed to line 2					
2 Route Characteristics					3.2
Depth to Aquifer of Concern	0 1 2 3	2	6	6	
Net Precipitation	0 1 2 3	1	2	3	
Permeability of the Unsaturated Zone	0 1 2 3	1	2	3	
Physical State	0 1 2 3	1	3	3	
	Total Route Characteristics Score		13	15	
3 Containment	0 1 2 3	1	3	3	3.3
4 Waste Characteristics					3.4
Toxicity/Persistence	0 3 6 9 12 15 18	1	18	18	
Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	5	8	
	Total Waste Characteristics Score		23	26	
5 Targets					3.5
Ground Water Use	0 1 2 3	3	3	9	
Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 30 32 35 40	1	0	40	
	Total Targets Score		3	49	
6 If line 1 is 45, multiply 1 x 4 x 5 If line 1 is 0, multiply 2 x 3 x 4 x 5			3,105	57,330	
7 Divide line 6 by 57,330 and multiply by 100 S_{gw} = 5.42					

GROUND WATER ROUTE WORK SHEET

Surface Water Route Work Sheet					
Rating Factor	Assigned Value (Circle One)	Multiplier	Score	Max. Score	Ref. (Section)
1 Observed Release	0 45	1	0	45	4.1
If observed release is given a score of 45, proceed to line 4 If observed release is given a score of 0, proceed to line 2					
2 Route Characteristics					4.2
Facility Slope and Intervening Terrain	0 1 2 3	1	0	3	
1-yr. 24-hr. Rainfall	0 1 2 3	1	2	3	
Distance to Nearest Surface Water	0 1 2 3	2	4	6	
Physical State	0 1 2 3	1	3	3	
	Total Route Characteristics Score		9	15	
3 Containment	0 1 2 3	1	3	3	4.3
4 Waste Characteristics					4.4
Toxicity/Persistence	0 3 6 9 12 15 18	1	18	18	
Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	5	8	
	Total Waste Characteristics Score		23	26	
5 Targets					4.5
Surface Water Use	0 1 2 3	3	6	9	
Distance to a Sensitive Environment	0 1 2 3	2	2	6	
Population Served/ Distance to Water Intake Downstream	0 4 6 8 10 12 16 18 20 24 30 32 35 40	1	0	40	
	Total Targets Score		8	55	
6 If line 1 is 45, multiply 1 x 4 x 5 If line 1 is 0, multiply 2 x 3 x 4 x 5			4968	64,350	
7 Divide line 6 by 64,350 and multiply by 100	S_{sw} = 7.72				

SURFACE WATER ROUTE WORK SHEET

Air Route Work Sheet

Rating Factor	Assigned Value (Circle One)	Multi-plier	Score	Max. Score	Ref. (Section)
$\boxed{1}$ Observed Release	0 45	1	0	45	5.1
Date and Location: 8/22/88 SITE PERIMETER					
Sampling Protocol: Photoionization Detector					
If line $\boxed{1}$ is 0, the S_a = 0. Enter on line $\boxed{5}$. If line $\boxed{1}$ is 45, then proceed to line $\boxed{2}$.					
$\boxed{2}$ Waste Characteristics					5.2
Reactivity and Incompatibility	0 1 2 3	1	2	3	
Toxicity	0 1 2 3	3	9	9	
Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	5	8	
Total Waste Characteristics Score			16	20	
$\boxed{3}$ Targets					5.3
Population Within 4-Mile Radius	0 9 12 15 18 21 24 27 30	1	21	30	
Distance to Sensitive Environment	0 1 2 3	2	2	6	
Land Use	0 1 2 3	1	3	3	
Total Targets Score			26	39	
$\boxed{4}$ Multiply $\boxed{1}$ x $\boxed{2}$ x $\boxed{3}$			0	35,100	
$\boxed{5}$ Divide line $\boxed{4}$ by 35,100 and multiply by 100 S_a = 0					

AIR ROUTE WORK SHEET

	S	S^2
Groundwater Route Score (S_{gw})	5.42	29.38
Surface Water Route Score (S_{sw})	7.72	59.60
Air Route Score (S_a)	0	0
$S_{gw}^2 + S_{sw}^2 + S_a^2$		88.98
$\sqrt{S_{gw}^2 + S_{sw}^2 + S_a^2}$		9.43
$\sqrt{S_{gw}^2 + S_{sw}^2 + S_a^2} / 1.73 = S_M =$		5.45

WORKSHEET FOR COMPUTING S_M

Fire and Explosion Work Sheet					
Rating Factor	**Assigned Value (Circle One)**	**Multi-plier**	**Score**	**Max. Score**	**Ref. (Section)**
1 Containment	1 3	1	N/A	3	7.1
2 Waste Characteristics					7.2
Direct Evidence	0 3	1	0	3	
Ignitability	0 1 2 3	1	3	3	
Reactivity	0 1 2 3	1	0	3	
Incompatibility	0 1 2 3	1	2	3	
Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	5	8	
Total Waste Characteristics Score			10	20	
3 Targets					7.3
Distance to Nearest Population	0 1 2 3 4 5	1	4	5	
Distance to Nearest Building	0 1 2 3	1	2	3	
Distance to Sensitive Environment	0 1 2 3	1	0	3	
Land Use	0 1 2 3	1	3	3	
Population Within 2-Mile Radius	0 1 2 3 4 5	1	5	5	
Buildings Within 2-Mile Radius	0 1 2 3 4 5	1	5	5	
Total Targets Score			19	24	
4 Multiply 1 x 2 x 3			N/A	1,440	
5 Divide line 4 by 1,440 and multiply by 100	S_{FE} = NOT SCORED				

FIRE AND EXPLOSION WORK SHEET

Direct Contact Work Sheet					
Rating Factor	Assigned Value (Circle One)	Multi-plier	Score	Max. Score	Ref. (Sectio
1 Observed Incident	0 45	1	0	45	8.1
If observed release is given a score of 45, proceed to line 4 If observed release is given a score of 0, proceed to line 2					
2 Accessibility	0 1 2 3	1	3	3	8.2
3 Containment	0 15	1	15	15	8.3
4 Waste Characteristics Toxicity	0 1 2 3	5	15	15	8.4
5 Targets					8.5
Population Within a 1-Mile Radius	0 1 2 3 4 5	4	16	20	
Distance to a Critical Habitat	0 1 2 3 4 5	4	0	12	
	Total Targets Score		16	32	
6 If line 1 is 45, multiply 1 x 4 x 5 If line 1 is 0, multiply 2 x 3 x 4 x 5			10,800	21,600	
7 Divide line 6 by 21,600 and multiply by 100		S_{DC} =	50		

DIRECT CONTACT WORK SHEET

GROUND WATER ROUTE

1 OBSERVED RELEASE

Contaminants detected (5 maximum):

Benzene, Toluene, Phenol, Arsenic, Beryllium

Rationale for attributing the contaminants to the facility:

Direct analytical evidence from Recra Environmental, Inc. Phase II Investigation, 1989.

* * *

2 ROUTE CHARACTERISTICS

<u>Depth to Aquifer of Concern</u>

Name/description of aquifer(s) of concern:

Shallow aquifer existing in upper part of lacustrine sediments and overlying coarse fill. At the Alltift Realty site, this zone is hydraulically connected to lower aquifer existing in upper bedrock and overlying till. These are considered as one aquifer for scoring purposes. (Ref. 1)

Depth(s) from the ground surface to the highest seasonal level of the saturated zone [water table(s)] of the aquifer of concern:

1.5 feet

(Ref. Recra Environmental, Inc. Phase II Investigation, 1989)

Depth from the ground surface to the lowest point of waste disposal/ storage:

7 feet

(Ref. Recra Environmental, Inc. Phase II Investigation, 1989)

Assign Value = <u>3</u>

Net Precipitation

Mean annual or seasonal precipitation (list months for seasonal):

36 inches

(Ref. 2)

Mean annual lake or seasonal evaporation (list months for seasonal):

27 inches

(Ref. 2)

Net precipitation (subtract the above figures):

+9 inches annually

Assign Value = 2

Permeability of Unsaturated Zone

Soil type in unsaturated zone:

Sand and silt with some gravel (coke fill).

Permeability associated with soil type:

10^{-3} to 10^{-4} cm/sec
Refer to page 4-10

(Ref. Appendix E - Permeability Test Calculations)

Assign Value = 2

Physical State

Physical state of substances at time of disposal (or at present time for generated gases):

Sludge

(Ref. 3)

Assign Value = 3

* * *

3 CONTAINMENT

Containment

Method(s) of waste or leachate containment evaluated:

Landfill, no liner

Method with highest score:

Landfill as described above.

Assign Value = 3

4 WASTE CHARACTERISTICS

Toxicity and Persistence

Compound(s) evaluated:

Acetone, Benzene, Carbon Disulfide, Toluene, Phenol, Naphthalene, Arsenic, Beryllium, Cyanide, Aluminum, Cadmium, Chromium, Cobalt, Copper, Iron, Lead, Manganese, Mercury, Nickel, Vanadium, Zinc, 2-Butanone.

Compound with highest score:

Arsenic (Ref. 4)

Assign Matrix Value = 18

Hazardous Waste Quantity

Total quantity of hazardous substances at the facility, excluding those with a containment score of 0 (Give a reasonable estimate even if quantity is above maximum):

594 tons

Assign Value = 5

Basis of estimating and/or computing waste quantity:

Determined only for years for which a estimated quantity of waste was reported. Refer to page 4-2

1975 - 255 tons
1976 - 255 tons (assumed to be the same as 1975)
1977 - 42 tons
1978 - 42 tons
594 tons

(Ref. 5)

* * *

5 TARGETS

Ground Water Use

Use(s) of aquifer(s) of concern within a 3-mile radius of the facility:

Commercial, Industrial

(Ref. 6)

Assign Value = 1

Distance to Nearest Well

Location of nearest well drawing from aquifer of concern or occupied building not served by a public water supply:

Industrial well is located on the plant property.

(Ref. 7)

Distance to above well or building:

Well not used for drinking purposes.

Assign Value = 0

Population Served by Ground Water Wells Within a 3-Mile Radius

Identified water-supply well(s) drawing from aquifer(s) of concern within a 3-mile radius and populations served by each:

None, area served by municipal water supply since 1897. (Ref. 8)

Computation of land area irrigated by supply well(s) drawing from aquifer(s) of concern within a 3-mile radius, and conversion to population (1.5 people per acre):

None

Total population served by ground water within a 3-mile radius:

None

SURFACE WATER ROUTE

1 OBSERVED RELEASE

Contaminants detected in surface water at the facility or downhill from it (5 maximum):

Benzene, Toluene, Xylene, Phenol, Cyanide

Rationale for attributing the contaminants to the facility:

Contaminants detected in drainage ditches on-site which are not perennially flowing to other surface waters.

Assign Value = 0

(Ref. Recra Environmental, Inc. Phase II Investigation, 1989)

* * *

2 ROUTE CHARACTERISTICS

Facility Slope and Intervening Terrain

Average slope of facility in percent:

0.2%

(Ref. Appendix A, Drawing, No. 1)

Name/description of nearest downslope surface water:

Buffalo River

(Ref.9 USGS 7.5 minute Topographic Map of the Buffalo SE Quadrangle, 1965)

Average slope of terrain between facility and above-cited surface water body in percent:

0%

Calculated from USGS 7.5 minute Topographic May of the Buffalo SE Quadrangle, 1965. (Ref. 9)

Assign Value = 0

Is the facility located either totally or partially in surface water?

Prior to fill activities much of site was a wetland.

Is the facility completely surrounded by areas of higher elevation?

No

1-Year 24-Hour Rainfall in Inches

2.1 inches

(Ref.10)

Assign Value = 2

Distance to Nearest Downslope Surface Water

2000 ft.

Calculated from USGS 7.5 minute Topographic Map of the Buffalo SE Quadrangle, 1965.

Assign Value = 2

Physical State of Waste

Sludge

(Ref. 3)

Assign Value = 3

* * *

3 CONTAINMENT

Containment

Method(s) of waste or leachate containment evaluated:

Landfill, no diversion system present

Method with highest score:

Landfill as described above

Assign Value = 3

4 WASTE CHARACTERISTICS

<u>Toxicity and Persistence</u>

Compound(s) evaluated

Acetone, Benzene, Carbon Disulfide, Toluene, Phenol, Napthalene, Arsenic, Beryllium, Cyanide, 2-Butanone, Methylene Chloride, Total Xylenes, Fluoranthene, Benzo(b)fluoranthene, Pyrene, Phenanthrene, 4-4'DDD, Methylene Chloride, Aluminum, Antimony, Iron, Zinc

Compound with highest score:

Arsenic (Ref. 4)

Assign Matrix Value = <u>18</u>

<u>Hazardous Waste Quantity</u>

Total quantity of hazardous substances at the facility, excluding those with a containment score of 0 (Give a reasonable estimate even if quantity is above maximum):

594 tons

Assign Value = <u>5</u>

Basis of estimating and/or computing waste quantity:

Determined only for years for which a estimated quantity of waste was reported.
1975 - 255 tons
1976 - 255 tons (assumed to be the same as 1975)
1977 - 42 tons
1978 - 42 tons
594 tons

(Ref. 5)

* * *

5 TARGETS

<u>Surface Water Use</u>

Use(s) of surface water within 3 miles downstream of the hazardous substance:

Recreation (fishing, boating)

Assign Value = <u>2</u>

Is there tidal influence?

No

Distance to a Sensitive Environment

Distance to 5-acre (minimum) coastal wetland, if 2 miles or less:

None within 2 miles of site.

Distance to 5-acre (minimum) fresh-water wetland, if 1 mile or less:

Designated wetland BU-15 located 2,000 feet west of the site.

(Ref. 11)

Assign Value = 1

Distance to critical habitat of an endangered species or national wildlife refuge, if 1 mile or less:

None identified within 1 mile.

(Ref. 12)

Population Served by Surface Water

Location(s) of water-supply intake(s) within 3 miles (free-flowing bodies) or 1 mile (static water bodies) downstream of the hazardous substance and population served by each intake:

Buffalo Public Water intake is located in Lake Erie further than 3 miles from the site.

(Ref.13)

Assign Value = 0

Computation of land area irrigated by above-cited intake(s) and conversion to population (1.5 people per acre):

None

Total population served:

NA

Name/description of nearest of above water bodies:

Lake Erie - Class A Special Water Resource (international boundary)

Distance to above-cited intakes, measured in stream miles.

Intakes are approximately 5 miles from the site.

(Ref.13)

AIR ROUTE

1 OBSERVED RELEASE

Contaminants detected:

None

Assign Value = <u>0</u>

Date and location of detection of contaminants:

NA

Methods used to detect the contaminants:

NA

Rationale for attributing the contaminants to the site:

NA

* * *

2 WASTE CHARACTERISTICS

<u>Reactivity and Incompatibility</u>

Most reactive compound:

None identified

Most incompatible pair of compounds:

Benzene and Beryllium

(Ref.14)

Assign Value = <u>2</u>

Toxicity

Most toxic compound:

Benzene

(Ref.15)

Assign Value = 3

Hazardous Waste Quantity

Total quantity of hazardous waste:

594 tons

Assign Value = 5

Basis of estimating and/or computing waste quantity:

Determined only for years for which an estimated quantity of waste was reported.
1975 - 255 tons
1976 - 255 tons
1977 - 42 tons
1978 - 42 tons
594 tons

(Ref. 5)

* * *

3 TARGETS

Population Within 4-Mile Radius

Underline radius used, give population, and indicate how determined:

0 to 4 mi   0 to 1 mi   0 to 1/2 mi   0 to 1/4 mi

5,461 (US Census Data, 1980) (Ref.16)

Assign Value = 21

Distance to a Sensitive Environment

Distance to 5-acre (minimum) coastal wetland, if 2 miles or less:

None within 2 miles of site

Distance to 5-acre (minimum) fresh-water wetland, if 1 mile or less:

Designated wetland BU-15 located 2,000 feet west of site

(Ref.11)

Assign Value = 1

Distance to critical habitat of an endangered species, if 1 mile or less:

None identified within 1 mile of site.

(Ref.12)

Land Use

Distance to commercial/industrial area, if 1 mile or less:

Commercial/industrial area adjacent to site.

Assign Value = 3

Distance to national or state park, forest, or wildlife reserve, if 2 miles or less:

0.8 miles - Tifft Farms Nature Preserve

(Ref.9; USGS 7.5 minute Topographic Map of the Buffalo SE Quadrangle, 1965

Distance to residential area, if 2 miles or less:

Adjacent to site

Distance to agricultural land in production within past 5 years, if 1 mile or less:

None identified within 1 mile of the site, upon inspection of the USGS 7.5 minute Topographic Map of the Buffalo SE Quadrangle, 1965.

Distance to prime agricultural land in production within past 5 years, if 2 miles or less:

None identified within 1 mile of the site, upon inspection of the USGS 7.5 minute Topographic Map of the Buffalo SE Quadrangle, 1965.

Is a historic or landmark site (National Register or Historic Places and National Natural Landmarks) within the view of the site?

None identified

FIRE AND EXPLOSION

1 CONTAINMENT

Hazardous substances present:

None identified

Type of containment, if applicable:

Fire Marshall has not certified a fire threat nor do field measurements suggest such.

* * *

2 WASTE CHARACTERISTICS

<u>Direct Evidence</u>

Type of instrument and measurements:

None

<u>Ignitability</u>

Compound used:

Benzene

(Ref.15)

Assign Value = <u>3</u>

<u>Reactivity</u>

Most reactive compound:

None identified

<u>Incompatibility</u>

Most incompatible pair of compounds:

Benzene and Beryllium

(Ref.14)

Assign Value = <u>2</u>

* * *

Hazardous Waste Quantity

Total quantity of hazardous substances at the facility:

594 tons

Assign Value = 5

Basis of estimating and/or computing waste quantity:
Determined only for years for which an estimated quantity of waste was reported
1975 - 255 tons
1976 - 255 tons (assumed to be the same as 1975)
1977 - 42 tons
1978 - 42 tons
594 tons

* * *

3 TARGETS

Distance to Nearest Population

100 feet (Phase II Investigation Site Visit, 1988)

Assign Value = 4

Distance to Nearest Building

100 feet (Phase II Investigation Site Visit, 1988)

Assign Value = 2

Distance to Sensitive Environment

Distance to wetlands:

Greater than 100 feet

(Ref.11)

Assign Value = 0

Distance to critical habitat:

None identified within 1 mile of site.

(Ref.12)

Land Use

Distance to commercial/industrial area, if 1 mile or less:

Commercial/industrial area adjacent to site.

Assign Value = 3

Distance to national or state park, forest, or wildlife reserve, if 2 miles or less:

0.8 miles - Tifft Farms Nature Preserve

Distance to residential area, if 2 miles or less:

Adjacent to site.

Distance to agricultural land in production within past 5 years, if 1 mile or less:

None identified within 1 mile of the site, upon inspection of USGS 7.5 minute Topographic Map of the Buffalo, SE Quadrangle, 1965.

Distance to prime agricultural land in production within past 5 years, if 2 miles or less:

None identified within 1 mile of the site, upon inspection of USGS 7.5 minute Topographic Map of the Buffalo, SE Quadrangle, 1965.

Is a historic or landmark site (National Register or Historic Places and National Natural Landmarks) within the view of the site?

None identified

Population Within 2-Mile Radius

35,951

(Ref. 16; US Census Data, 1980)

Assign Value = 5

Buildings Within 2-Mile Radius

3,500 estimated from USGS 7.5 minute Topographic Map of the Buffalo, SE Quadrangle, 1965.

Assign Value = 5

DIRECT CONTACT

1 OBSERVED INCIDENT

Date, location, and pertinent details of incident:

No observed incident

* * *

2 ACCESSIBILITY

Describe type of barrier(s):

Barriers do not completely surround the facility.

Assign Value = 3

* * *

3 CONTAINMENT

Type of containment, if applicable:

Unlined landfill, no containment

Assign Value = 15

* * *

4 WASTE CHARACTERISTICS

Toxicity

Compounds evaluated:

Benzene, Beryllium, Acetone, Arsenic, Toluene, Cyanide

Compound with highest score:

Benzene

(Ref.14)

Assign Value = 3

* * *

5 TARGETS

Population within one-mile radius

5,461

(Ref. 16; US Census Data, 1980)

Assign Value = 4

Distance to critical habitat (of endangered species)

None identified within one mile of site.

(Ref. 12)

Site Inspection Report

EPA

POTENTIAL HAZARDOUS WASTE SITE SITE INSPECTION REPORT
PART 1 - SITE LOCATION AND INSPECTION INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NY	915017

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site)	02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER
Donner-Hanna Coke	Abby and Mystic Sts.

03 CITY	04 STATE	05 ZIP CODE	06 COUNTY	07 COUNTY CODE	08 CONG DIST
Buffalo	NY	14220	Erie	029	

09 COORDINATES: LATITUDE 42 51 15.0 LONGITUDE 078 50 30.0

10 TYPE OF OWNERSHIP (Check one): ☒ A. PRIVATE ☐ B. FEDERAL ☐ C. STATE ☐ D. COUNTY ☐ E. MUNICIPAL ☐ F. OTHER ☐ G. UNKNOWN

III. INSPECTION INFORMATION

01 DATE OF INSPECTION	02 SITE STATUS	03 YEARS OF OPERATION
8 / 22 / 88 (MONTH DAY YEAR)	☐ ACTIVE ☒ INACTIVE	1919 (BEGINNING YEAR) / early 1980s (ENDING YEAR) ___ UNKNOWN

04 AGENCY PERFORMING INSPECTION (Check all that apply)

☐ A. EPA ☐ B. EPA CONTRACTOR ______ (Name of firm) ☐ C. MUNICIPAL ☐ D. MUNICIPAL CONTRACTOR ______ (Name of firm)
☐ E. STATE ☒ F. STATE CONTRACTOR Recra Environmental (Name of firm) ☐ G. OTHER ______ (Specify)

05 CHIEF INSPECTOR	06 TITLE	07 ORGANIZATION	08 TELEPHONE NO.
Jeff Contino	Staff Geologist	Recra	(716) 691-2600

09 OTHER INSPECTORS	10 TITLE	11 ORGANIZATION	12 TELEPHONE NO.
James Bingert	Staff Geologist	Recra	(716) 691-2600
			( )
			( )
			( )
			( )

13 SITE REPRESENTATIVES INTERVIEWED	14 TITLE	15 ADDRESS	16 TELEPHONE NO.
Edwin J. Hartman	Superintendent	Donner-Hanna Coke	(716 824-3873
			( )
			( )
			( )
			( )
			( )

17 ACCESS GAINED BY (Check one)	18 TIME OF INSPECTION	19 WEATHER CONDITIONS
☒ PERMISSION ☐ WARRANT	09:35-13:17	Sunny, mild, 65 degrees

IV. INFORMATION AVAILABLE FROM

01 CONTACT	02 OF (Agency/Organization)	03 TELEPHONE NO.
Marsden Chen, P.E.	NYS Dept. of Environmental Conservation	(518) 457-0639

04 PERSON RESPONSIBLE FOR SITE INSPECTION FORM	05 AGENCY	06 ORGANIZATION	07 TELEPHONE NO.	08 DATE
Jeff Contino		Recra	(716)691-2600	4 / 14 / 89 (MONTH DAY YEAR)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NY	915017

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES (Check all that apply)

- A. SOLID
- B. POWDER, FINES
- X C. SLUDGE
- D. OTHER ______ (Specify)
- E. SLURRY
- F. LIQUID
- G. GAS

02 WASTE QUANTITY AT SITE (Measures of waste quantities must be independent)

- TONS ______
- CUBIC YARDS unknown
- NO. OF DRUMS ______

03 WASTE CHARACTERISTICS (Check all that apply)

- X A. TOXIC
- B. CORROSIVE
- C. RADIOACTIVE
- X D. PERSISTENT
- E. SOLUBLE
- F. INFECTIOUS
- X G. FLAMMABLE
- H. IGNITABLE
- X I. HIGHLY VOLATILE
- J. EXPLOSIVE
- K. REACTIVE
- X L. INCOMPATIBLE
- M. NOT APPLICABLE

III. WASTE TYPE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE	unknown		coke process water sediment was land spread.
OLW	OILY WASTE			
SOL	SOLVENTS			
PSD	PESTICIDES			
OCC	OTHER ORGANIC CHEMICALS			
IOC	INORGANIC CHEMICALS			
ACD	ACIDS			
BAS	BASES			
MES	HEAVY METALS			

IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently cited CAS Numbers)

01 CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE/DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION
OCC	Benzene	71-43-2		140,000	ug/kg
SOC	Acetone	67-64-1		200,000	ug/kg
OCC	Toluene	108-88-3		100,000	ug/kg
OCC	2-Butanone	78-93-3		7,300	ug/kg
OCC	Carbon disulfide	75-15-0		4,600	ug/kg
OCC	Methylene Chloride	75-09-2		190,000	ug/kg
OCC	Total Xylenes	1330-20-7		210,000	ug/kg
OCC	Fluoranthene	206-44-0		150,000	ug/kg
OCC	Phenanthrene	85-01-8		140,000	ug/kg
OCC	Naththalene	91-20-3		110,000	ug/kg
IOC	Arsenic			3.3	mg/kg
IOC	Barium			11.0	mg/kg
IOC	Total Cyanide			7.1	mg/kg
IOC	Beryllium			2.5	mg/kg
IOC	Magnesium			34,300	mg/kg
IOC	Mercury			2.5	mg/kg

V. FEEDSTOCKS (See Appendix for CAS Numbers)

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS			FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

Recra Environmental, Inc. Phase II Investigation, 1989.

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

EPA

I. IDENTIFICATION
01 STATE: NY
02 SITE NUMBER: 915017

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ☒ A. GROUNDWATER CONTAMINATION
02 ☒ OBSERVED (DATE: 10/25-10/27/88) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ______
04 NARRATIVE DESCRIPTION

Phase II Investigation revealed elevated levels of some organic and inorganic compounds.

01 ☒ B. SURFACE WATER CONTAMINATION
02 ☒ OBSERVED (DATE: 10/25-10/27/88) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ______
04 NARRATIVE DESCRIPTION

Phase II Investigation revealed elevated levels of some organic and inorganic compounds in drainage ditch at perimeter of site.

01 ☐ C. CONTAMINATION OF AIR
02 ☐ OBSERVED (DATE: ______) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ______
04 NARRATIVE DESCRIPTION

None documented

01 ☒ D. FIRE/EXPLOSIVE CONDITIONS
02 ☐ OBSERVED (DATE: ______) ☒ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ______
04 NARRATIVE DESCRIPTION

Potential exists as ignitable and incompatible compounds exist at site.

01 ☒ E. DIRECT CONTACT
02 ☐ OBSERVED (DATE: ______) ☒ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ______
04 NARRATIVE DESCRIPTION

Potential exists since contaminated surface water is running off-site.

01 ☒ F. CONTAMINATION OF SOIL
02 ☒ OBSERVED (DATE: 9/88, 10/88) ☐ POTENTIAL ☐ ALLEGED
03 AREA POTENTIALLY AFFECTED: 33 (Acres)
04 NARRATIVE DESCRIPTION

Auger cuttings had strong odor of Naphthaline during drilling of GW-3. Phase II Investigation revealed elevated levels of some organic and inorganic compounds and pesticides in sediment samples. USGS Sampling (1982) reveased 21 priority and 18 non-priority pollutants and some unidentified hydrocarbons.

01 ☐ G. DRINKING WATER CONTAMINATION
02 ☐ OBSERVED (DATE: ______) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ______
04 NARRATIVE DESCRIPTION

Does not exist. Entire area is serviced by municipal water drawn from Lake Erie.

01 ☐ H. WORKER EXPOSURE/INJURY
02 ☐ OBSERVED (DATE: ______) ☐ POTENTIAL ☐ ALLEGED
03 WORKERS POTENTIALLY AFFECTED: ______
04 NARRATIVE DESCRIPTION

None documented

01 ☐ I. POPULATION EXPOSURE/INJURY
02 ☐ OBSERVED (DATE: ______) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ______
04 NARRATIVE DESCRIPTION

None documented.

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NY	915017

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 ☐ J. DAMAGE TO FLORA — 02 ☐ OBSERVED (DATE: ______) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

None documented

01 ☐ K. DAMAGE TO FAUNA — 02 ☐ OBSERVED (DATE: ______) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION (Include name(s) of species)

None documented

01 ☐ L. CONTAMINATION OF FOOD CHAIN — 02 ☐ OBSERVED (DATE: ______) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

None documented

01 ☒ M. UNSTABLE CONTAINMENT OF WASTES (Spills, Runoff, Standing liquids, Leaking drums) — 02 ☐ OBSERVED (DATE: 10/88) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ______ 04 NARRATIVE DESCRIPTION

Unlined landfill, no leachate collection system.

01 ☐ N. DAMAGE TO OFFSITE PROPERTY — 02 ☐ OBSERVED (DATE: ______) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs — 02 ☐ OBSERVED (DATE: ______) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

None documented

01 ☐ P. ILLEGAL/UNAUTHORIZED DUMPING — 02 ☐ OBSERVED (DATE: ______) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

III. TOTAL POPULATION POTENTIALLY AFFECTED: 5,461 (one mile radius)

IV. COMMENTS

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

Recra Research, Inc. Phase I Investigation Report, 1983.
Recra Environmental, Inc. Phase II Investigation, 1989.

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION
PART 4 - PERMIT AND DESCRIPTIVE INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NY	915017

II. PERMIT INFORMATION

01 TYPE OF PERMIT ISSUED (Check all that apply)	02 PERMIT NUMBER	03 DATE ISSUED	04 EXPIRATION DATE	05 COMMENTS
☒ A. NPDES	NY0003310			
☐ B. UIC				
☐ C. AIR				
☐ D. RCRA				
☐ E. RCRA INTERIM STATUS				
☐ F. SPCC PLAN				
☐ G. STATE (Specify)				
☐ H. LOCAL (Specify)				
☐ I. OTHER (Specify)				
☐ J. NONE				

III. SITE DESCRIPTION

01 STORAGE/DISPOSAL (Check all that apply)	02 AMOUNT	03 UNIT OF MEASURE
☐ A. SURFACE IMPOUNDMENT		
☐ B. PILES		
☐ C. DRUMS, ABOVE GROUND		
☐ D. TANK, ABOVE GROUND		
☐ E. TANK, BELOW GROUND		
☒ F. LANDFILL	unknown	
☐ G. LANDFARM		
☒ H. OPEN DUMP	unknown	
☐ I. OTHER (Specify)		

04 TREATMENT (Check all that apply)

- ☐ A. INCENERATION
- ☐ B. UNDERGROUND INJECTION
- ☐ C. CHEMICAL/PHYSICAL
- ☐ D. BIOLOGICAL
- ☐ E. WASTE OIL PROCESSING
- ☐ F. SOLVENT RECOVERY
- ☐ G. OTHER RECYCLING/RECOVERY
- ☐ H. OTHER (Specify)

05 OTHER

- ☐ A. BUILDINGS ON SITE

06 AREA OF SITE

50 (Acres)

07 COMMENTS

Dredging from process water settling lagoons deposited on-site which was previously a wetland.

IV. CONTAINMENT

01 CONTAINMENT OF WASTES (Check one)

☐ A. ADEQUATE, SECURE ☐ B. MODERATE ☒ C. INADEQUATE, POOR ☐ D. INSECURE, UNSOUND, DANGEROUS

02 DESCRIPTION OF DRUMS, DIKING, LINERS, BARRIERS, ETC.

Entire site is now covered with fragments of coke.

V. ACCESSIBILITY

01 WASTE EASILY ACCESSIBLE: ☒ YES ☐ NO

02 COMMENTS

VI. SOURCES OF INFORMATION (Cite specific references, e.g. state files, sample analysis, reports)

Recra Reserach, Inc. Phase I Investigation Report, 1983
Recra Environmental, Inc. Phase II Investigation, 1989

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NY	915017

II. DRINKING WATER SUPPLY

01 TYPE OF DRINKING SUPPLY (Check as applicable)

	SURFACE	WELL
COMMUNITY	A. X	B.
NON-COMMUNITY	C.	D.

02 STATUS

ENDANGERED	AFFECTED	MONITORED
A.	B.	C.
D.	E.	F.

03 DISTANCE TO SITE

A. 5 (mi)
B. ____ (mi)

III. GROUNDWATER

01 GROUNDWATER USE IN VICINITY (Check one)

- A. ONLY SOURCE FOR DRINKING
- B. DRINKING (Other sources available) COMMERCIAL, INDUSTRIAL, IRRIGATION (No other water sources available)
- X C. COMMERCIAL, INDUSTRIAL, IRRIGATION (Limited other sources available)
- D. NOT USED, UNUSEABLE

02 POPULATION SERVED BY GROUND WATER none

03 DISTANCE TO NEAREST DRINKING WATER WELL ____ (mi)

04 DEPTH TO GROUNDWATER 2.3 (m)

05 DIRECTION OF GROUNDWATER FLOW southwest

06 DEPTH TO AQUIFER OF CONCERN 2.3 (m)

07 POTENTIAL YIELD OF AQUIFER ____ (gpd)

08 SOLE SOURCE AQUIFER ☐ YES ☒ NO

09 DESCRIPTION OF WELLS (Including useage, depth, and location relative to population and buildings)

There is an unused industrial well on the property. All wells in the area are industrial.

10 RECHARGE AREA

X YES
NO

COMMENTS

11 DISCHARGE AREA

YES
NO

COMMENTS

IV. SURFACE WATER

01 SURFACE WATER USE (Check one)

- A. RESERVOIR, RECREATION, DRINKING WATER SOURCE
- B. IRRIGATION, ECONOMICALLY IMPORTANT RESOURCES
- C. COMMERCIAL, INDUSTRIAL
- X D. NOT CURRENTLY USED

02 AFFECTED/POTENTIALLY AFFECTED BODIES OF WATER

NAME:	AFFECTED	DISTANCE TO SITE
Lake Erie		<2 (mi)
		(mi)
		(mi)

V. DEMOGRAPHIC AND PROPERTY INFORMATION

01 TOTAL POPULATION WITHIN

ONE (1) MILE OF SITE	TWO (2) MILES OF SITE	THREE (3) MILES OF SITE
A. 5,461 (NO. OF PERSONS)	B. 35,951 (NO. OF PERSONS)	C. ≤50,000 (NO. OF PERSONS)

02 DISTANCE TO NEAREST POPULATION 0 (mi)

03 NUMBER OF BUILDINGS WITHIN TWO (2) MILES OF SITE 3,500

04 DISTANCE TO NEAREST OFF-SITE BUILDING 0 (mi)

05 POPULATION WITHIN VICINITY OF SITE (Provide narrative description of nature of population within vicinity of site, e.g., rural, village, densely populated urban area)

Vacant commercial properties and residential homes are present near the site.

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION
01 STATE: NY | 02 SITE NUMBER: 915017

VI. ENVIRONMENTAL INFORMATION

01 PERMEABILITY OF UNSATURATED ZONE (Check one)

☐ A $10^{-6} - 10^{-8}$ cm/sec ☐ B $10^{-4} - 10^{-6}$ cm/sec ☒ C $10^{-4} - 10^{-3}$ cm/sec ☐ D GREATER THAN 10^{-3} cm/sec

02 PERMEABILITY OF BEDROCK (Check one)

☐ A. IMPERMEABLE (Less than 10^{-6} cm/sec) ☐ B RELATIVELY IMPERMEABLE ($10^{-4} - 10^{-6}$ cm/sec) ☒ C RELATIVELY PERMEABLE ($10^{-2} - 10^{-4}$ cm/sec) ☐ D VERY PERMEABLE (Greater than 10^{-2} cm/sec)

03 DEPTH TO BEDROCK: 60 (ft)

04 DEPTH OF CONTAMINATED SOIL ZONE: unknown (ft)

05 SOIL pH:

06 NET PRECIPITATION: 9 (in)

07 ONE YEAR 24 HOUR RAINFALL: 2.1 (in)

08 SLOPE — SITE SLOPE: <1 % — DIRECTION OF SITE SLOPE: SW — TERRAIN AVERAGE SLOPE: <1 %

09 FLOOD POTENTIAL: SITE IS IN >500 YEAR FLOODPLAIN

10 ☐ SITE IS ON BARRIER ISLAND, COASTAL HIGH HAZARD AREA, RIVERINE FLOODWAY

11 DISTANCE TO WETLANDS (5 acre minimum)

ESTUARINE A ______ (mi) OTHER B. 2,000 ft (mi)

12 DISTANCE TO CRITICAL HABITAT (of endangered species): >1 (mi)

ENDANGERED SPECIES: NA

13 LAND USE IN VICINITY

DISTANCE TO:

COMMERCIAL/INDUSTRIAL: A on-site (mi)

RESIDENTIAL AREAS, NATIONAL/STATE PARKS, FORESTS, OR WILDLIFE RESERVES: B Adjacent (mi)

AGRICULTURAL LANDS: PRIME AG LAND C ______ (mi) AG LAND D ______ (mi)

14 DESCRIPTION OF SITE IN RELATION TO SURROUNDING TOPOGRAPHY

Generally flat with drainage ditches around the perimeter of and across the interior of the site. Most of the coke has been removed from the site. Surrounding area is residential/commercial and relatively flat with very little slope. The Buffalo River lies approximately 0.5 miles to the north and Lake Erie is approximately 1.2 miles to the west.

VII. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

Recra Research, Inc. Phase I Investigation Report, 1983.
Recra Environmental, Inc. Phase II Investigation, 1989.

EPA

POTENTIAL HAZARDOUS WASTE SITE SITE INSPECTION REPORT PART 6 - SAMPLE AND FIELD INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NY	915017

II. SAMPLES TAKEN

SAMPLE TYPE	01 NUMBER OF SAMPLES TAKEN	02 SAMPLES SENT TO	03 ESTIMATED DATE RESULTS AVAIL.
GROUNDWATER	6	Recra Environmental, Inc.	presentl
SURFACE WATER	6	Recra Environmental, Inc.	presentl
WASTE (tar seep)	2	Recra Environmetnal, Inc.	presentl
AIR			
RUNOFF (leachate)	1	Recra Environmental, Inc.	present
SPILL			
SOIL (Sed)	6	Recra Environmental, Inc.	present
VEGETATION			
OTHER (BH-1 Comp)	1	Recra Environmental, Inc.	present

III. FIELD MEASUREMENTS TAKEN

01 TYPE	02 COMMENTS
Air Monitoring	Initial survey yielded 0ppm volatiles; during drilling, reading of over 500 ppm obtained in borehole; during well development, up to 250ppm.
Groundwater	pH=4.08-8.22 Specific Conductance=1,020- <20,000 umhos/cm
Surface Water	pH=6.80-9.78 Specific Conductance=660-2600 umhos/cm

IV. PHOTOGRAPHS AND MAPS

01 TYPE ☐ GROUND ☐ AERIAL

02 IN CUSTODY OF ______ (Name of organization or individual)

03 MAPS ☒ YES ☐ NO

04 LOCATION OF MAPS: Recra Environmental, Inc. Phase II Investigation Report, 1989.

V. OTHER FIELD DATA COLLECTED (Provide narrative description)

Description of subsurface soils.
Turbidity of well water during development and sampling.
Permeability test data.
Terrain conductivity (geophysics) survey of site perimeter

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

Recra Environmental, Inc. Phase II Investigation Report, 1989

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 7 - OWNER INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NY	915017

II. CURRENT OWNER(S)

01 NAME	02 D+B NUMBER	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	05 CITY	06 STATE	07 ZIP CODE
Republic Steel Corp. & Hanna Furnace Corp.		20 Stanwix St.		Pittsburgh	PA	15222
c/o Joseph K. Carter		(same as above)				

PARENT COMPANY (if applicable)

08 NAME	09 D+B NUMBER	10 STREET ADDRESS (P.O. Box, RFD #, etc.)	11 SIC CODE	12 CITY	13 STATE	14 ZIP CODE

III. PREVIOUS OWNER(S) (List most recent first)

01 NAME	02 D+B NUMBER	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	05 CITY	06 STATE	07 ZIP CODE
Republic Steel		Box A South Park Station		Buffalo	NY	14220
National Steel		20 Stanwix St.		Pittsburgh	PA	15222

IV. REALTY OWNER(S) (If applicable; list most recent first)

01 NAME	02 D+B NUMBER	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	05 CITY	06 STATE	07 ZIP CODE

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

Recra Research, Inc. Phase I Investigation Report, 1983
Recra Environmental, Inc. Phase II Investigation Report, 1989

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 8 - OPERATOR INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NY	915017

II. CURRENT OPERATOR

01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P O Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

08 YEARS OF OPERATION	09 NAME OF OWNER

OPERATOR'S PARENT COMPANY

10 NAME	11 D+B NUMBER

12 STREET ADDRESS (P O Box, RFD #, etc.)	13 SIC CODE

14 CITY	15 STATE	16 ZIP CODE

III. PREVIOUS OPERATOR(S)

01 NAME	02 D+B NUMBER
Donner-Hanna Coke Joint Venture	

03 STREET ADDRESS (P O Box, RFD #, etc.)	04 SIC CODE
Abby & Mystic Streets	

05 CITY	06 STATE	07 ZIP CODE
Buffalo	NY	14220

08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD
1919-1982	

01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P O Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD

01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P O Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD

PREVIOUS OPERATORS' PARENT COMPANIES

10 NAME	11 D+B NUMBER

12 STREET ADDRESS (P O Box, RFD #, etc.)	13 SIC CODE

14 CITY	15 STATE	16 ZIP CODE

10 NAME	11 D+B NUMBER

12 STREET ADDRESS (P O Box, RFD #, etc.)	13 SIC CODE

14 CITY	15 STATE	16 ZIP CODE

10 NAME	11 D+B NUMBER

12 STREET ADDRESS (P O Box, RFD #, etc.)	13 SIC CODE

14 CITY	15 STATE	16 ZIP CODE

IV. SOURCES OF INFORMATION

Recra Research, Inc. Phase I Investigation Report, 1983

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 9 - GENERATOR/TRANSPORTER INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NY	915017

II. ON-SITE GENERATOR

01 NAME	02 D+B NUMBER
Donner-Hanna Coke Joint Venture	

03 STREET ADDRESS (P O Box, RFD #, etc.)	04 SIC CODE
Abby & Mystic Streets	

05 CITY	06 STATE	07 ZIP CODE
Buffalo	NY	14220

III. OFF-SITE GENERATOR(S)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P O Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P O Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE	05 CITY	06 STATE	07 ZIP CODE

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P O Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P O Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE	05 CITY	06 STATE	07 ZIP CODE

IV. TRANSPORTER(S)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P O Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P O Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE	05 CITY	06 STATE	07 ZIP CODE

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P O Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P O Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE	05 CITY	06 STATE	07 ZIP CODE

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

Recra Research, Inc. Phase I Investigation Report, 1983

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NY	915017

II. PAST RESPONSE ACTIVITIES

01 ☐ A. WATER SUPPLY CLOSED 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION
No

01 ☐ B. TEMPORARY WATER SUPPLY PROVIDED 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION
No

01 ☐ C. PERMANENT WATER SUPPLY PROVIDED 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION
No

01 ☐ D. SPILLED MATERIAL REMOVED 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION
No

01 ☐ E. CONTAMINATED SOIL REMOVED 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION
No

01 ☐ F. WASTE REPACKAGED 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION
No

01 ☐ G. WASTE DISPOSED ELSEWHERE 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION
No

01 ☒ H. ON SITE BURIAL 02 DATE 1951-1978 03 AGENCY ______
04 DESCRIPTION
Sediments from process waters deposited in wetland area of plant property.

01 ☐ I. IN SITU CHEMICAL TREATMENT 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION
No

01 ☐ J. IN SITU BIOLOGICAL TREATMENT 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION
No

01 ☐ K. IN SITU PHYSICAL TREATMENT 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION
No

01 ☐ L. ENCAPSULATION 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION
No

01 ☐ M. EMERGENCY WASTE TREATMENT 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION
Unknown

01 ☐ N. CUTOFF WALLS 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION
None

01 ☐ O. EMERGENCY DIKING/SURFACE WATER DIVERSION 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION
None

01 ☐ P. CUTOFF TRENCHES/SUMP 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION
None

01 ☐ Q. SUBSURFACE CUTOFF WALL 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION
None

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NY	915017

II PAST RESPONSE ACTIVITIES (Continued)

01 ☐ R. BARRIER WALLS CONSTRUCTED 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION

No

01 ☒ S. CAPPING/COVERING 02 DATE 1979 03 AGENCY ______
04 DESCRIPTION

Filled area subsequently used for coke storage. Coke covers entire filled area.

01 ☐ T. BULK TANKAGE REPAIRED 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION

No

01 ☐ U. GROUT CURTAIN CONSTRUCTED 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION

No

01 ☐ V. BOTTOM SEALED 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION

No

01 ☐ W. GAS CONTROL 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION

None

01 ☐ X. FIRE CONTROL 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION

None

01 ☐ Y. LEACHATE TREATMENT 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION

None

01 ☐ Z. AREA EVACUATED 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION

No

01 ☐ 1. ACCESS TO SITE RESTRICTED 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION

No

01 ☐ 2. POPULATION RELOCATED 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION

No

01 ☐ 3. OTHER REMEDIAL ACTIVITIES 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION

None

III. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

Recra Research, INc. Phase I Investigation Report, 1983
Recra Environmental, Inc. Phase II Investigation Report, 1989

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 11 - ENFORCEMENT INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NY	915017

II. ENFORCEMENT INFORMATION

01 PAST REGULATORY/ENFORCEMENT ACTION X YES ☐ NO

02 DESCRIPTION OF FEDERAL, STATE, LOCAL REGULATORY/ENFORCEMENT ACTION

EPA site inspection on December 4, 1980 noted several violations of EPA regulations 40CFR Part 265. Based on these violations, Donner-Hanna Coke Joint Venture was issued a Complaint, Compliance Order, and Notice of Opportunity for Hearing by EPA on February 10, 1981.

On February 3, 1983, Donner-Hanna Coke Joint Venture signed a Consent Order and began removing the hazardous materials from the site shortly thereafter.

III. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

References 27 and 28 (Appendix G)

10595.5.20

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF SOLID AND HAZARDOUS WASTE
INACTIVE HAZARDOUS WASTE DISPOSAL SITE REPORT

CLASSIFICATION CODE: ____ REGION: 9 SITE CODE: 915017

NAME OF SITE: Donner-Hanna Coke
STREET ADDRESS: Abby and Mystic Streets
TOWN/CITY: Buffalo, New York COUNTY: Erie ZIP: 14220

SITE TYPE: Open Dump X Structure _ Lagoon _ Landfill X Treatment Pond _
ESTIMATED SIZE: 50 Acres

SITE OWNER/OPERATOR INFORMATION:
CURRENT OWNER NAME: Republic Steel Corp. & Hanna Furnace Corp.;c/o Joseph K.Carter
CURRENT OWNER ADDRESS: 20 Stanwix Street; Pittsburgh, PA 15222
OWNER(S) DURING USE: Donner-Hanna Coke Joint Venture
OPERATOR DURING USE: Donner-Hanna Coke Joint Venture
OPERATOR ADDRESS Abby and Mystic Streets
PERIOD ASSOCIATED WITH HAZARDOUS WASTE: From 1951 To 1978

SITE DESCRIPTION:

Lat. 42° 51'N Long. 78° 50'W

Nearest bodies of water: Buffalo River approximately 0.5 miles to the north. Lake Erie <2 miles to the west.

A large pond and wetland area was used to dispose of dredgings from coke process water settling lagoons, slag, and other demolition debris.

After extensive filling, the area was used for coke storage. The coke covers the entire area.

A Phase I report was prepared in which a Phase II Investigation was recommended.

A Phase II study of the site has been completed in 1989. Results of this study indicate that inorganic contamination and moderate level organic contamination exist within the groundwater, surface water, and sediments.

HAZARDOUS WASTE DISPOSED: Confirmed X Suspected _

TYPE	QUANTITY (units)
Dredgings from coke process water settling lagoons.	Unknown
Other coke related waste	Unknown

10595.5.21

SITE CODE: 915017

ANALYTICAL DATA AVAILABLE:

Air _ Surface Water X Groundwater X Soil X Sediment X None _

CONTRAVENTION OF STANDARDS:

Groundwater X Drinking Water _ Surface Water X Air _

LEGAL ACTION:

TYPE: None State _ Federal _

STATUS: In Progress _ Completed _

REMEDIAL ACTION:

Proposed _ Under Design _ In Progress _ Completed _

NATURE OF ACTION: None

GEOTECHNICAL INFORMATION:

SOIL TYPE: Lacustrine sand and silt, some clay overlain by coarse fill (coke).

GROUNDWATER DEPTH: 2.3 feet to over 70.0 feet

ASSESSMENT OF ENVIRONMENTAL PROBLEMS:

Inorganic contamination and moderate level organic contamination exist within the groundwater, surface water, and sediments. Public exposure possible due to contaminated surface water flowing off-site.

ASSESSMENT OF HEALTH PROBLEMS:

APPENDIX A

DRAWINGS

DONNER-HANNA COKE

#915017

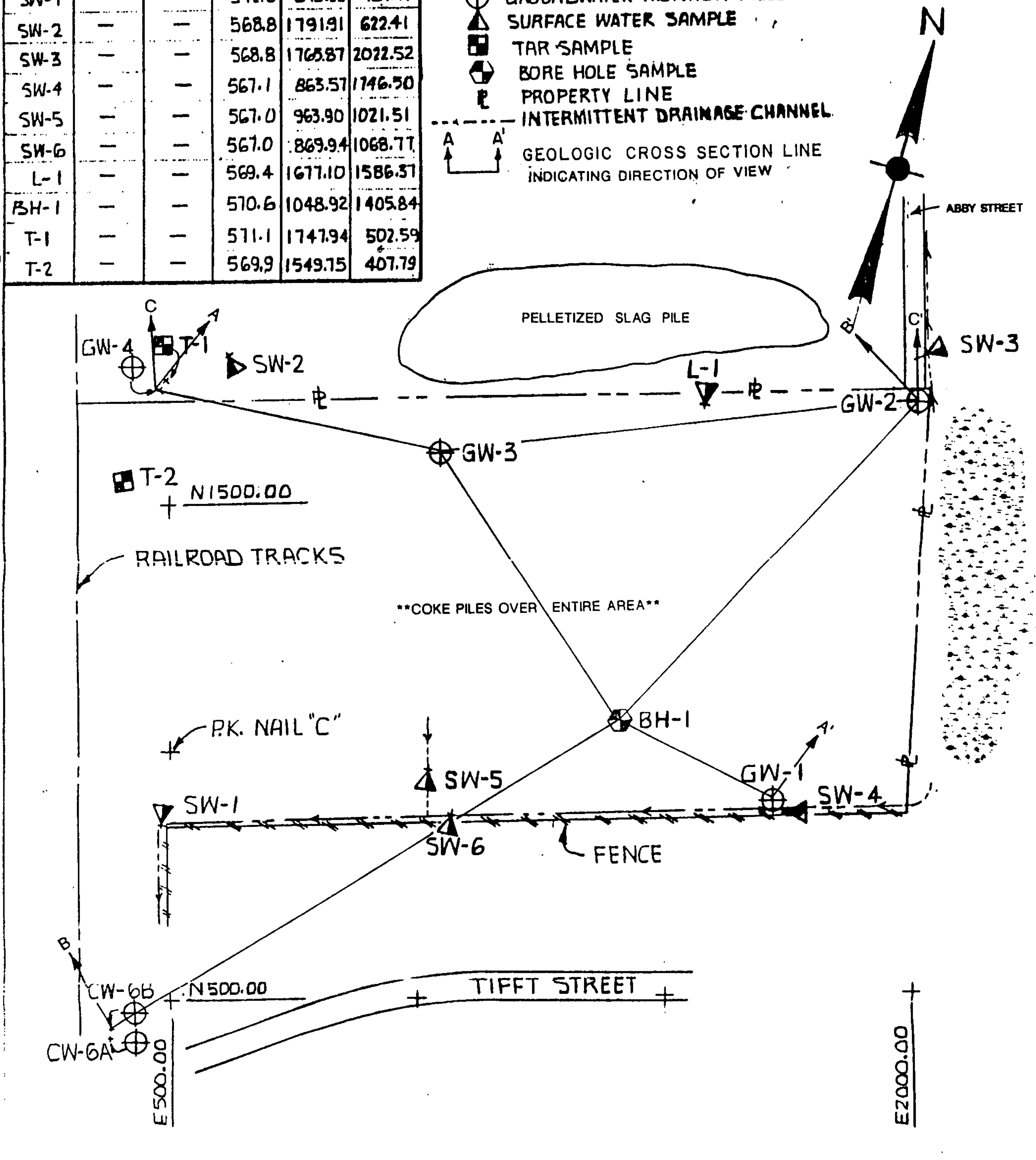
NO.	STEEL	PVC	ELEV.	NORTH	EAST
GW-1	515.82	515.27	512.8	886.77	1713.02
GW-2	513.46	513.35	510.5	1680.36	2017.17
GW-3	513.89	513.80	510.6	1592.46	1049.32
GW-4	515.03	514.94	512.0	1728.64	482.51
CW-6A	511.57	511.37	510.0	422.28	373.93
CW-6B	511.00	570.93	569.6	422.12	373.91
SW-1	—	—	572.6	848.52	487.41
SW-2	—	—	568.8	1791.91	622.41
SW-3	—	—	568.8	1765.87	2022.52
SW-4	—	—	567.1	863.57	1746.50
SW-5	—	—	567.0	963.90	1021.51
SW-6	—	—	567.0	869.94	1068.77
L-1	—	—	569.4	1677.10	1586.37
BH-1	—	—	570.6	1048.92	1405.84
T-1	—	—	571.1	1747.94	502.59
T-2	—	—	569.9	1549.15	407.79

NOTES:

1. COORDINATES ARBITRARILY ASSUMED NORTH 1000.00 AND EAST 500.00 AT P.K. NAIL "C".
2. BENCH MARK, TOP STEEL CASING CW-6A. ELEVATION 511.57 FEET.
3. GENERAL PROPERTY LINES MAY VARY FROM LOCATIONS SHOW DUE TO LIMITED AVAILABILITY OF DATA.

LEGEND:

- GROUNDWATER MONITOR WELL
- SURFACE WATER SAMPLE
- TAR SAMPLE
- BORE HOLE SAMPLE
- ℄ PROPERTY LINE
- INTERMITTENT DRAINAGE CHANNEL
- A A' GEOLOGIC CROSS SECTION LINE INDICATING DIRECTION OF VIEW



F.B. # E-101, P45-50.

REVISED BY RECRA ENVIRONMENTAL, INC. 2/89

SCALE: 1"=200'		
	BY	DATE
DWN.	EOW	12-26-88
AP'VD.	JRS	5/89
REV.	EOW	1-26-89

DONNER HANNA COKE – LOCATION OF MONITOR WELLS & SAMPLE POINTS

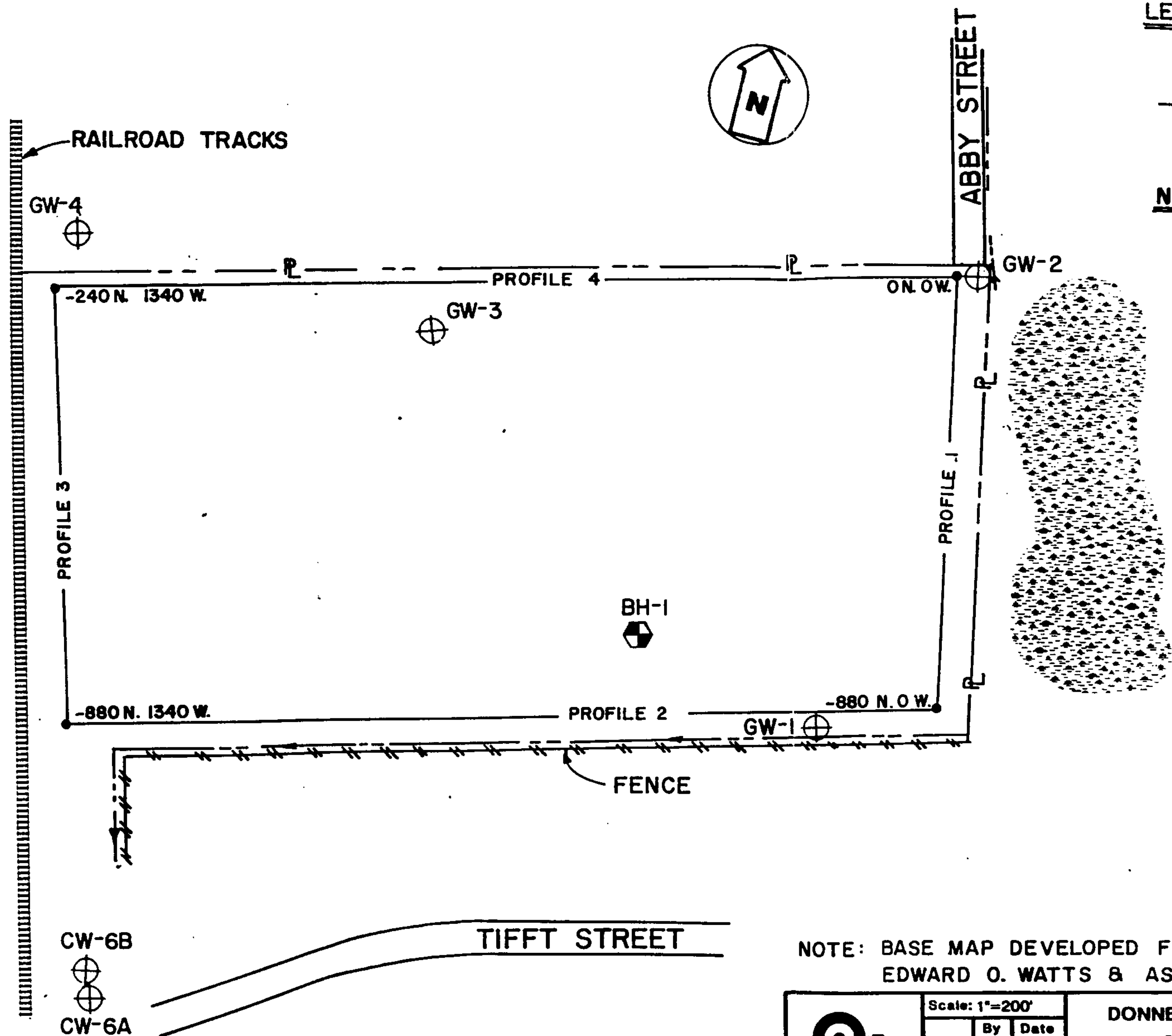
NYS SUPERFUND PHASE II – SITE NO. 915017

EDWARD O. WATTS & ASSOCIATES

BUFFALO NEW YORK

DWG. NO. E3122688

DWG. No. 1



LEGEND:

REFER TO DRAWING NO. 1 FOR GENERAL LEGEND.

—— TERRAIN CONDUCTIVITY PROFILE LINE.

• DENOTES STARTING OR TURNING POINT OF A PROFILE LINE.

NOTES:

1. REFER TO DRAWING NO. 1 FOR GENERAL NOTES.
2. FOR DETAILED INFORMATION PERTAINING TO TERRAIN CONDUCTIVITY STUDY, SEE APPENDIX B.
3. COORDINATE SYSTEM BASED ON A 0 NORTH 0 WEST ARBITRARY STARTING POINT SET AT THE NORTHEAST CORNER OF THE SITE.
4. SINCE NO BEARINGS WERE MAINTAINED DURING THE FIELD SURVEY, PROFILE LOCATIONS ARE ESTIMATED BASED ON FIELD MEASUREMENTS.
5. PROFILES WERE TRAVERSED OVER THE COKE, WHICH HAD MIGRATED BEYOND PROPERTY LINES.

NOTE: BASE MAP DEVELOPED FROM DRAWING NO. EJ122688 OF EDWARD O. WATTS & ASSOCIATES.

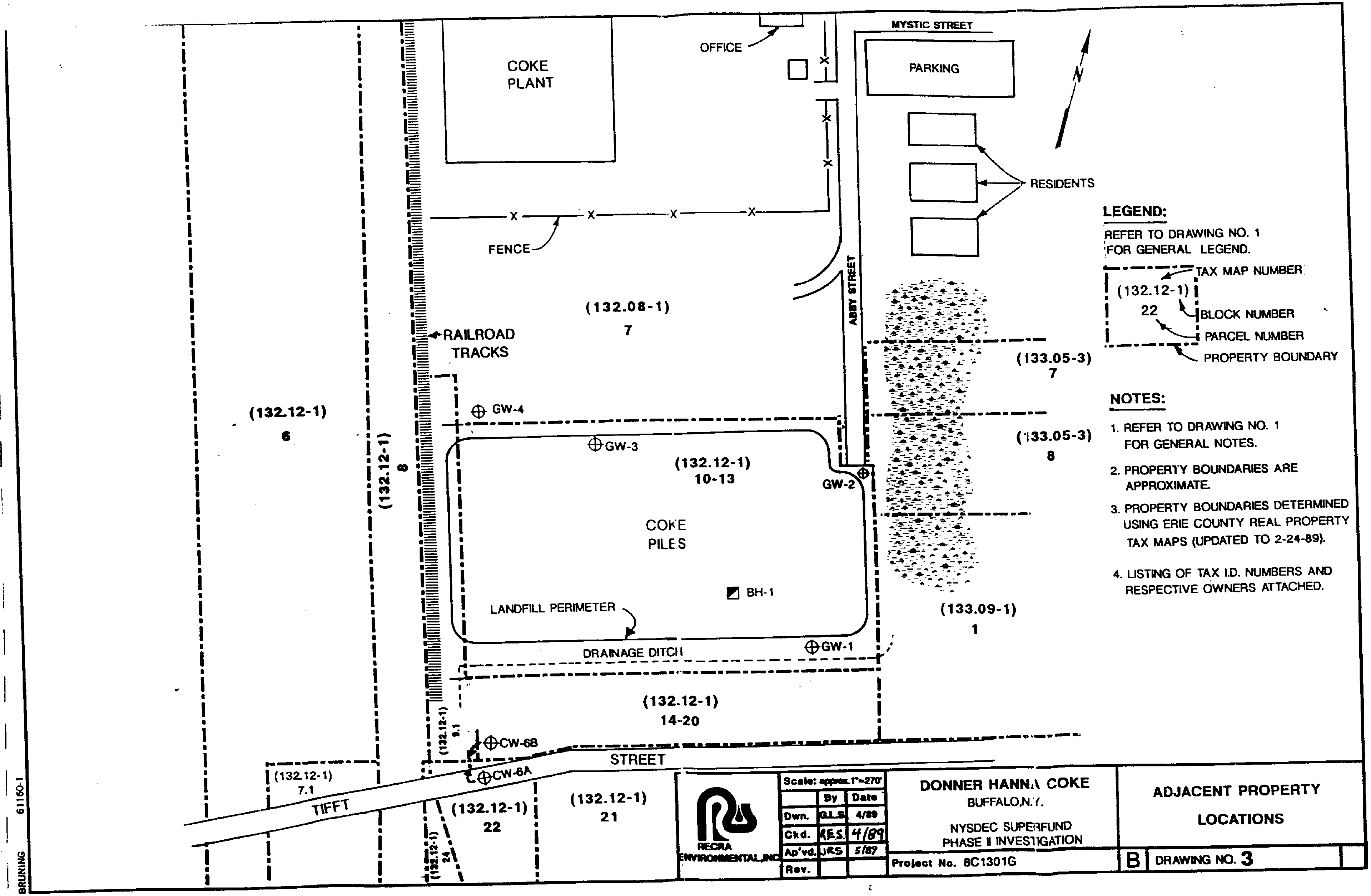
RECRA ENVIRONMENTAL	Scale: 1"=200'		
		By	Date
	Dwn.	E.D.	2/89
	Ckd.	R.S.	4/89
	Ap'vd.	JRS	5/89
	Rev.		

DONNER HANNA COKE
BUFFALO, N.Y.
NYSDEC SUPERFUND PHASE II INVESTIGATION
Project No. 8C1301 G

TERRAIN CONDUCTIVITY SURVEY LOCATIONS

B DRAWING NO. 2

BRUNING 61160-1

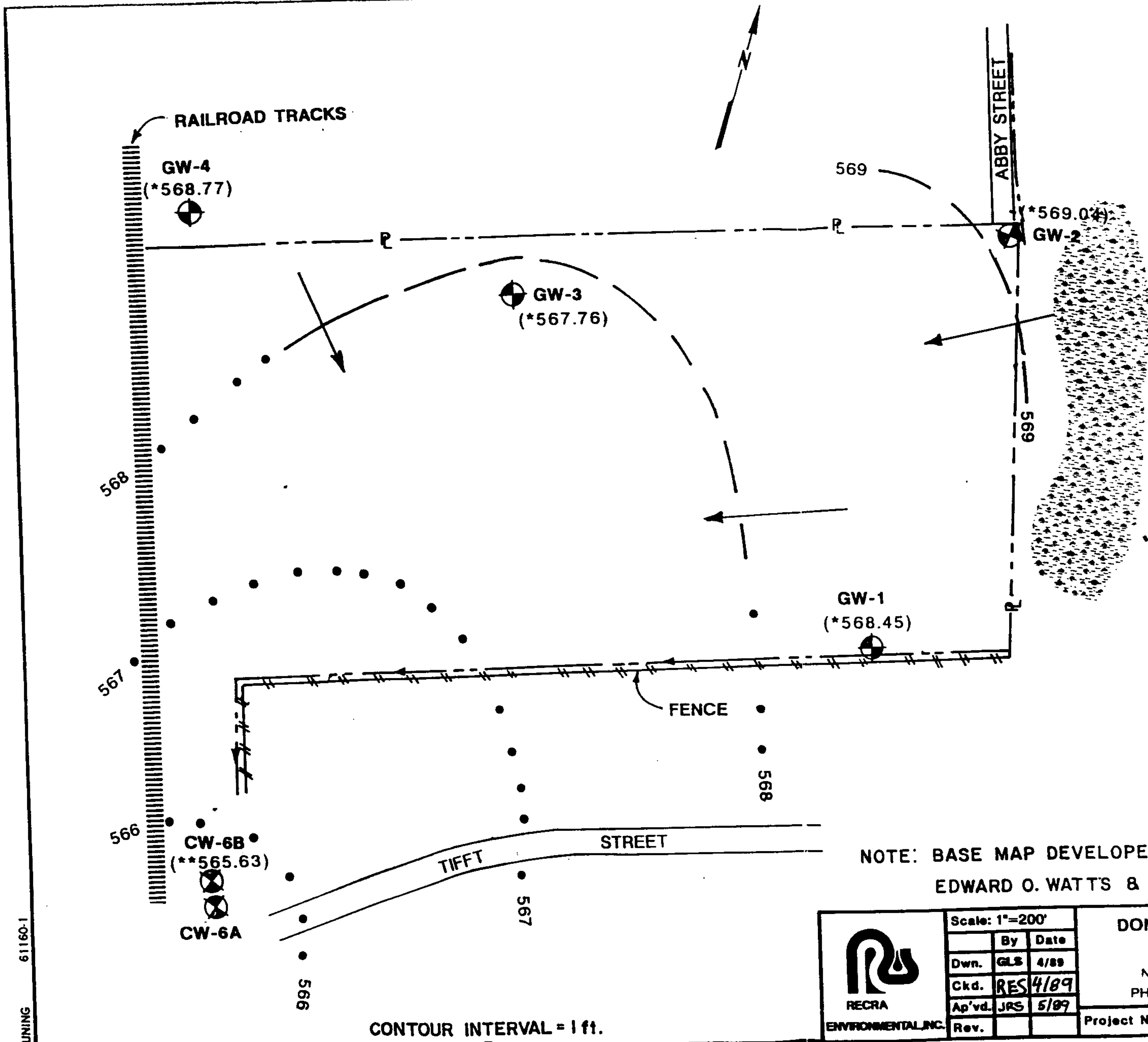


MYSTIC STREET
OFFICE
COKE PLANT
PARKING
RESIDENTS
FENCE
ABBY STREET
(132.08-1)
7
RAILROAD TRACKS
(133.05-3)
7
(132.12-1)
6
(132.12-1)
8
GW-4
GW-3
(132.12-1)
10-13
GW-2
(133.05-3)
8
COKE PILES
BH-1
LANDFILL PERIMETER
(133.09-1)
1
GW-1
DRAINAGE DITCH
(132.12-1)
14-20
(132.12-1)
9.1
CW-6B
CW-6A
STREET
TIFFT
(132.12-1)
7.1
(132.12-1)
22
(132.12-1)
21
(132.12-1)
24
LEGEND:
REFER TO DRAWING NO. 1 FOR GENERAL LEGEND.
(132.12-1)
22
TAX MAP NUMBER
BLOCK NUMBER
PARCEL NUMBER
PROPERTY BOUNDARY
NOTES:
1. REFER TO DRAWING NO. 1 FOR GENERAL NOTES.
2. PROPERTY BOUNDARIES ARE APPROXIMATE.
3. PROPERTY BOUNDARIES DETERMINED USING ERIE COUNTY REAL PROPERTY TAX MAPS (UPDATED TO 2-24-89).
4. LISTING OF TAX I.D. NUMBERS AND RESPECTIVE OWNERS ATTACHED.
RECRA ENVIRONMENTAL, INC.
Scale: approx. 1"=270'
By
Date
Dwn. G.L.S. 4/89
Ckd. R.E.S. 4/89
Ap'vd. J.R.S. 5/89
Rev.
DONNER HANNA COKE
BUFFALO, N.Y.
NYSDEC SUPERFUND PHASE II INVESTIGATION
Project No. 8C1301G
ADJACENT PROPERTY LOCATIONS
B
DRAWING NO. 3
61160-1
BRUNING

DRAWING NO. 3

DONNER HANNA COKE ADJACENT PROPERTY OWNERS

NAME AND ADDRESS	TAX I.D. NUMBER
Baltimore & Ohio Railroad	132.12-1-(6,24)
Republic Steel Corp. 1812 Republic Building P.O. Box 6778 Cleveland, Ohio	132.12-1-7.1; 132.08-1-7
South Buffalo Railroad	132.12-1-8
Republic Steel Corp & Hanna Furnace Corp. c/o Joseph K. Carter 20 Stanwix Street Pittsburgh, PA	132.12-1-(9.1-13)
Stanley Doraski P.O. Box 60 South Park Station Buffalo, NY	132.12-1-(14-20)
Alltift, Inc. 105 Dorothy Street Buffalo, NY	132.12-1-21
Adrian Realty Co. c/o CSX Transportation Tax Dept. J 910 500 Winter Street Jacksonville, FL	132.12-1-22
Coltrans, Inc. c/o Dallas & Maris Forwarding 4314 39th Ave. Kenosha, WI	133.05-3-7
City of Buffalo 170 Germania Buffalo, NY	133.05-3-8
Erie County Industrial Development Agency c/o L.A. Woolley, Inc. 620 Tifft Street Buffalo, NY	133.09-1-1



LEGEND:

REFER TO DRAWING NO. 1 FOR GENERAL LEGEND.

GW-1 (*568.45) GROUNDWATER ELEVATION MEASURED ON 11-17-88.

CW-6B (**565.63) GROUNDWATER ELEVATION MEASURED ON 12-21-88

568 ESTIMATED GROUNDWATER ELEVATION CONTOUR LINE AND FLOW DIRECTION.

568 INFERRED GROUNDWATER ELEVATION CONTOUR LINE.

NOTES:

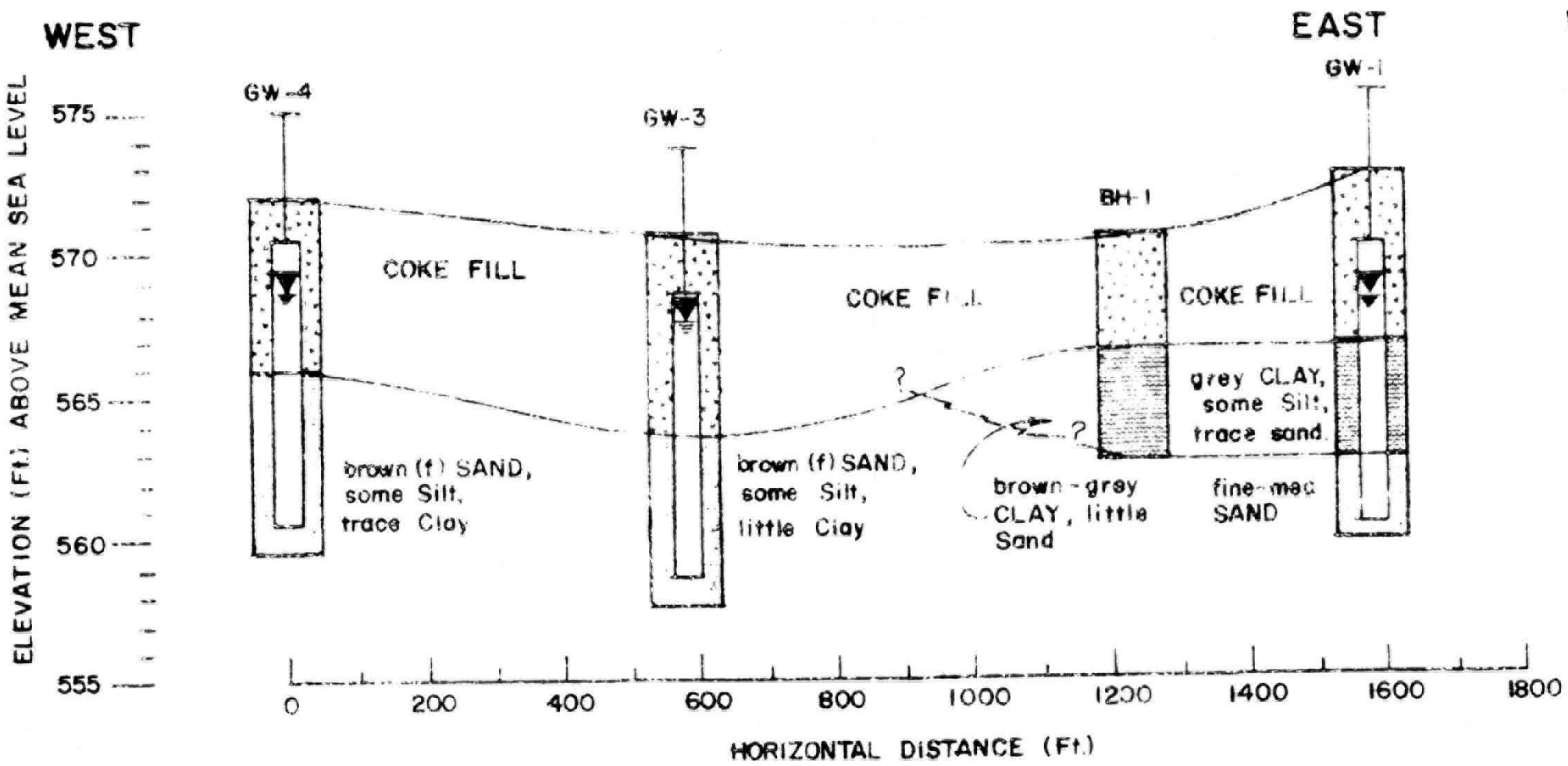
1. REFER TO DRAWING NO. 1 FOR GENERAL NOTES.
2. CW-6B WAS LOCATED AND SAMPLED AFTER WELLS GW-1 THRU GW-4 WERE SAMPLED AND WATER ELEVATIONS HAD BEEN TAKEN.
3. A COMPLETE SET OF WATER ELEVATIONS COULD NOT BE COLLECTED ON 12-21-88 DUE TO THE DAMAGE OF GW-2
4. FLUCTUATION IN GROUNDWATER ELEVATIONS MAY OCCUR DUE TO VARIATIONS IN PRECIPITATION, BAROMETRIC PRESSURE, AND OTHER FACTORS FROM THE TIME THE MEASUREMENTS WERE TAKEN.

NOTE: BASE MAP DEVELOPED FROM DRAWING NO. EJ122688, EDWARD O. WATTS & ASSOCIATES.

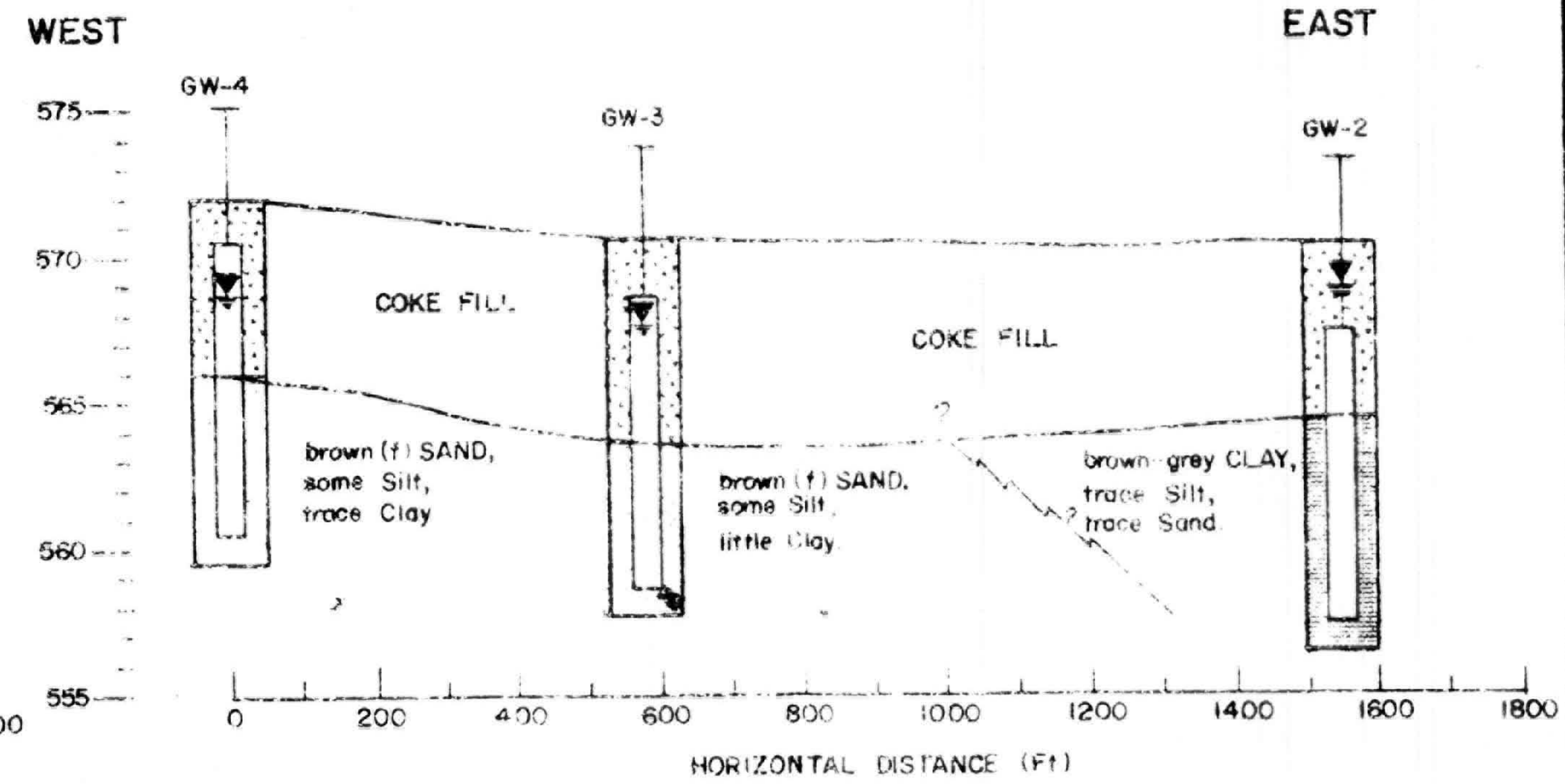
RECRA ENVIRONMENTAL, INC.	Scale: 1"=200'		DONNER HANNA COKE BUFFALO, N.Y. NYSDEC SUPERFUND PHASE II INVESTIGATION	GROUNDWATER CONTOUR MAP
	By	Date		
	Dwn. GLS	4/89		
	Ckd. RES	4/89		
	Ap'vd. JRS	5/89		
	Rev.		Project No. 8C1301G	B DRAWING NO. 4

61160-1

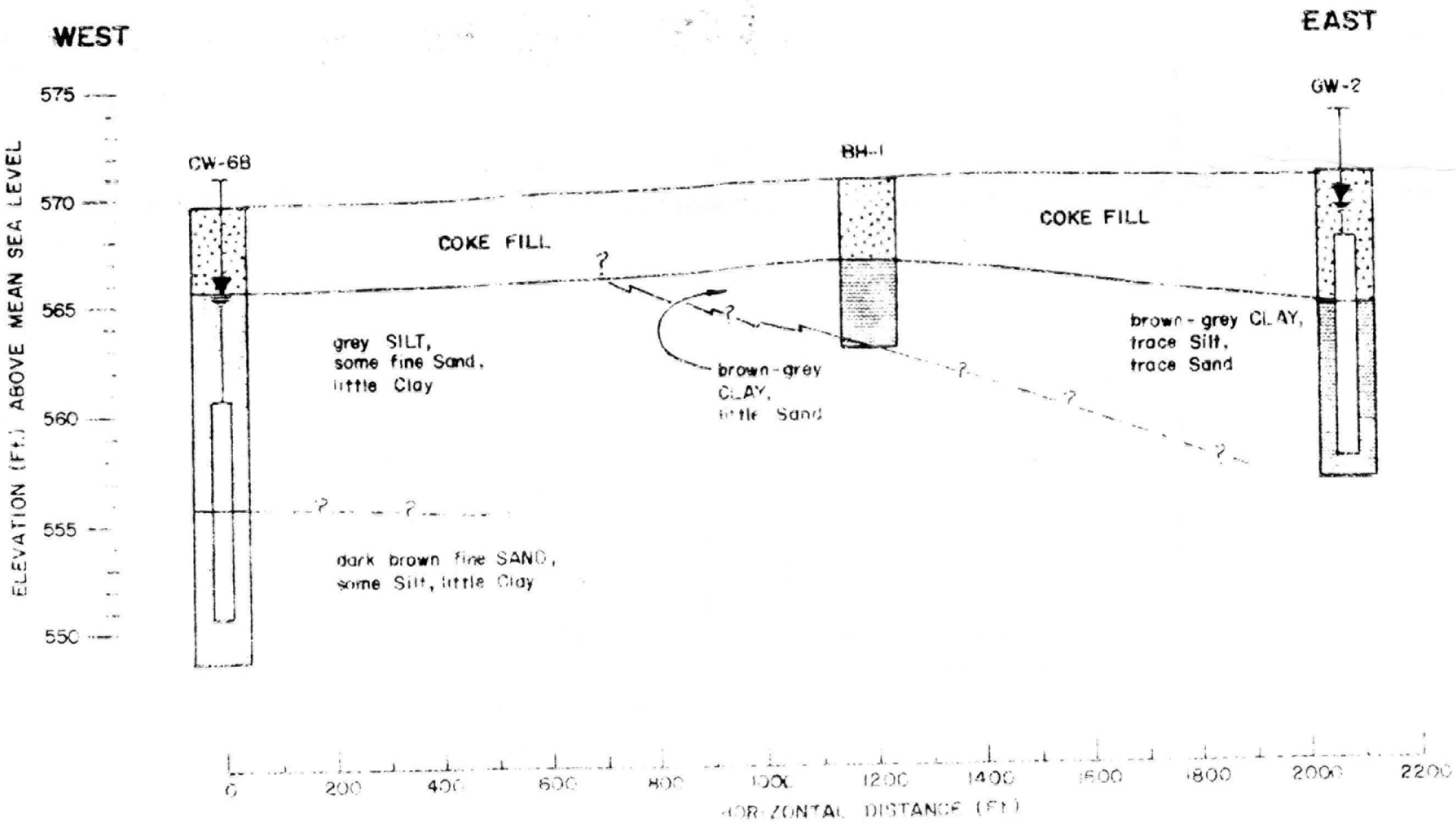
BRUNING



CROSS SECTION A-A'



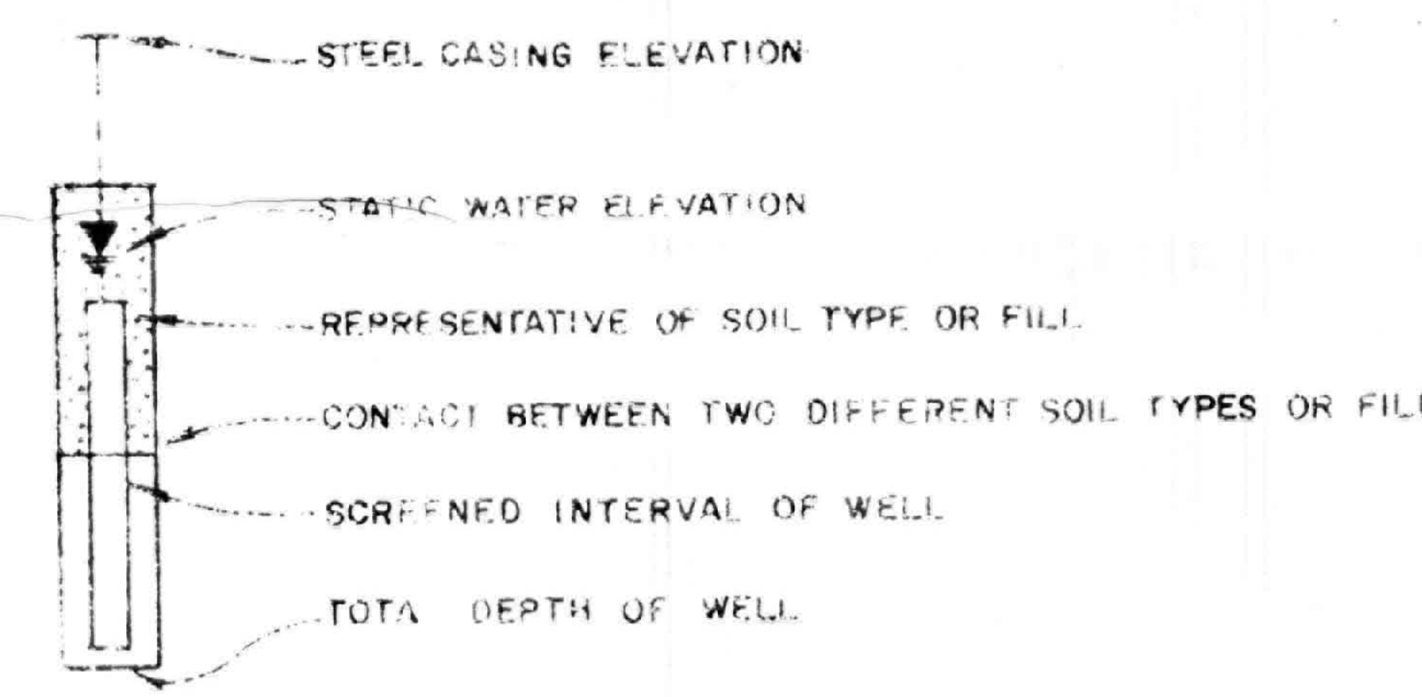
CROSS SECTION C-C'



CROSS SECTION B-B'

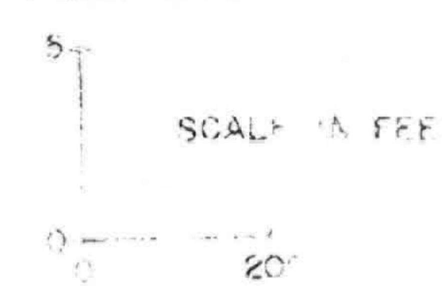
LEGEND:

REFER TO DRAWING NO. 1 FOR GENERAL LEGEND.



NOTES

1. REFER TO DRAWING NO. 1 FOR GENERAL NOTES
2. VERTICAL EXAGGERATION = 40x



3. GEOLOGIC CONDITIONS SHOWN ARE REPRESENTATIVE OF CONDITIONS ENCOUNTERED AT EACH BORING LOCATION TO THE DEPTH DRILLED. EXTRAPOLATION BETWEEN BORINGS HAVE BEEN MADE USING STANDARD ACCEPTED GEOLOGIC PRACTICES AND PRINCIPLES. ACTUAL CONDITIONS MAY VARY BETWEEN BORINGS FROM THOSE SHOWN
4. STATIC WATER LEVELS TAKEN ON NOVEMBER 17, 1988 EXCEPT CW-6B, WHICH WAS TAKEN DECEMBER 21, 1988

RECRA ENVIRONMENTAL INC.	Scale: AS SHOWN		DONNER HANNA COKE BUFFALO, N.Y. NYSDEC SUPERFUND PHASE II INVESTIGATION	GEOLOGIC CROSS SECTIONS
		By / Date		
	Drwn	ED / 2-89		
	Chkd	[illegible] / [illegible] 89		
	App	[illegible] / 5/2[illegible]	Project No. BC[illegible]	C DRAWING No. 5

BRUNING 44-131 61160

APPENDIX B

DUNN GEOSCIENCE CORPORATION, TERRAIN CONDUCTIVITY SURVEY REPORT

DONNER HANNA COKE
#915017

8/25/88

DONNER HANNA COKE COMPANY

BUFFALO, NEW YORK

1.0 INTRODUCTION

A terrain conductivity survey was completed around the perimeter of the Donner Hanna Site in the City of Buffalo, New York on August 22, 1988. The method of investigation utilized Geonics Model EM-31 DL terrain conductivity meter (TC) to measure the subsurface conductivity characteristics. A terrain conductivity survey is a fast, environmentally non-invasive technique for determining subsurface conditions. This method is indirect and interpretive and should be verified by more direct methods of investigation.

A total of four terrain conductivity profiles were completed for a total of approximately 4611 lineal feet (Figure 1).

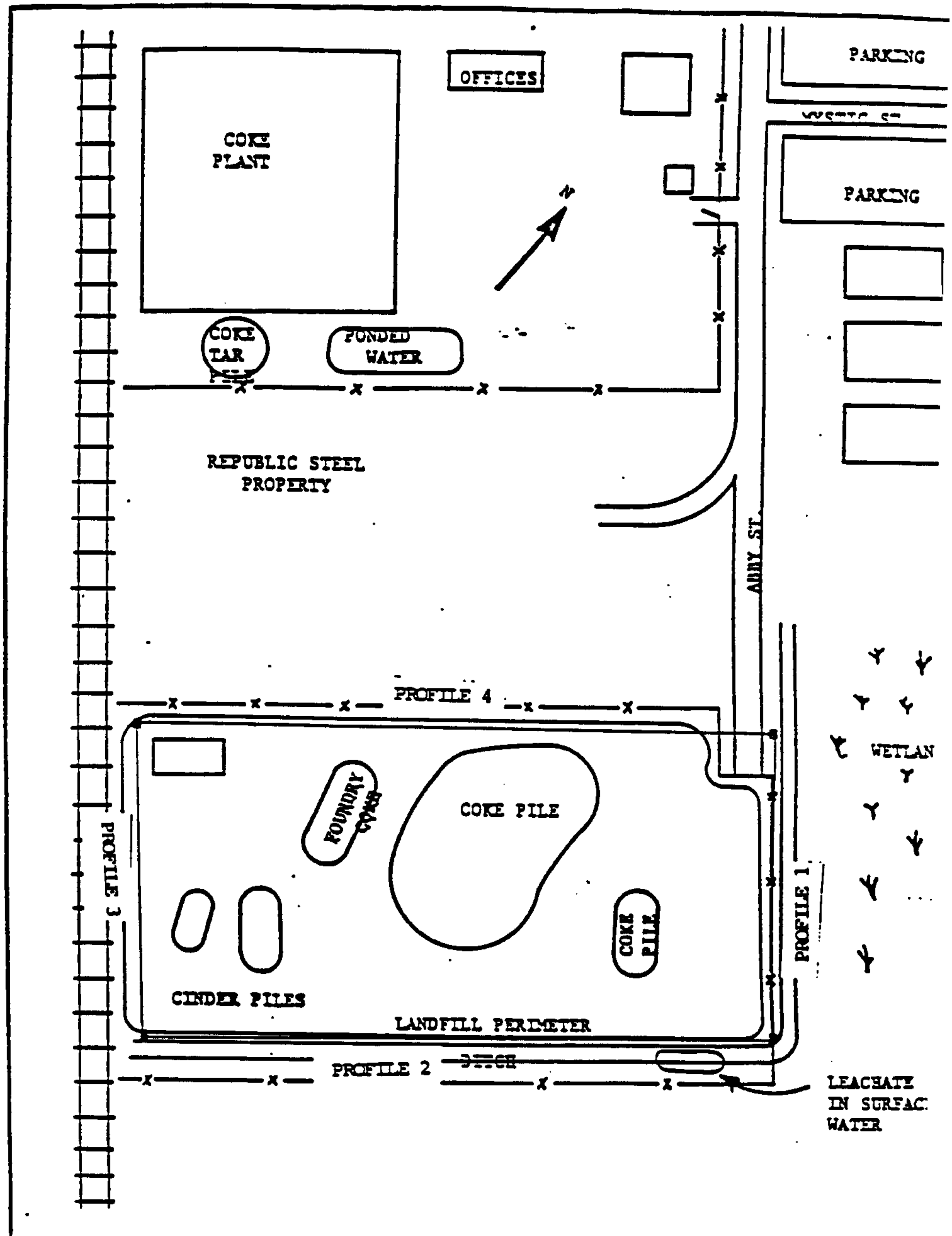
2.0 PURPOSE

The purpose of this investigation was to help define limits of fill material to better characterize the site and to help assess the presence of contaminants.

3.0 METHODS

3.1 Survey Control

Prior to the data collection, base stations were established with a



NOT TO SCALE	SITE MAP DONNER HANNA COKE	FIGUR

300 foot tape measure. Base stations and turning points were staked, flagged and the coordinates recorded on them. Base stations and turning points were tied into existing structures where possible.

3.2 Terrain Conductivity Survey

Prior to data collection with the EM-31 DL TC meter, the instrument was calibrated. After calibration processes were completed, a 300 foot tape measure was extended along the path of the traverse to establish accurate station location with the instrument. Readings were taken with the EM-31 DL TC at 20 foot centers unless otherwise noted. All readings were taken with the instrument in the routine "operational" mode which measures the quadrature-phase component of the induced magnetic field. This component is linearly related to actual ground conductivity. Readings were taken with the instrument both parallel and perpendicular to the direction of travel unless otherwise noted. This method was incorporated to test the lateral variation in conductivity at each station. Parallel and perpendicular values were plotted on each profile.

The EM-31 DL TC meter is equipped with a transmitter coil and a receiver coil spaced 12 feet apart. The theory of operation is as follows: the transmitter coil is energized with an alternating current at an audio frequency producing a time varying primary magnetic field (McNeill, 1980). The magnetic field induces small currents in the ground which produces a secondary magnetic field.

The ratio of the primary field to the secondary field is linearly proportional to the ground conductivity. The effective depth of investigation of the instrument is 20 feet.

Ground water contamination can be detected by the EM-31 provided that the contaminants produce a measurable anomaly. Typically, this can occur if sufficient amounts of electrolytic contaminants are present in the ground water. Generally the electrolytes that cause the instrument to respond are not of primary concern. Electrolytes are generally common travelers with contaminants that are of concern such as organic chemicals, of which few are conductive. If relatively non-electrolytic contaminants are present in the soil and ground water of the Donner Hanna site such contaminants may go undetected by terrain conductivity surveying.

4.0 RESULTS

Coke reclaimation activities at this site have appeared to result in large amounts of coke migrating tens of feet outside the property boundary of the site. This coke migration is especially evident along the eastern boundary of the site. A preliminary investigation completed by the U.S. Geological Survey in August 1982, demonstrated as much as possibly 6.0 feet of coke present within the subsurface around the perimeter of the site.

Coke, a form of carbon, has a conductivity similar to that of metal. Slag from the closed Republic Steel mill to the north appears to have migrated on to the Donner Hanna property. Slag can also have high conductivities.

Readings observed at this site ranged from less than zero to greater than 1,000 millimhos/meter. This range probably reflects the change in thickness of the coke, the amount of slag present and buried metal(steel cable was noted at several locations protruding from the soil).

Anticipated material background values for this area would be 35-45 millimhos/meter. Conductive contaminants, if present in the ground water at one Donner Hanna site, may have been masked by the very conductive nature of the coke/slag fill. Terrain conductivity profiles and the raw data is included in Appendix I and II respectively.

4.1.1 Profile 1

Profile 1 was located along the eastern boundary of the site trending north to south. "Zero" readings were observed at locations -180N to -200N, -260N to -280N, -340N to -400N, -700N and -760N to -880N. These "zero" readings probably represent thick areas of coke within the subsurface. These "zero" readings may also be the result of buried metallic debris.

Anomalies across this profile probably represent the presence of coke, slag and buried metal within the subsurface. As the coke, slag and possible buried metal change in thickness and concentration within the subsurface this probably results in the anomalies observed along Profile 1.

4.1.2 Profile 2

Profile 2 was located along the southern boundary of the site, trending east to west. "Zero" values were observed at locations 0W, to 20W, 100W, 140W, 460W and 780W. These zero readings probably represent thick areas of coke or areas of buried metal within the vicinity of the recording station.

Significant differences between parallel and perpendicular readings were observed between location 0W and 600W. These differences may be representative of changing subsurface conditions within the vicinity of this location, or the presence of a coke mound located between location 60W and 400W.

A reading was not taken at location 720W due to the presence of a drainage ditch containing approximately one foot of water.

Parallel and perpendicular values observed were similar and value ranges were approximately 182-800 mmhos/meter for locations 800W to 1340W. Steel cable was noted protruding from the surface at locations 800W and 860W. Active reclaimation of coke ended at station 920W. The values observed between location 800W to 1340W may represent an area of coke, fairly uniform in thickness, with some buried metallic debris and/or fill material.

4.1.3 Profile 3

Profile 3 was located along the western boundary of the site trending south to north. This survey line was approximately 46 feet east of existing railroad tracks and ran parallel to the tracks. Coke was currently being piled within the vicinity of locations -500N to -240N and was being loaded into railroad "hopper" cars.

"Zero" readings were observed at locations -860N, -880N to -680N, -580N to -540N, -480N to -260N, and -200N. These readings are probably representative of thick areas of coke within the subsurface with possible slag and buried metallic debris also present.

Anomalies observed across this Profile probably represent changes in the thickness in the coke and slag within the subsurface.

4.1.4 Profile 4

Profile 4 was located along the northern boundary of the site trending west to east. A large pile of slag was located due north of the site boundary on the abandoned Republic Steel property. It was visually apparent at several locations that slag was present on the Donner Hanna property. Values observed across this profile ranged from "zero" to greater than 1000 millimhos/meter. "Zero" values were observed at locations 1280W to 1120W, 1060W to 960W, 860W to 820W, 640W to 580W, 160W, 20W, and -200W to -260W. These readings are probably representative of thick areas of coke and slag within the subsurface.

Anomalies observed across this profile probably represent changes in the thickness of the coke and slag within the subsurface.

5.0 CONCLUSIONS

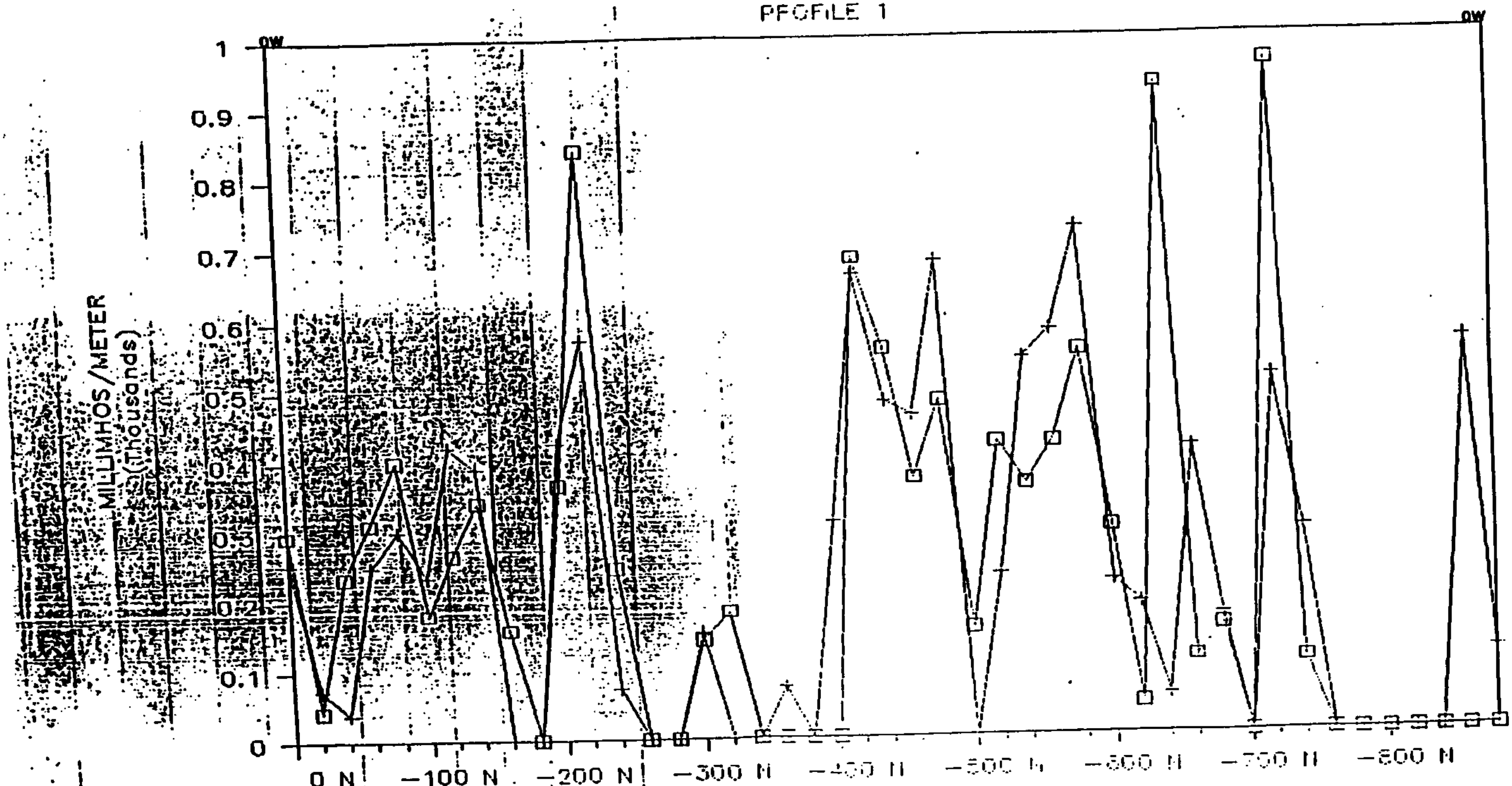
- Coke with possible associated slag and buried metal is present along the entire perimeter of the site.
- Contaminants, if present, are masked by the presence of the coke. slag and possible buried metallic debris within the subsurface at the site.

6.0 LIMITATIONS

Geophysical exploration is an established method for nondestructively investigating the subsurface. However, because it is an indirect method of subsurface investigation it is subject to inherent limitations and ambiguities. Search targets such as stratigraphy, the water table, disturbed areas, soil or ground water contamination, buried tanks, drums, transformers, and conduits are detectable only if they produce recognizable anomalies or patterns against the background geophysical data. Natural and cultural features such as major soil changes, topography, site boundaries, pavement, fences, buildings, surface and buried extraneous debris, vehicles, and heterogeneous fill, may exhibit significant anomalies depending upon the geophysical technique being used.

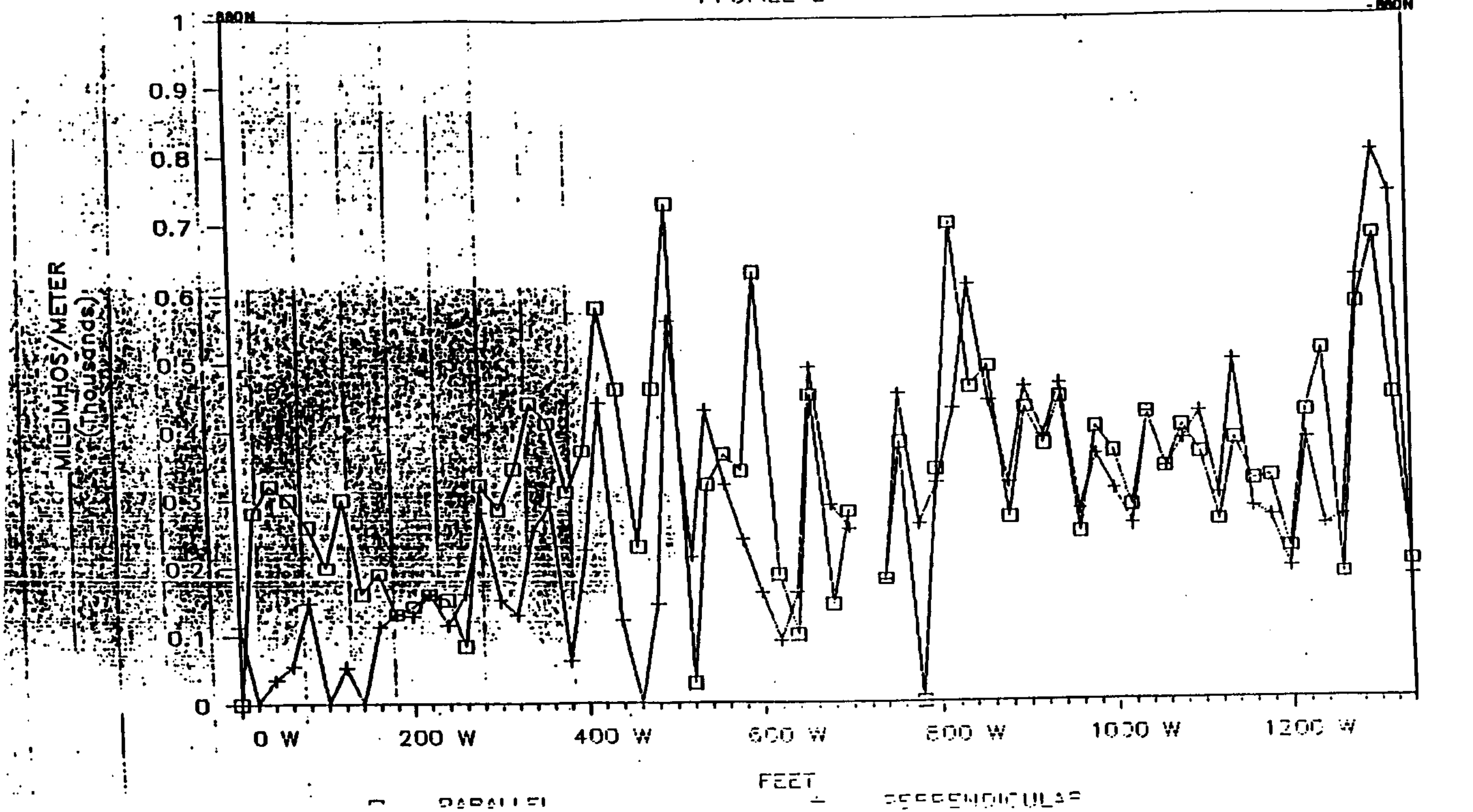
DONNER HANNA COKE COMPANY

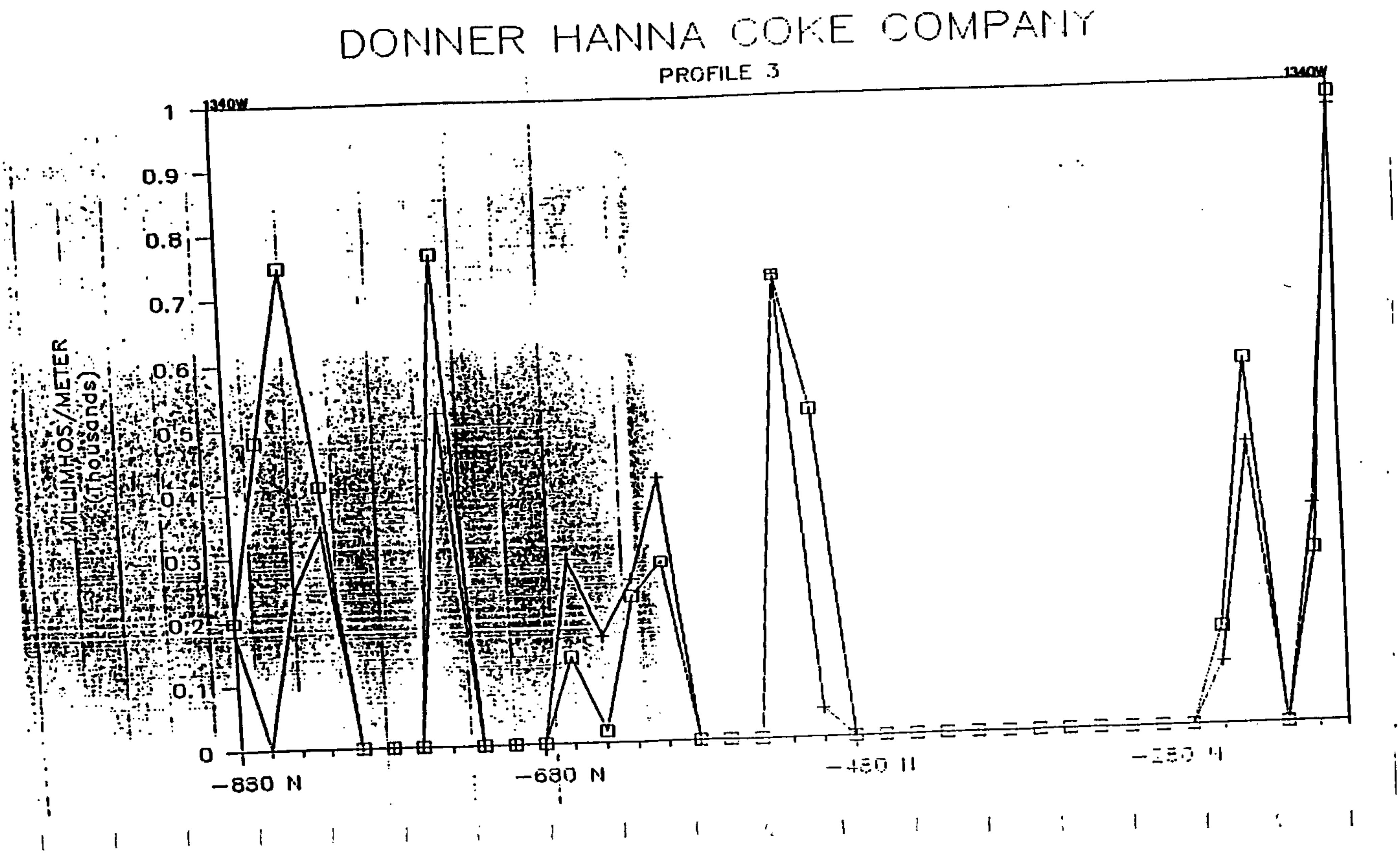
PROFILE 1

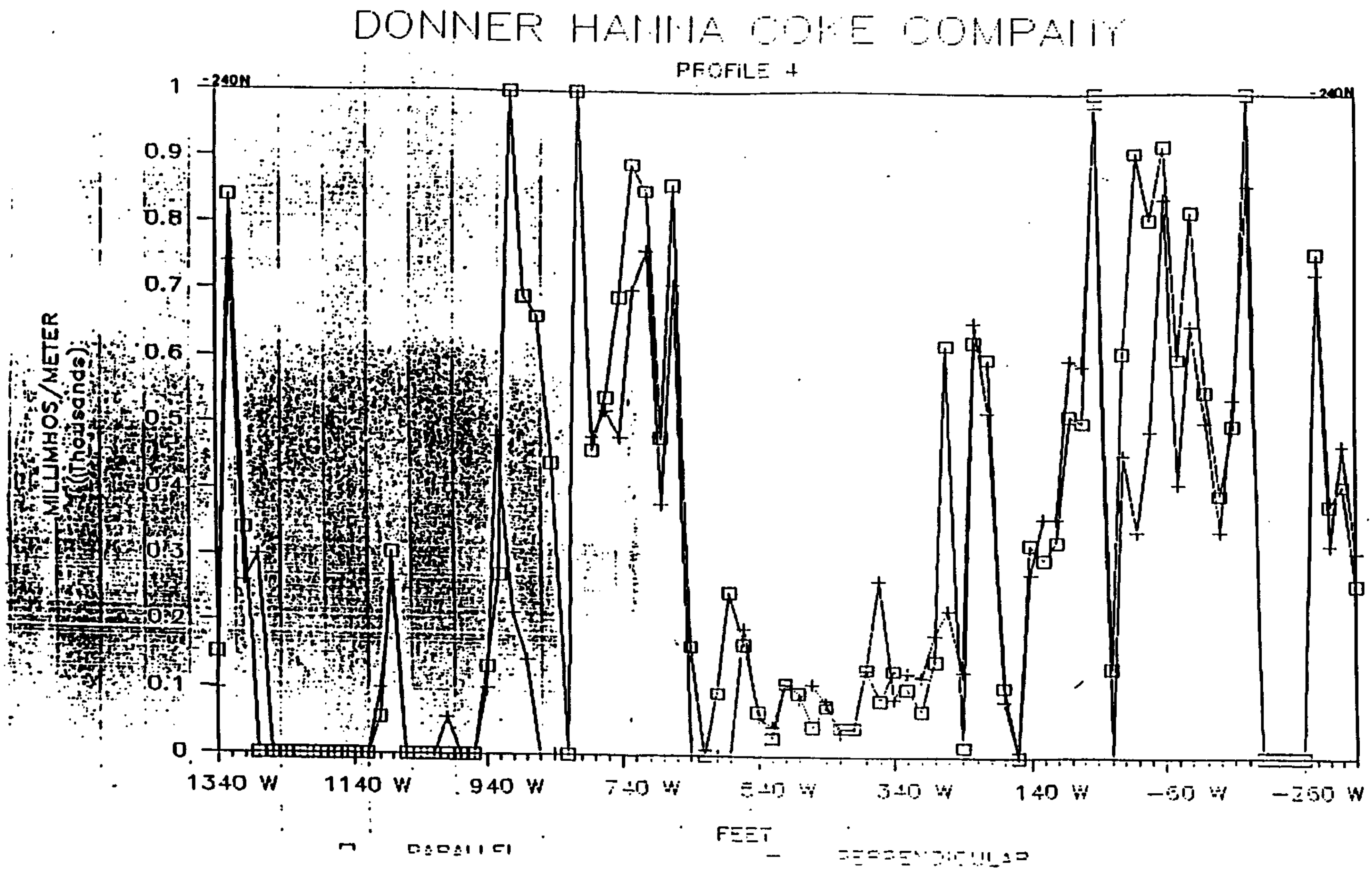


DONNER HANNA COKE COMPANY

PROFILE 2




DONNER HANNA COKE COMPANY
PROFILE 3
1340W
1340W
MILLIMHOS/METER
(Thousands)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-830 N
-680 N
-480 N
-280 N


DONNER HANNA COKE COMPANY
PROFILE 4
MILLIMHOS/METER (Thousands)
-240N
1340 W
1140 W
940 W
740 W
540 W
340 W
140 W
-60 W
-260 W
FEET
PARALLEL
PERPENDICULAR

DONNER HANNA COKE COMPANY
BUFFALO, NEW YORK
PROFILE 1

LOCATION		PARALLEL	PERPENDICULAR	AVERAGE
0 N	0 W	293	255	[illegible]
-20 N	0 W	41	72.5	56.75
-40 N	0 W	225	52	138.5
-60 N	0 W	310	250	280
-80 N	0 W	400	300	350
-100 N	0 W	180	235	207.5
-120 N	0 W	265	420	342.5
-140 N	0 W	340	390	365
-160 N	0 W	158	0	79
-180 N	0 W	0	0	0
-200 N	0 W	365	425	395
-220 N	0 W	840	570	705
-240 N	0 W	245	72	158.5
-260 N	0 W	0	0	0
-280 N	0 W	0	0	0
-300 N	0 W	141	152	146.5
-320 N	0 W	182	0	91
-340 N	0 W	0	0	0
-360 N	0 W	0	72	36
-380 N	0 W	0	0	0
-400 N	0 W	0	310	155
-420 N	0 W	695	660	677.5
-440 N	0 W	555	480	517.5
-460 N	0 W	370	460	415
-480 N	0 W	480	680	580
-500 N	0 W	155	0	77.5
-520 N	0 W	420	232	326
-540 N	0 W	360	540	450
-560 N	0 W	420	580	500
-580 N	0 W	550	725	637.5
-600 N	0 W	298	220	259
-620 N	0 W	43	188	115.5
-640 N	0 W	930	54	492
-660 N	0 W	109	410	259.5
-680 N	0 W	155	170	162.5
-700 N	0 W	0	0	0
-720 N	0 W	960	510	735
-740 N	0 W	105	295	200
-760 N	0 W	0	0	0
-780 N	0 W	0	0	0
-800 N	0 W	0	0	0
-820 N	0 W	0	0	0
-840 N	0 W	0	0	0
-860 N	0 W	0	550	275
-880 N	0 W	0	110	55

PROFILE 2

LOCATION	PARALLEL	PERPENDICULAR	AVERAGE

-880 N	0 W	0	111	[illegible]
-880 N	20 W	282	0	[illegible]
-880 N	40 W	220	34	[illegible]
-880 N	60 W	200	51	[illegible]
-880 N	80 W	250	149	204.5
-880 N	100 W	200	0	100
-880 N	120 W	300	53	175.5
-880 N	140 W	151	0	90.5
-880 N	160 W	191	112	151.5
-880 N	180 W	131	130	130.5
-880 N	200 W	142	128	135
-880 N	220 W	160	160	160
-880 N	240 W	152	115	133.5
-880 N	260 W	84	160	122
-880 N	280 W	320	280	300
-880 N	300 W	285	152	218.5
-880 N	320 W	345	130	237.5
-880 N	340 W	440	255	347.5
-880 N	360 W	410	290	350
-880 N	380 W	310	61	185.5
-880 N	400 W	270	225	237.5
-880 N	420 W	590	440	510
-880 N	440 W	460	120	290
-880 N	460 W	230	0	115
-880 N	480 W	460	145	302.5
-880 N	500 W	730	560	545
-880 N	520 W	28.8	215	121.9
-880 N	540 W	320	430	375
-880 N	560 W	365	320	342.5
-880 N	580 W	340	240	290
-880 N	600 W	630	160	395
-880 N	620 W	188	90	139
-880 N	640 W	99	160	129.5
-880 N	660 W	450	490	470
-880 N	680 W	144	290	217
-880 N	700 W	280	255	267.5
-880 N	720 W			---
-880 N	740 W	180	180	180
-880 N	760 W	380	450	415
-880 N	780 W	0	260	130
-880 N	800 W	340	320	330
-880 N	820 W	700	430	565
-880 N	840 W	460	610	535
-880 N	860 W	490	440	465
-880 N	880 W	270	320	295
-880 N	900 W	420	450	445
-880 N	920 W	375	390	382.5
-880 N	940 W	445	455	455
-880 N	960 W	248	230	264
-880 N	980 W	400	360	380
-880 N	1000 W	365	310	337.5
-880 N	1020 W	285	258	271.5
-880 N	1040 W	420	420	420
-880 N	1060 W	340	340	340
-880 N	1080 W	400	380	390
-880 N	1100 W	260	420	390

-880 N	1120 W	162	300	231
-880 N	1140 W	380	495	437.5
-880 N	1160 W	320	280	300
-880 N	1180 W	228	363	295.5
-880 N	1200 W	222	192	207
-880 N	1220 W	420	380	400
-880 N	1240 W	510	255	382.5
-880 N	1260 W	182	268	225
-880 N	1280 W	580	620	600
-880 N	1300 W	680	800	740
-880 N	1320 W	445	740	592.5
-880 N	1340 W	200	179	189.5

PROFILE 3

LOCATION		PARALLEL	PERPENDICULAR	AVERAGE
-880 N	1340 W	200	179	189.5
-860 N	1340 W	480	0	240
-840 N	1340 W	750	245	497.5
-820 N	1340 W	410	340	375
-800 N	1340 W	0	0	0
-780 N	1340 W	0	0	0
-760 N	1340 W	0	0	0
-740 N	1340 W	765	520	642.5
-720 N	1340 W	0	0	0
-700 N	1340 W	0	0	0
-680 N	1340 W	0	0	0
-660 N	1340 W	135	288	211.5
-640 N	1340 W	18.1	166	92.05
-620 N	1340 W	228	255	241.5
-600 N	1340 W	280	410	345
-580 N	1340 W	0	0	0
-560 N	1340 W	0	0	0
-540 N	1340 W	0	0	0
-520 N	1340 W	720	720	720
-500 N	1340 W	510	44	277
-480 N	1340 W	0	0	0
-460 N	1340 W	0	0	0
-440 N	1340 W	0	0	0
-420 N	1340 W	0	0	0
-400 N	1340 W	0	0	0
-380 N	1340 W	0	0	0
-360 N	1340 W	0	0	0
-340 N	1340 W	0	0	0
-320 N	1340 W	0	0	0
-300 N	1340 W	0	0	0
-280 N	1340 W	0	0	0
-260 N	1340 W	0	0	0
-240 N	1340 W	152	98	125
-220 N	1340 W	570	440	505
-200 N	1340 W	0	0	0
-180 N	1340 W	272	340	306
-160 N	1340 W	380	960	670

PROFILE 4

LOCATION				PARALLEL	PERPENDICULAR	AVERAGE
-240	N	1340	W	152	98	125
-240	N	1320	W	840	740	790
-240	N	1300	W	340	262	301
-240	N	1280	W	0	300	150
-240	N	1260	W	0	0	0
-240	N	1240	W	0	0	0
-240	N	1220	W	0	0	0
-240	N	1200	W	0	0	0
-240	N	1180	W	0	0	0
-240	N	1160	W	0	0	0
-240	N	1140	W	0	0	0
-240	N	1120	W	0	0	0
-240	N	1100	W	55	100	77.5
-240	N	1080	W	305	260	282.5
-240	N	1060	W	0	0	0
-240	N	1040	W	0	0	0
-240	N	1020	W	0	0	0
-240	N	1000	W	0	54	27
-240	N	980	W	0	0	0
-240	N	960	W	0	0	0
-240	N	940	W	132	99	115.5
-240	N	920	W	272	480	376
-240	N	900	W	1000	215	607.5
-240	N	880	W	690	144	417
-240	N	860	W	660	0	330
-240	N	840	W	440	0	220
-240	N	820	W	0	0	0
-240	N	800	W	1000	1000	1000
-240	N	780	W	460	480	470
-240	N	760	W	540	520	530
-240	N	740	W	690	480	585
-240	N	720	W	890	700	795
-240	N	700	W	850	760	805
-240	N	680	W	480	380	430
-240	N	660	W	860	710	785
-240	N	640	W	164	0	82
-240	N	620	W	0	0	0
-240	N	600	W	94	0	47
-240	N	580	W	248	0	124
-240	N	560	W	168	192	180
-240	N	540	W	66	58	62
-240	N	520	W	26.8	43.5	35.15
-240	N	500	W	109	109	109
-240	N	480	W	95	86	90.5
-240	N	460	W	43	108	75.5
-240	N	440	W	74.5	80	77.25
-240	N	420	W	42.5	34	38.25
-240	N	400	W	42.5	36	39.25
-240	N	380	W	131	130	130.5
-240	N	360	W	84	265	174.5
-240	N	340	W	119	95	107
-240	N	320	W	101	125	113
-240	N	300	W	68	119	93.5

-240	N	280	W	144	134	154
-240	N	260	W	520	320	420
-240	N	240	W	11.9	130	70.95
-240	N	220	W	525	555	540
-240	N	200	W	530	590	560
-240	N	180	W	105	84	94.5
-240	N	160	W	0	0	0
-240	N	140	W	320	275	297.5
-240	N	120	W	299	360	329.5
-240	N	100	W	325	350	342.5
-240	N	80	W	515	600	557.5
-240	N	60	W	505	590	547.5
-240	N	40	W	1000	980	990
-240	N	20	W	134	0	67
-240	N	0	W	610	455	532.5
-240	N	-20	W	910	340	625
-240	N	-40	W	810	490	650
-240	N	-60	W	820	940	880
-240	N	-80	W	600	410	505
-240	N	-100	W	920	550	735
-240	N	-120	W	550	505	527.5
-240	N	-140	W	395	340	367.5
-240	N	-160	W	500	540	520
-240	N	-180	W	1000	860	930
-240	N	-200	W	0	0	0
-240	N	-220	W	0	0	0
-240	N	-240	W	0	0	0
-240	N	-260	W	0	0	0
-240	N	-280	W	760	730	745
-240	N	-300	W	330	320	350
-240	N	-320	W	410	470	440
-240	N	-331	W	260	310	285

RECRA ENVIRONMENTAL, INC.

CHAIN OF CUSTODY RECORD

PROJECT NO: 86301G

SITE NAME: Donner-Hanna Coke

SAMPLERS (SIGNATURE): [illegible]

STATION NO	DATE	TIME	COMP	GRAB	STATION LOCATION	NO OF CONTAINERS	[illegible]	[illegible]					REMARKS
1					GW-1; SS-4, SS-7	2	2						Geotechnical Analysis
2					GW-2; SS-4, SS-6	2		2					
3					GW-3a; SS-3, SS-6	2		2					
4					GW-4; SS-5, SS-6	2		2					
						8							

RELINQUISHED BY (SIGNATURE)	DATE / TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE / TIME	RECEIVED BY (SIGNATURE)
[illegible]		[illegible]			

RELINQUISHED BY (SIGNATURE)	DATE / TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE / TIME	RECEIVED BY (SIGNATURE)

RELINQUISHED BY (SIGNATURE)	DATE / TIME	RECEIVED FOR LABORATORY BY (SIGNATURE)	DATE / TIME	REMARKS

DATE STARTED 9/21/88 FINISHED 9/21/88 SHEET 1 OF 1	RECRA ENVIRONMENTAL, INC. SUBSURFACE LOG	HOLE NO. BH-1 SURFACE ELEV. 570.6 G.W. DEPTH

PROJECT NYSDEC PHASE II INVESTIGATION SITE #915017 LOCATION DONNER-HANNA COKE BUFFALO, NEW YORK

DEPTH-FT	RECOVERY	SAMPLE TYPE	SAMPLE NO	BLOWS ON SAMPLER 0/6, 6/12, 12/18, 18/24	DESCRIPTION	NOTES
	1.4	SB	1	7, 47, 100/.2'	Moist, black sand and silt textured COKE fill, little white slag, little gravel, very dense.	Water level measured at 1.2 ft. on 9/21/88.
	0.7	SB	2	35, 30, 5, 5	Grades to ... little clay, dense. [COKE FILL] 4'	Boring advanced with 4-1/4 in. I.D. HSA, truck mounted CME-45B drill rig.
5	0.8	SB	3	4, 2, 6, 10	Wet, gray and brown CLAY, little sand, medium stiff.	OVA = 0 ppm. Explosimeter = 0% LEL throughout boring operation.
	2.0	SB	4	8, 9, 6, 7	Grades to ... stiff. [CLAY] 8'	Boring completed at 8 ft. Borehole grouted at completion.
10						
15						
20						
25						
30						
35						

CLASSIFICATION Visual - Manual

METHOD OF INVESTIGATION ASTM D-1586

LOG DEVELOPED BY James T. Bingert

3.00258

DATE
STARTED 9/21/88
FINISHED 9/21/88
SHEET 1 OF 1

RECRA ENVIRONMENTAL, INC.

SUBSURFACE LOG

HOLE NO. GW-1
SURFACE ELEV. 572.8
G.W. DEPTH 568.45

PROJECT NYSDEC PHASE II INVESTIGATION SITE #915017
LOCATION DONNER-HANNA COKE BUFFALO, NEW YORK

DEPTH-FT	RECOVERY	SAMPLE TYPE	SAMPLE NO	BLOWS ON SAMPLER 0/6, 12/18	BLOWS ON SAMPLER 6/12, 18/24	DESCRIPTION	NOTES
	1.5	SB	1	2, 4	3, 4	Moist, black sand and silt textured COKE fill, some gravel, trace clay, loose, odor present.	Boring advanced with 4 in. I.D. HSA, truck mou CME-45B drill rig.
	0.9	SB	2	10, 34	62, 12	Grades to ... bluish white SLAG, little clay, trace silt, trace organic debris, very dense.	Water level measured 4.35 ft. on 11/17/88.
5	1.3	SB	3	2, 2	3, 3	Grades to ... wet, loose. [FILL] 6'	OVA = 0 ppm.
	1.2	SB	4	2, 2	1, 3	Wet, gray CLAY, some silt, trace fine sand, soft.	Explosimeter = 0% LEL throughout boring oper
10	0.8	SB	5	2, 4	3, 7	[CLAY] 10'	
	1.3	SB	6	2, 6	3, 9	Wet, gray, medium to fine SAND, loose to medium dense.	Boring completed at 14
	2.0	SB	7	2, 10	7, 13	[SAND] 14'	Hole completed with 2 monitoring well instal-lation.
15							
20							
25							
30							
35							

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METHOD OF INVESTIGATION ASTM D-1586
LOG DEVELOPED BY James T. Bingert

APPENDIX C

RECRA ENVIRONMENTAL, INC.
SUBSURFACE LOGS, MONITORING WELL CONSTRUCTION
DIAGRAMS; DAMES AND MOORE BORING LOG;
BUFFALO DRILLING CO., INC. LABORATORY
GEOTECHNICAL TESTING REPORT

DONNER HANNA COKE
#915017

ATE
STARTED 9/22/88
FINISHED 9/22/88
HEET 1 OF 1

RECRA ENVIRONMENTAL, INC.

SUBSURFACE LOG

HOLE NO. GW-2
SURFACE ELEV. 570.5
G.W. DEPTH 569.04

PROJECT NYSDEC PHASE II INVESTIGATION SITE #915017

LOCATION DONNER-HANNA COKE BUFFALO, NEW YORK

DEPTH-FT	RECOVERY	SAMPLE TYPE	SAMPLE NO	BLOWS ON SAMPLER 0/6, 12/18	BLOWS ON SAMPLER 6/12, 18/24	DESCRIPTION	NOTES
	1.3	SB	1	7 69	24 17	Moist, black sand and silt, textured COKE fill, some gravel, trace organic debris, very dense, odor present. Grades to ... gray and black CLAY, medium stiff. Grades to ... COKE [COKE FILL AND CLAY] 6'	Water level measured at 1.46 ft. on 11/17/88. Boring advanced with 4-1/4 in. I.D. HSA, truck mounted CME-45B drill rig. OVA = 0 ppm throughout boring operation.
	1.0	SB	2	4 6	4 4		
	0.15	SB	3	3 4	2 6		
	1.8	SB	4	11 17	16 12	Moist, brown-gray CLAY, trace silt, trace sand, hard to stiff.	
	2.0	SB	5	3 9	4 9		
	2.0	SB	6	3 10	9 16	Grades to ... wet, brown, little silt, very stiff. [CLAY] 14'	Boring completed at 14 ft. Hole completed with 2 in. monitoring well installation.
	2.0	SB	7	7 9	8 10		
5							
0							
5							
0							
5							

CLASSIFICATION Visual - Manual

METHOD OF INVESTIGATION ASTM D-1586
LOG DEVELOPED BY James T. Bingert

.002588

DATE	RECRA ENVIRONMENTAL, INC.	
STARTED 9/22/88 FINISHED 9/22/88 SHEET 1 OF 1	SUBSURFACE LOG	HOLE NO. GW-3 SURFACE ELEV. 570.6 G.W. DEPTH 567.76

PROJECT NYSDEC PHASE II INVESTIGATION SITE #915017 LOCATION DONNER-HANNA COKE BUFFALO, NEW YORK

DEPTH-FT	RECOVERY	SAMPLE TYPE	SAMPLE NO	BLOWS ON SAMPLER 0/6 12/18	BLOWS ON SAMPLER 6/12 18/24	DESCRIPTION	NOTES
	0.8	SB	1	5 27	12 27	Moist, black sand and silt textured COKE fill, some gravel, trace organic debris, very dense, rust staining, odor present.	Boring advanced with 4-in. I.D. HSA, truck mount CME-45B drill rig.
	0.1	SB	2	100/.4			Water level measured at 2.84 ft. on 11/17/88.
5	0.8	SB	3	17	100/.4		
	0.2	SB	4	27 5	4 7	Grades to ... loose. [COKE FILL] 7'	OVA = 0 ppm throughout boring operation unless otherwise stated.
	1.8	SB	5	7 10	10 13	Moist, brown, fine SAND, little silt, trace clay, medium dense.	
10	1.7	SB	6	3 5	4 6	Grades to ... wet, loose. Grades to ... brown SILT, little clay,	OVA = 5 ppm at SB 5.
	2.0	SB	7	3 7	5 9	medium dense. [SAND AND SILT] 13'	Boring completed at 13 f Hole completed with 2 in monitoring well instal-lation.
15							
20							
25							
30							
35							

CLASSIFICATION Visual - Manual

METHOD OF INVESTIGATION ASTM D-1586

LOG DEVELOPED BY James T. Bingert

...TE STARTED 9/23/88 FINISHED 9/23/88 ...EET 1 OF 1	RECRA ENVIRONMENTAL, INC. SUBSURFACE LOG	HOLE NO. GW-4 SURFACE ELEV. 572.0 G.W. DEPTH 568.77

PROJECT NYSDEC PHASE II INVESTIGATION SITE #915017 LOCATION DONNER-HANNA COKE BUFFALO, NEW YORK

RECOVERY	SAMPLE TYPE	SAMPLE NO	BLOWS ON SAMPLER 0-6 / 12-18	BLOWS ON SAMPLER 6-12 / 18-24	DESCRIPTION	NOTES
2.0	SB	1	3 15	6 15	Moist, black sand and silt textured COKE fill, some gravel, medium dense, odor present.	Boring advanced with 4-1/4 in. I.D. HSA, truck mounted CME-45B drill rig.
0.8	SB	2	16 16	19 15	Grades to ... wet, dense. Grades to ... medium dense.	Water level measured at 3.23 ft. on 11/17/88.
1.5	SB	3	3 12	7 7	[COKE FILL] 6'	
0.5	SB	4	5 2	3 2	Wet, brown, fine SAND, some silt, loose.	OVA = 0 ppm throughout boring operation.
1.4	SB	5	3 5	2 6		
1.1	SB	6	5 4	6 4	[SAND] 12.5'	Auger drilling completed at 12.5 ft. Hole completed with 2 in. monitoring well installation.
0	SB	7				

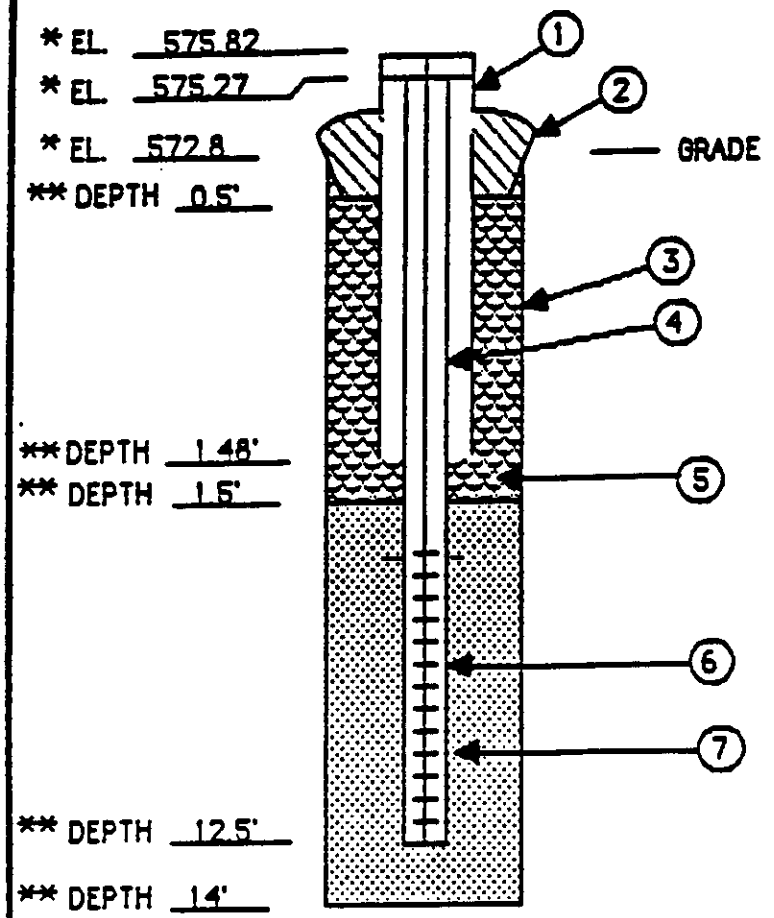
...LASSIFICATION Visual - Manual

METHOD OF INVESTIGATION ASTM D-1586

LOG DEVELOPED BY James T. Bingert

002580

MONITOR WELL COMPLETION REPORT



WELL NO. GW-1
SITE NO. 915017
DATE OF INSTALLATION 9/21/88

1. PROTECTIVE CASING I.D. 4 INCHES
2. SURFACE SEAL TYPE Sonitube filled with sacrete
3. BOREHOLE DIAMETER 8 INCHES
4. RISER PIPE:
   A. Type Schedule 40 PVC
   B. I.D. 2 INCHES
   C. Length 5.0 FEET
   D. Joint Type Flush threaded
5. TYPE OF SEAL Bentonite pellets
6. SCREEN
   A. Type Schedule 40 PVC
   B. I.D. 2 INCHES
   C. Slot Size 0.010 INCHES
   D. Length 10 FEET
7. SCREEN FILTER TYPE No. 4 graded quartzite sand

* Ref. Edward O. Watts & Associates, Dwg. No. EJ122688

** Depth in feet below grade.

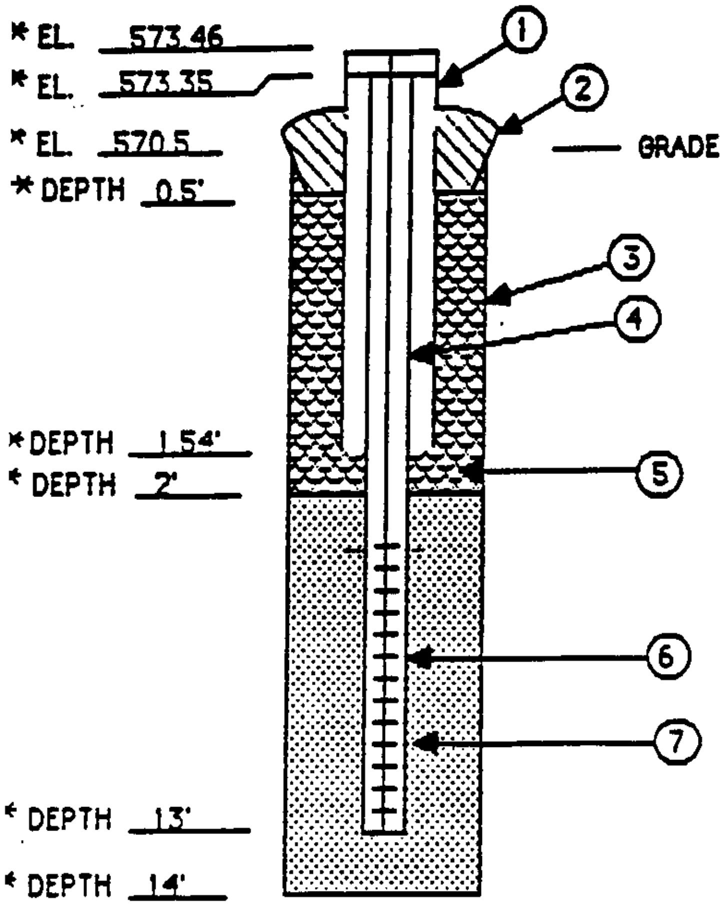
SCALE:	AS NOTED
	BY	DATE
DWN.	PCB	3/1/89
CKD.	RES	4/89
APPVD	JRS	5/89

NYSDEC PHASE II INVESTIGATION
DONNER-HANNA COKE
BUFFALO, NY

MONITOR WELL CONSTRUCTION DIAGRAM

MONITOR WELL COMPLETION REPORT

WELL NO. GW-2
SITE NO. 915017
DATE OF INSTALLATION 9/22/88



1. PROTECTIVE CASING I.D. 4 INCHES
2. SURFACE SEAL TYPE Sonitube filled with sacrete
3. BOREHOLE DIAMETER 8 INCHES
4. RISER PIPE:
   - A. Type Schedule 40 PVC
   - B. I.D. 2 INCHES
   - C. Length 5.9 FEET
   - D. Joint Type Flush threaded
5. TYPE OF SEAL Bentonite pellets
6. SCREEN
   - A. Type Schedule 40 PVC
   - B. I.D. 2 INCHES
   - C. Slot Size 0.010 INCHES
   - D. Length 10 FEET
7. SCREEN FILTER TYPE No. 4 graded quartzite sand

* Ref. Edward O. Watts & Associates, Dwg. No. EJ122688

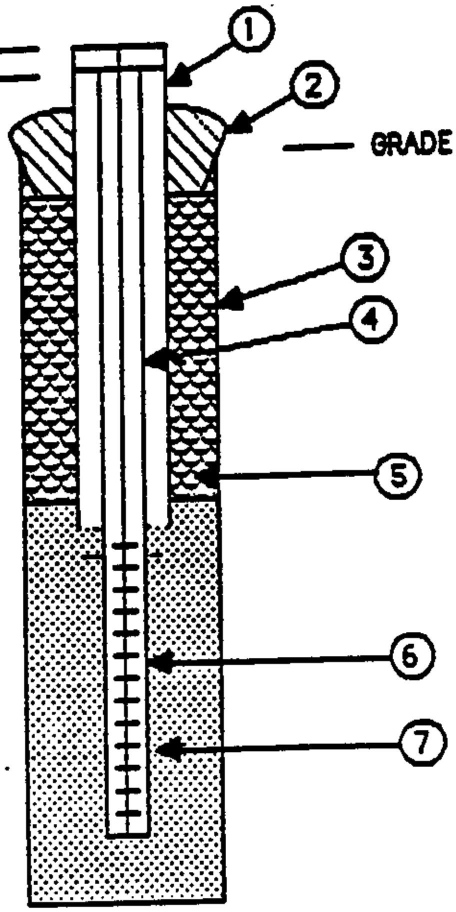
** Depth in feet below grade.

CRA ENVIRONMENTAL INC	SCALE:	AS NOTED		NYSDEC PHASE II INVESTIGATION DONNER-HANNA COKE BUFFALO, NY	MONITOR WELL CONSTRUCTION DIAGRAM
		BY	DATE		
	DWN.	PCB	3/1/89		
	CKD.	RES	4/89		
	APPVD.	JRS	5/89		
	REV.			PROJECT NO. 8C13010	A PB 00257

MONITOR WELL COMPLETION REPORT

WELL NO. GW-3
SITE NO. 915017
DATE OF INSTALLATION 9/22/88

* EL. 573.89
* EL. 573.80
* EL. 570.6
** DEPTH 0.25'



** DEPTH 1'
** DEPTH 1.21'
** DEPTH 12'
** DEPTH 13'

1. PROTECTIVE CASING I.D. 4 INCHES
2. SURFACE SEAL TYPE Sonitube filled with secrete
3. BOREHOLE DIAMETER 8 INCHES
4. RISER PIPE:
   A. Type Schedule 40 PVC
   B. I.D. 2 INCHES
   C. Length 5.2 FEET
   D. Joint Type Flush threaded
5. TYPE OF SEAL Bentonite pellets
6. SCREEN
   A. Type Schedule 40 PVC
   B. I.D. 2 INCHES
   C. Slot Size 0.010 INCHES
   D. Length 10 FEET
7. SCREEN FILTER TYPE No. 4 graded quartzite sand

* Ref. Edward O. Watts & Associates, Dwg. No. EJ122688

** Depth in feet below grade.

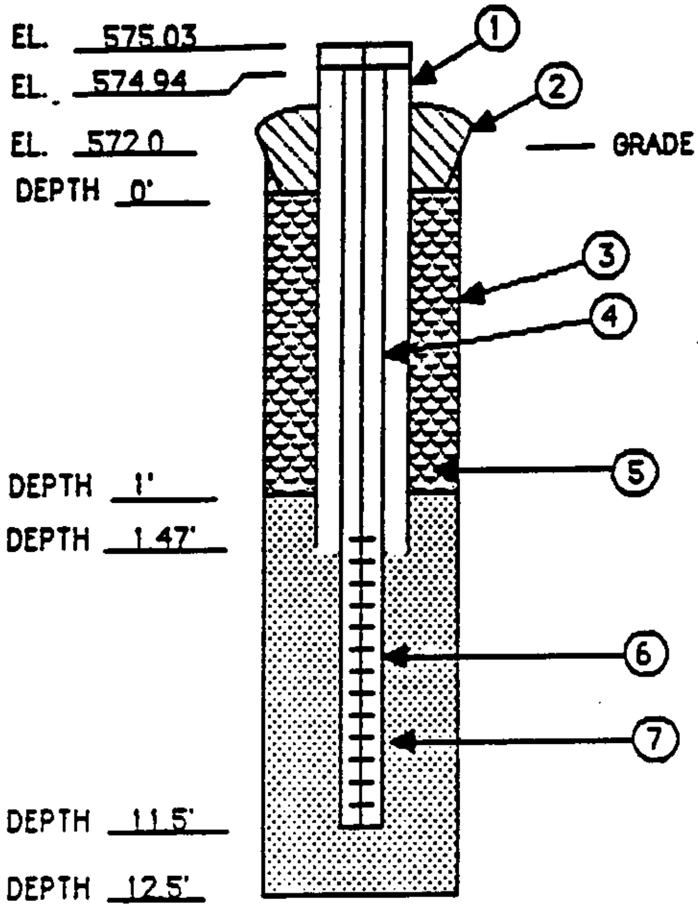
SCALE:	AS NOTED	
	BY	DATE
DWN.	PCB	3/1/89
CKD.	R.E.S	4/89

NYSDEC PHASE II INVESTIGATION DONNER-HANNA COKE

MONITOR WELL CONSTRUCTION DIAGRA

ONITOR WELL COMPLETION REPORT

WELL NO. GW-4
SITE NO. 915017
DATE OF INSTALLATION 9/23/88



1. PROTECTIVE CASING I.D. 4 INCHES
2. SURFACE SEAL TYPE Sonitube filled with secrete
3. BOREHOLE DIAMETER 8 INCHES
4. RISER PIPE:
   - A. Type Schedule 40 PVC
   - B. I.D. 2 INCHES
   - C. Length 4.44 FEET
   - D. Joint Type Flush threaded
5. TYPE OF SEAL Bentonite pellets
6. SCREEN
   - A. Type Schedule 40 PVC
   - B. I.D. 2 INCHES
   - C. Slot Size 0.010 INCHES
   - D. Length 10 FEET
7. SCREEN FILTER TYPE No. 4 graded quartzite sand

* Ref. Edward O. Watts & Associates, Dwg. No. EJ122688

** Depth in feet below grade.

RA RONMENTAL INC	SCALE: AS NOTED			NYSDEC PHASE II INVESTIGATION DONNER-HANNA COKE BUFFALO, NY	MONITOR WELL CONSTRUCTION DIAGRAM
		BY	DATE		
	DWN.	PCB	3/1/89		
	CKD.	RES	4/89		
	APPVD.	JRS	5/89		
	REV			PROJECT NO 8C13010	A PB 00257C

DAMES & MOORE
BORING LOG

CLIENT: NYSDEC
LOCATION: ALLTIFT REALTY

BORING NO.: CW-6A
SURFACE ELEV: 571.57'

DRILLING METHOD: Augers

SAMPLING METHOD: Split spoon

DATE STARTED: 8/6/85

DATE FINISHED: 8/6/85

SAMPLE NO.	BLOWS/FT	SAMPLE TYPE	DEPTH IN FT.	SOIL GRAPH	MATERIAL DESCRIPTION
1	13	SS	0		Black, dry, clumpy coal dust, little bro silt and gravel (Fill)
			1	Fill	
			2		
			3		
			4		Dark gray, moist silt, some fine sand, little clay
2	5	SS	5		
			6		
			7		
			8		
			9		grading less sand
3	10	SS	10	ML	
			11		
			12		
			13		
			14	SM	Dark brown, wet, fine running sands with some silt and clay
4	13	SS	15		Dark, moist silt
			16	ML	
			17		
			18		
			19		Gray, moist clay, some silt
5	8	SS	20		

DAMES & MOORE
BORING LOG

CLIENT: NYSDEC
LOCATION: ALLTIFT REALTY

BORING NO.: CW-6A

SAMPLE NO.	BLOWS/FT	SAMPLE TYPE	DEPTH IN FT.	SOIL GRAPH	MATERIAL DESCRIPTION
			20		
			21		
			22		
			23		
			24		grading increase in silt
6	6	SS	25		
			26		
			27		
			28		
			29		
7	Rod wt.	SS	30	CL	grading increase in clay content
			31	ML	
			32		
			33		
			34		
8	Rod wt.	SS	35		
			36		
			37		
			38		
			39		
9	Rod wt.	SS	40		

DAMES & MOORE
BORING LOG

BORING NO.: CW-6A

CLIENT: NYSDEC
LOCATION: ALLTIFT REALTY

SAMPLE NO.	BLOWS/FT	SAMPLE TYPE	DEPTH IN FT.	SOIL GRAPH	MATERIAL DESCRIPTION
			40		grading with reddish color
			41		
			42		
			43		
			44		
10	Rod wt.	SS	45	CL	grading reddish grey, oily sheen on cuttings
			46	ML	
			47		
			48		
			49		
11	Rod wt.	SS	50		
			51		grading with gravel
			52		
			53		Grey, moist silt, little gravel, fine sa and clay (Till)
			54		
12	4	SS	55	ML	
			56		
			57		Start coring at 57.8 feet
			58		
			59		
			60		

DAMES & MOORE
BORING LOG

CLIENT: NYSDEC
LOCATION: ALLTIFT REALTY

BORING NO.: CW-6A

SAMPLE NO.	BLOWS/FT	SAMPLE TYPE	DEPTH IN FT.	SOIL GRAPH	MATERIAL DESCRIPTION
			60		
			61		
			62		Boring terminated at a depth of 62.8 feet on 8/6/85.
			63		

BUFFALO DRILLING COMPANY
INC.
955 NIAGARA STREET
BUFFALO, NEW YORK
14213
(716) 886-0375

March 24, 1989 JOB NO: 89-1214

Recra Environmental, Inc.
Audubon Business Center
10 Hazelwood Drive
Suite 106
Amherst, New York 14150

ATTN: Dr. Roger A. Clark

RE: Laboratory Soil Analysis Results
for Donner-Hanna Coke (#915017),
Recra Environmental Project No. 8C1301G.

Gentlemen:

The enclosed table and graphs present laboratory testing of eight soil samples provided by Recra Environmental, Inc. for the above referenced project. The samples were tested for particle size analysis (ASTM D422), and moisture content (ASTM D2216). Seven hydrometer analyses (ASTM D422) were undertaken on samples with greater than twenty percent passing the No. 200 sieve. In addition, liquid and plastic limit determination (ASTM D4318) was completed on one sample.

Thank you for the opportunity to assist on this project. If there any questions, please call.

Very truly yours,
BUFFALO DRILLING COMPANY, INC.

David M. Frazier
Geologist

Encl.

CLIENT: Recra Environmental, Inc.
PROJECT: Donner-Hanna Coke (#915017)
JOB NO: 89-1214

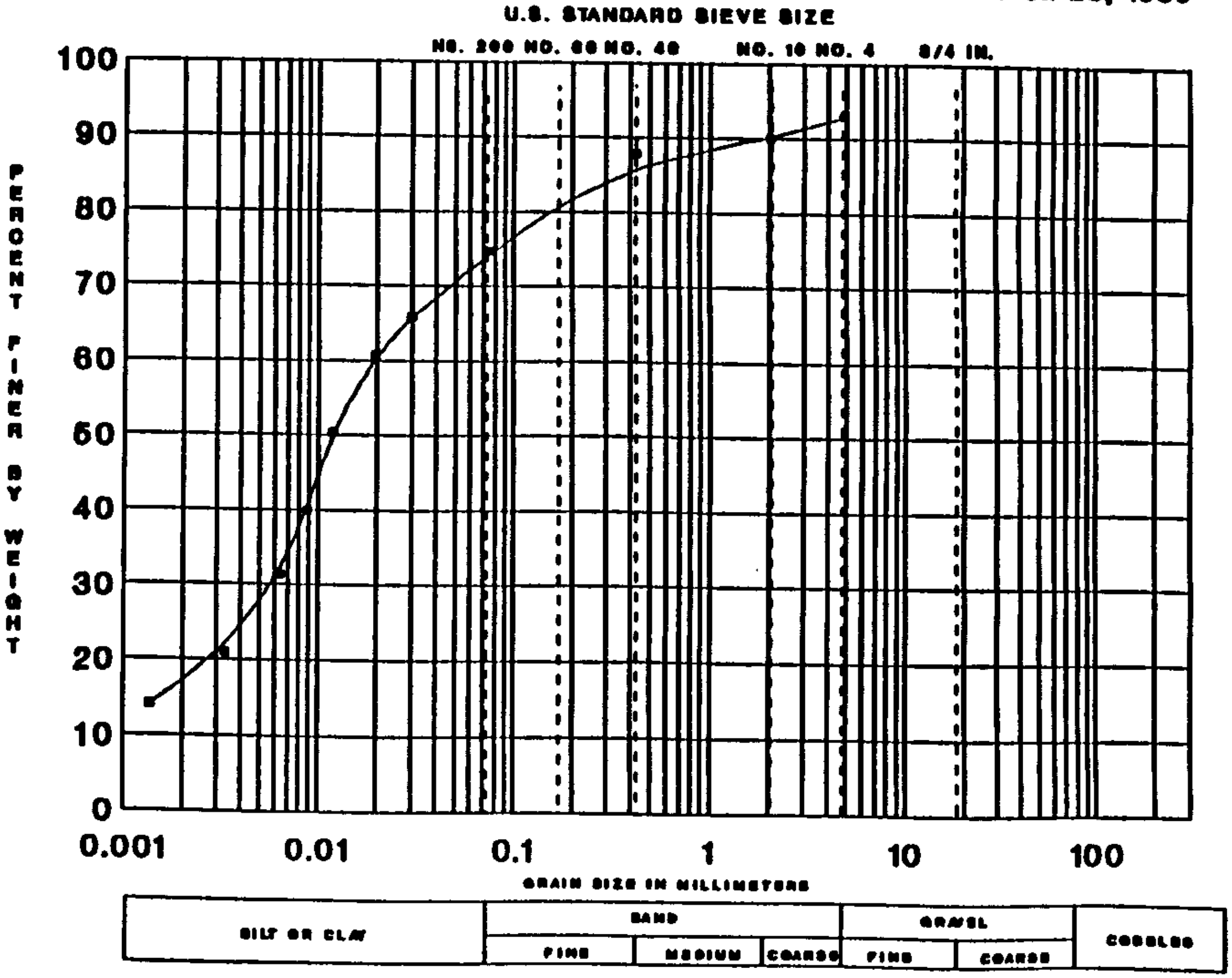
TABLE 1

BORING NO.	SAMPLE NO.	DEPTH (ft.)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			GRADATION ANALYSIS				SAMPLE DESCRIPTION
				LL (%)	PL (%)	PI (%)	GRAVEL (%)	SAND (%)	SILT (%)	CLAY (%)	
GW-1	SS-4	6-8	54.4				7.1	18.5	45.9	28.5	Silt, some Clay, little f/c Sand, tr. Gravel
GW-1	SS-7	12-14	21.8				5.8	47.0	39.2	8.0	f/c Sand and Silt, tr. Clay, tr. Gravel
GW-2	SS-4	6-8	20.3				4.2	23.9	66.3	5.6	Silt, some f/c Sand, tr. Clay, tr. Gravel
GW-2	SS-6	10-12	19.5	20	24	4	0	1.0	69.5	29.5	Silt, some Clay, tr. f/m Sand
GW-3a	SS-3	4-6	8.4				47.6	38.9	13.5		Gravel and f/c Sand, tr. Silt, tr. Clay
GW-3a	SS-6	9-11	23.1				.3	33.8	40.9	25.0	Silt, some f/c Sand, some Clay, tr. Gravel
GW-4	SS-5	8-10	24.3				0.0	31.2	38.3	30.5	Silt, some f/c Sand, some Clay
GW-4	SS-6	10-12	22.1				5.4	50.1	25.2	19.3	f/c Sand, some Silt, little Clay, tr. Gravel

BUFFALO DRILLING COMPANY, INC.

GRAIN SIZE ANALYSIS

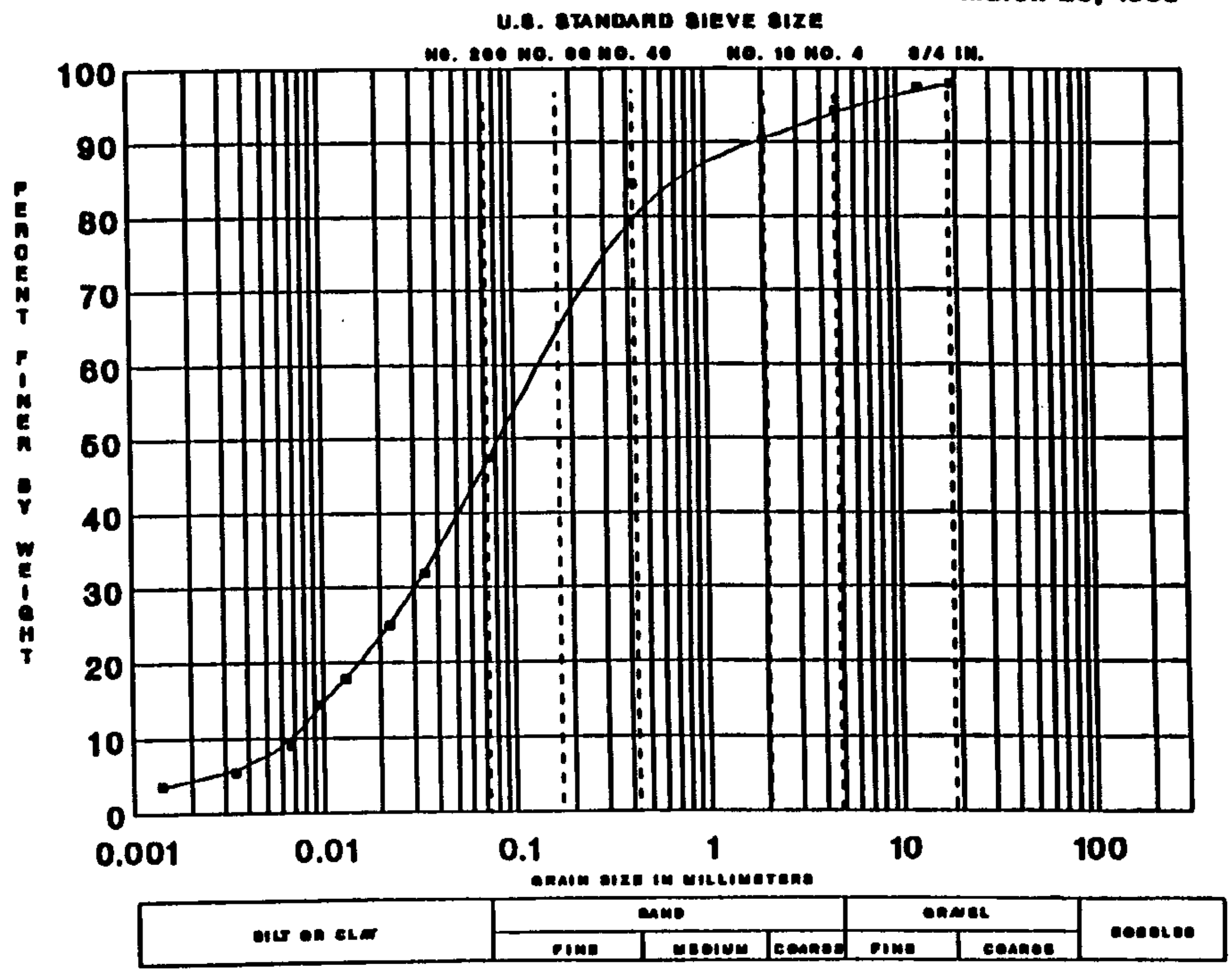
Boring No: GW-1 Sample No: SS-4
March 20, 1989



BUFFALO DRILLING COMPANY, INC.

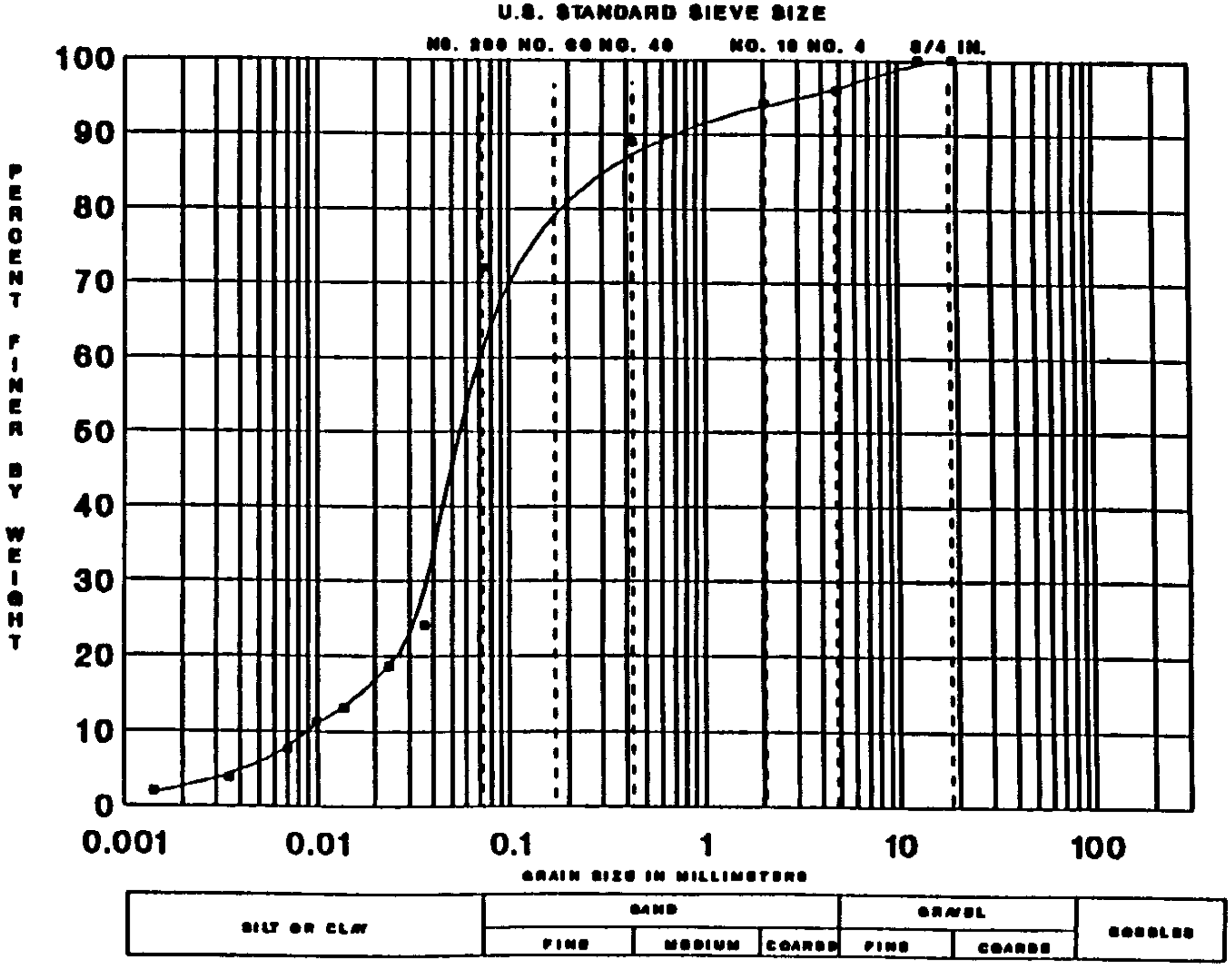
GRAIN SIZE ANALYSIS

Boring No: GW-1 Sample No: SS-7
March 20, 1989



BUFFALO DRILLING COMPANY, INC.
GRAIN SIZE ANALYSIS

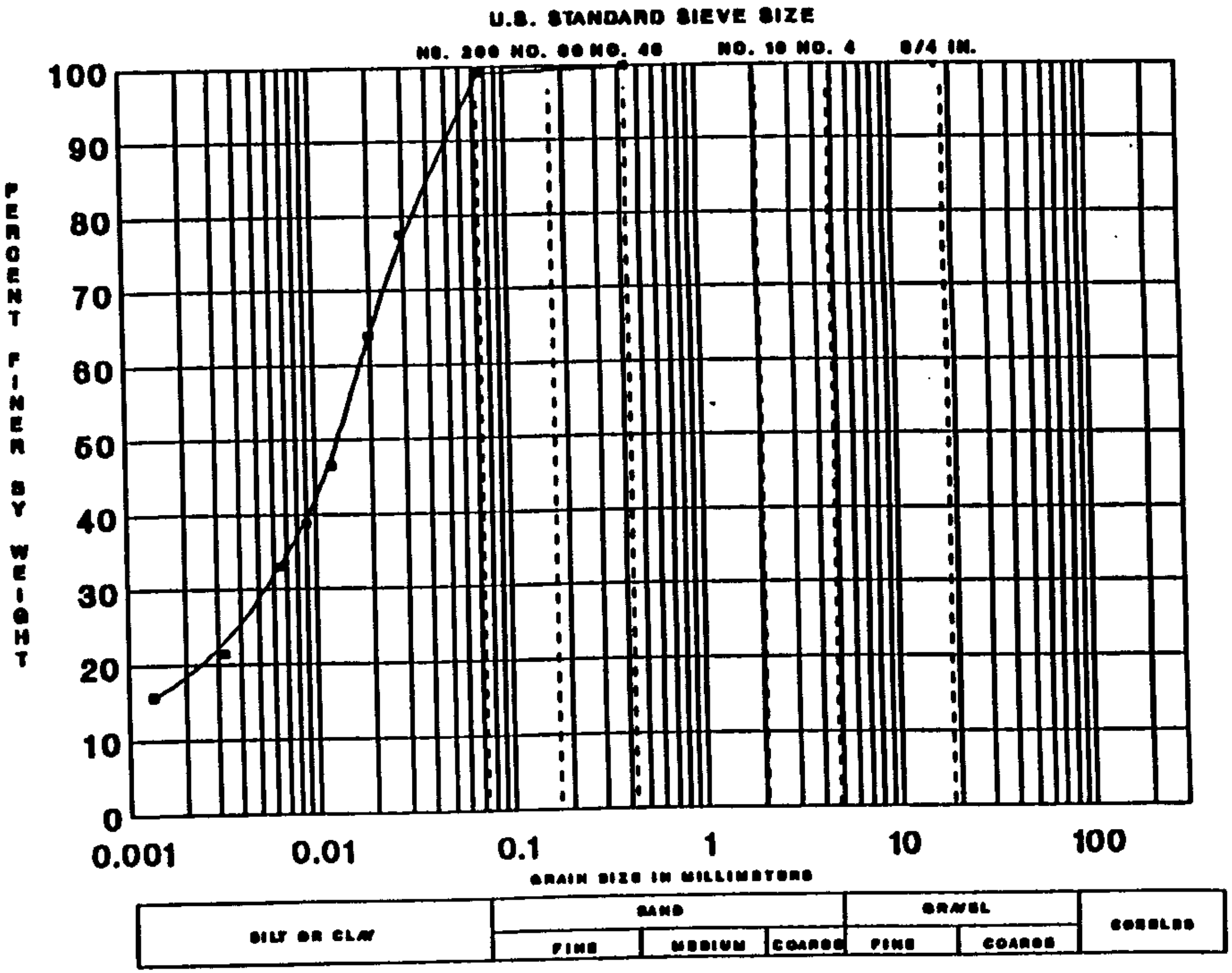
Boring No: GW-2 Sample No: SS-4
March 20, 1989



BUFFALO DRILLING COMPANY, INC.

GRAIN SIZE ANALYSIS

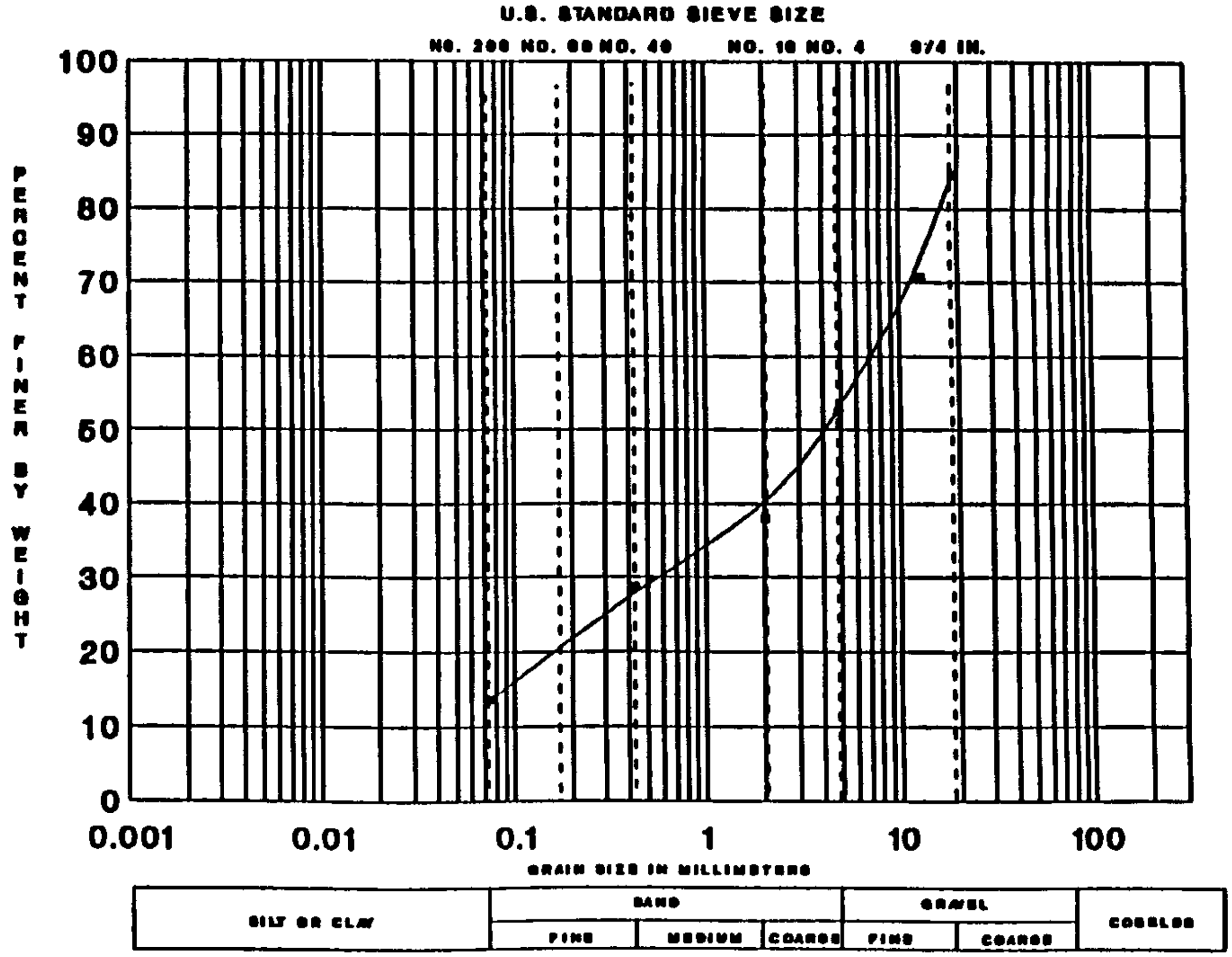
Boring No: GW-2 Sample No: SS-6
March 20, 1989



BUFFALO DRILLING COMPANY, INC.

GRAIN SIZE ANALYSIS

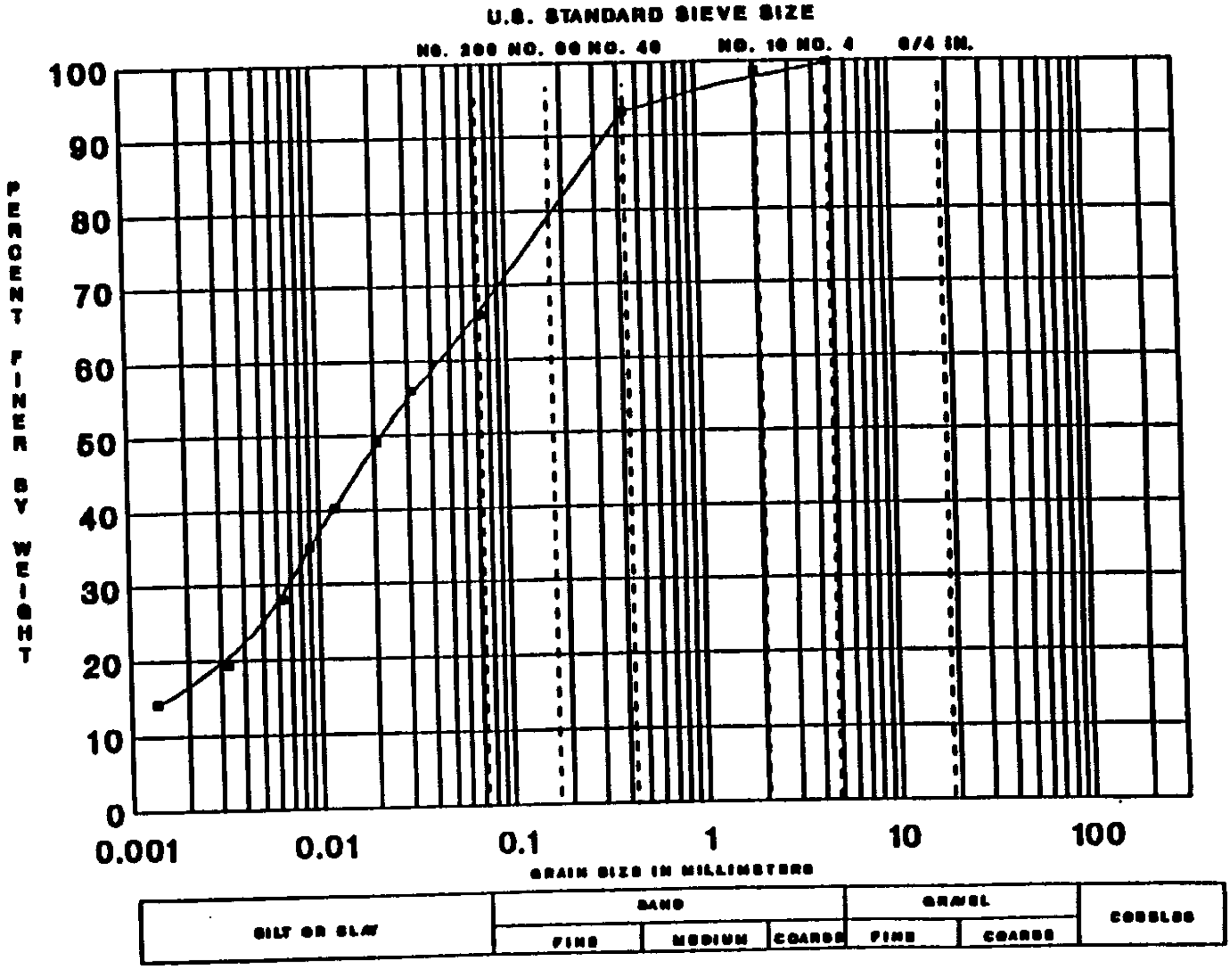
Boring No: GW-3a Sample No: SS-3
March 20, 1989



BUFFALO DRILLING COMPANY, INC.

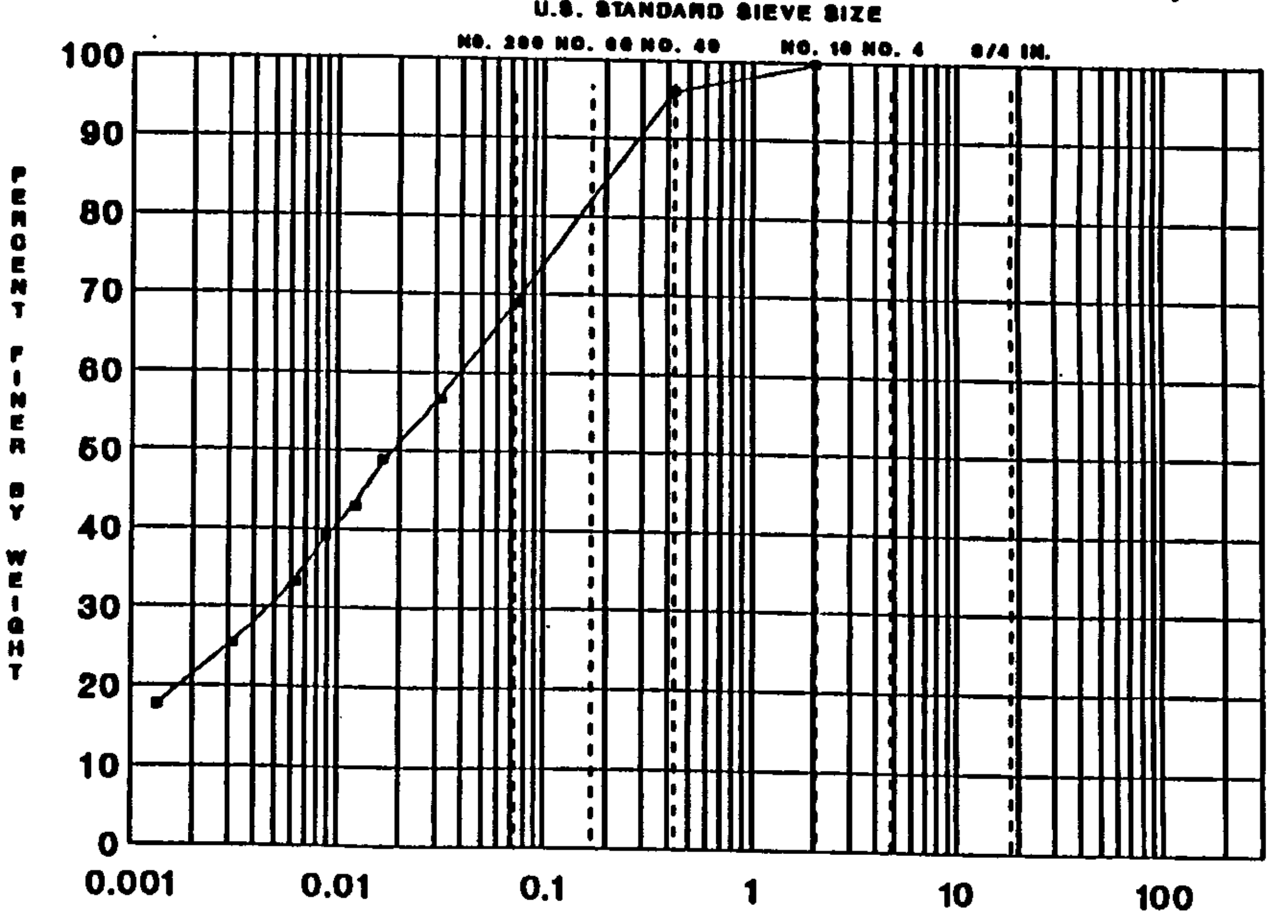
GRAIN SIZE ANALYSIS

Boring No: GW-3a Sample No: SS-6
March 20, 1989



BUFFALO DRILLING COMPANY, INC.
GRAIN SIZE ANALYSIS

Boring No: GW-4 Sample No: SS-6
March 20, 1989

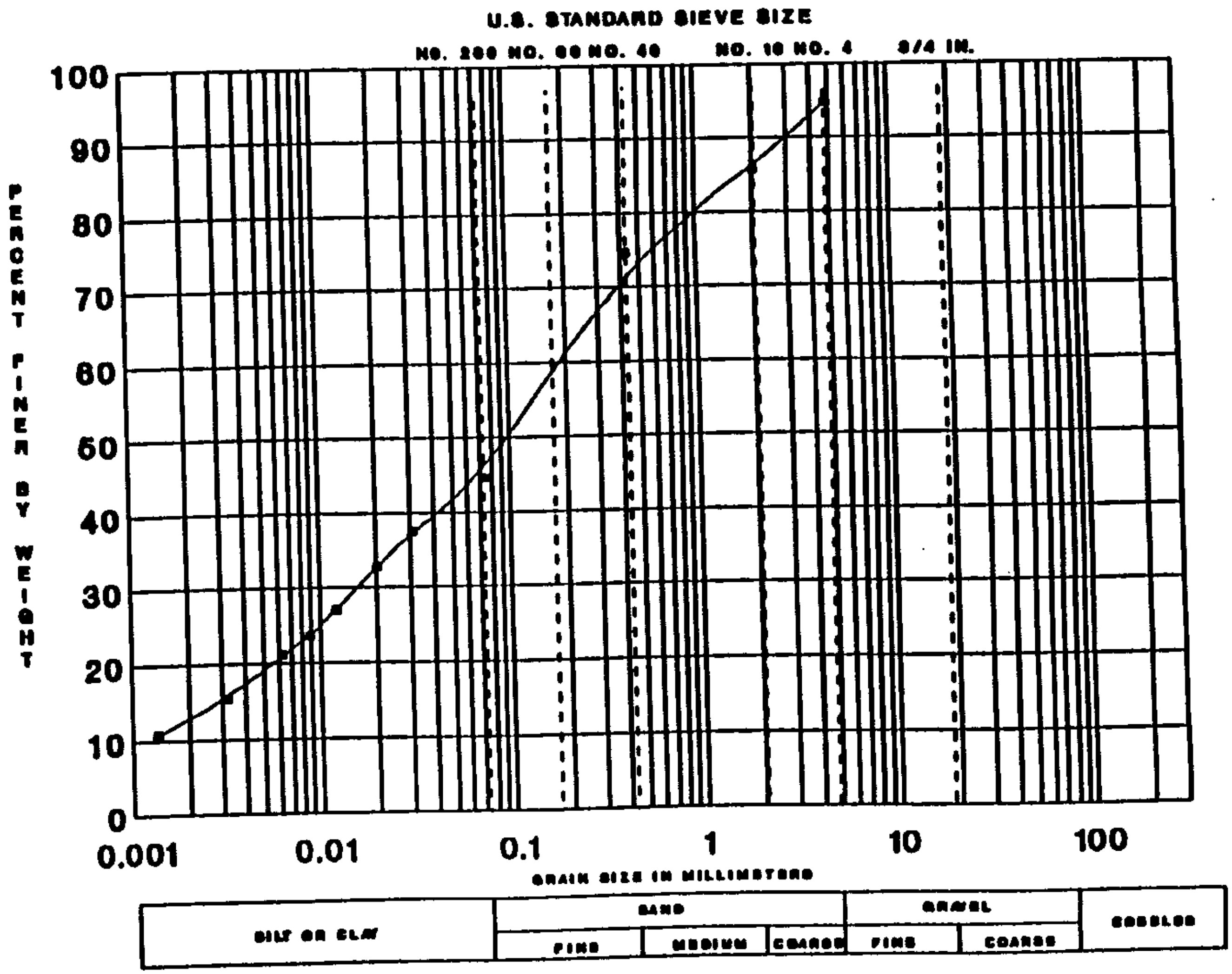


SILT OR CLAY	SAND			GRAVEL		COBBLES
	FINE	MEDIUM	COARSE	FINE	COARSE	

BUFFALO DRILLING COMPANY, INC.

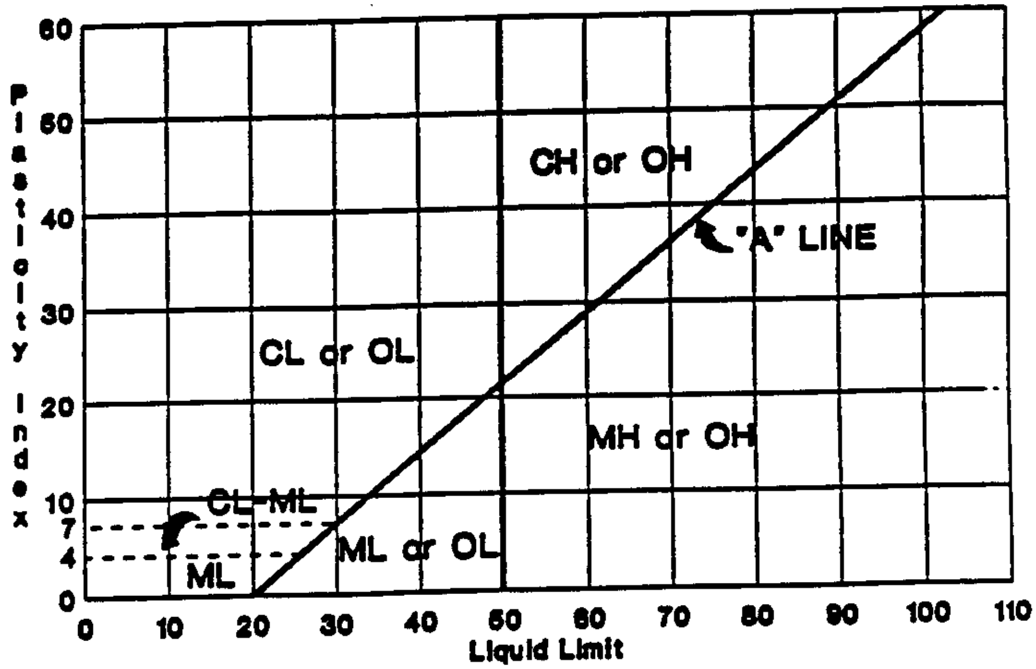
GRAIN SIZE ANALYSIS

Boring No: GW-4 Sample No: SS-6
March 20, 1989

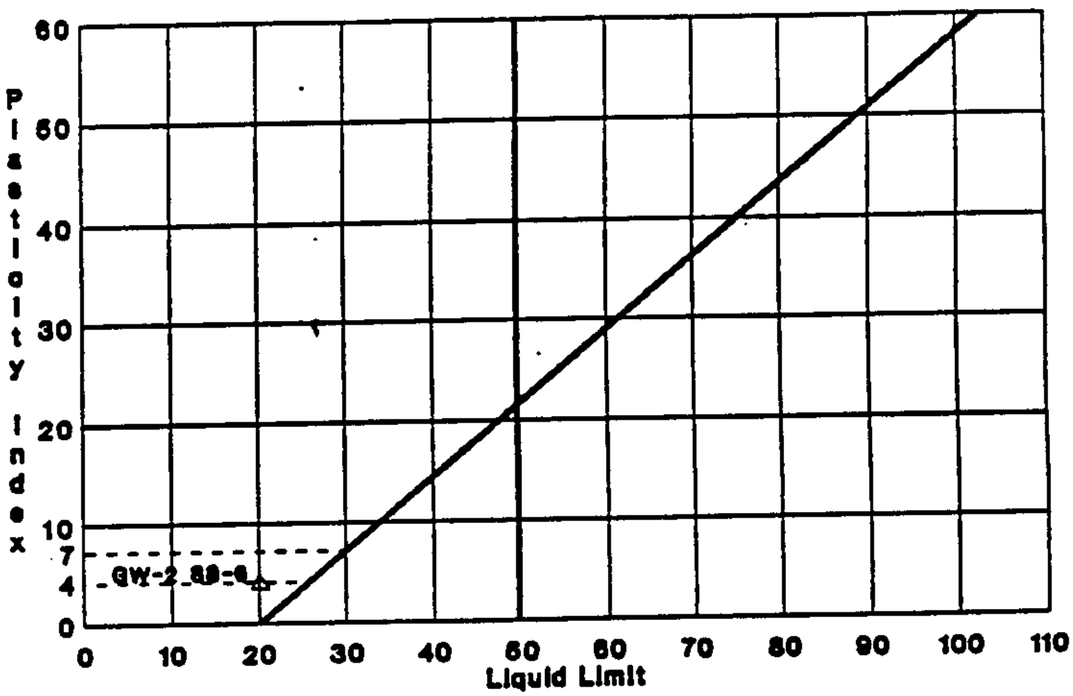


Plasticity Chart

Legend



Laboratory Test Results



APPENDIX D

RECRA ENVIRONMENTAL, INC.
WELL DEVELOPMENT DATA

DONNER HANNA COKE
#915017

DONNER HANNA COKE (#(915017)
PHASE II INVESTIGATION
WELL DEVELOPMENT DATA

WELL I.D.	DATE	TIME	pH (STANDARD UNITS)	SPECIFIC CONDUCTANCE (umhos/cm)	TURBIDITY (NTU)	TEMP (°C)	CUMULATIVE VOLUME EVACUATED IN GALLONS	COMMENTS
GW-4	10/4/88	13:55	6.60	9,500	>200	16	0	Evacuated with PVC Bailer Very turbid, dark fines
GW-4	10/4/88	14:03	5.80	8,000	>200	16	1.5	Evacuated with PVC Bailer; Very turbid, dark fines, slight odor
GW-4	10/4/88	14:07	5.75	8,500	>200	16	3	Evacuated with PVC Bailer; Very turbid, dark fines, slight odor
GW-4	10/4/88	14:09	5.85	7,900	>200	16	4	Evacuated with PVC Bailer; Very turbid, dark fines, slight odor
GW-4	10/4/88	14:12	5.75	8,500	>200	16	5.5	Evacuated with PVC Bailer; Very turbid, dark fines, slight odor
GW-4	10/4/88	14:15	5.75	7,000	>200	16	7	Evac. w/ PVC Bailer;Very turbid dark fines,slight odor,oily residue on bailer
GW-4	10/4/88	14:17	5.80	7,900	>200	16	8	Evac. w/PVC Bailer; Very turbid dark fines, slight odor, oily residue on bailer
GW-4	10/4/88	14:20	6.00	7,100	>200	16	9.5	Evac. w/PVC Bailer; Very turbid dark fines, slight odor, oily residue on bailer
GW-4	10/4/88	14:34	5.50	9,500	>200	16	11	Very turbid, dark fines, cont. pumping with Peristaltic pump
GW-4	10/4/88	14:37	5.45	8,600	>200	16	12	Very turbid, dark fines, cont. pumping with Peristaltic pump
GW-4	10/4/88	14:40	5.50	9,100	>200	16	13.5	Very turbid, dark fines, cont. pumping with Peristaltic pump
GW-4	10/4/88	14:52	5.55	9,200	>200	16	18.5	Less turbid, few fines
GW-4	10/4/88	15:42	5.50	9,100	154	16	48.5	Less turbid, few fines

DONNER HANNA COKE (#(915017)
PHASE II INVESTIGATION
WELL DEVELOPMENT DATA

WELL I.D.	DATE	TIME	pH (STANDARD UNITS)	SPECIFIC CONDUCTANCE (umhos/cm)	TURBIDITY (NTU)	TEMP (°C)	CUMULATIVE VOLUME EVACUATED IN GALLONS	COMMENTS
GW-1	10/3/88	11:15	7.05	3400	>200	15	0	Evacuated with PVC Bailer Turbid,dark sand and silt
GW-1	10/3/88	11:22	7.00	3365	>200	15	1.5	Evacuated with PVC Bailer Turbid,dark sand and silt
GW-1	10/3/88	11:24	7.05	3360	>200	15	2.5	Evacuated with PVC Bailer Turbid,dark sand and silt
GW-1	10/3/88	11:27	7.00	3310	>200	15	4	Evacuated with PVC Bailer Turbid,dark sand and silt
GW-1	10/3/88	11:32	7.00	3295	>200	14	5	Evacuated with PVC Bailer Turbid,dark sand and silt
GW-1	10/3/88	11:36	7.00	3310	>200	14	8	Evacuated with PVC Bailer Turbid,dark sand and silt
GW-1	10/3/88	11:37	7.00	3360	>200	14	9	Evacuated with PVC Bailer Turbid,dark sand and silt
GW-1	10/3/88	11:41	7.00	3360	>200	14	10.5	Evacuated with PVC Bailer Turbid,dark sand and silt
GW-1	10/3/88	11:43	7.05	3380	>200	14	12	Evacuated with PVC Bailer Turbid,dark sand and silt
GW-1	10/3/88	11:45	7.05	3390	>200	13.5	13	Evacuated with PVC Bailer;Turbid dark sand and mostly silt.
GW-1	10/3/88	12:15	7.05	3510	13.78	13	23	Evacuated final 10 gallons with Peristaltic pump. Clear

1/WD10595.2

DONNER HANNA COKE (#(915017)
PHASE II INVESTIGATION
WELL DEVELOPMENT DATA

WELL I.D.	DATE	TIME	pH (STANDARD UNITS)	SPECIFIC CONDUCTANCE (umhos/cm)	TURBIDITY (NTU)	TEMP (°C)	CUMULATIVE VOLUME EVACUATED IN GALLONS	COMMENTS
GW-2	10/3/88	13:45	10.05	850	132	14	0	Evacuated with PVC Bailer Tan, slightly turbid
GW-2	10/3/88	13:48	6.10	2300	>200	12	1.5	Very turbid, brown sand & silt
GW-2	10/3/88	13:52	6.05	2360	>200	12	3.5	Very turbid, brown sand & silt
GW-2	10/3/88	14:00	5.95	2350	>200	11	7	Very turbid, brown sand & silt
GW-2	10/3/88	14:03	6.15	2325	>200	11	8.5	Very turbid, brown sand & silt
GW-2	10/3/88	14:09	5.70	3025	>200	12	10.5	Very turbid, brown sand & silt
GW-2	10/3/88	14:26	5.85	2340	>200	12	13.5	Begin evacuation with peristaltic pump. Turbid, brown silt
GW-2	10/3/88	14:30	5.85	2340	>200	11	15.5	Cont. evacuation with peristaltic pump. Turbid, brown silt
GW-2	10/3/88	14:32	5.45	2650	>200	11	17	Cont. evacuation with peristaltic pump. Turbid, brown silt
GW-2	10/3/88	14:45	5.65	2610	120	11	19.5	Slightly turbid
GW-2	10/3/88	15:35	5.65	2175	>200	11	23	Turbid

DONNER HANNA COKE (#(915017)
PHASE II INVESTIGATION
WELL DEVELOPMENT DATA

WELL I.D.	DATE	TIME	pH (STANDARD UNITS)	SPECIFIC CONDUCTANCE (umhos/cm)	TURBIDITY (NTU)	TEMP (°C)	CUMULATIVE VOLUME EVACUATED IN GALLONS	COMMENTS
GW-3	10/4/88	10:02	4.45		68	13	0	Evacuated with PVC bailer Yellow, slightly turbid
GW-3	10/4/88	10:10	4.30		>200	13	3	Orange-Brown, turbid,strong odor
GW-3	10/4/88	10:37	4.25	26,500	>200	13	6	Orange-Brown, turbid,strong odor
GW-3	10/4/88	10:42	4.15	26,500	>200	13	7.5	Orange-Brown, turbid,strong odor
GW-3	10/4/88	11:10	4.15	30,000	>200	14	9	Orange-Brown, turbid,strong odor
GW-3	10/4/88	11:12	4.30	29,000	>200	12	10.5	Orange-Brown, turbid,strong odor
GW-3	10/4/88	11:26	4.25	30,000	>200	12	12	Orange-Brown, turbid,strong odor begin pumping w/peristaltic pump
GW-3	10/4/88	11:29	4.30	30,000	>200	12	13.5	Orange-Brown, turbid,strong odor cont. pumping w/peristaltic pump
GW-3	10/4/88	11:42	4.35	29,500	>200	13	15	Orange-Brown, turbid,strong odor cont. pumping w/peristaltic pump
GW-3	10/4/88	13:15	4.15	29,800	>200	13	25.5	Orange-Brown, turbid,strong odor cont. pumping w/peristaltic pump
								O.V.A.readings of 10 to 250ppm obtained in well during develop.

APPENDIX E

RECRA ENVIRONMENTAL, INC.
PERMEABILITY TEST CALCULATIONS

DONNER HANNA COKE
#915017

PROJECT NAME: NYSDEC Phase II Investigation PROJECT NO.: 8C1301G

LOCATION: Donner-Hanna Coke DATE: 12/22/88

PERFORMED BY: R. Bianchi, J. Contino TYPE OF TEST: Constant Head

REFERENCE POINT: Top of Case Elevation: 575.82 ft. HOLE NO.: GW-1

STATIC GROUNDWATER LEVEL: 7.59 ft. HOLE DEPTH: 15.98 ft. STICK UP: 3.02 ft.

DATA:

Elapsed Time (minutes)	Evacuated Volume (gallons)	Discharge (gal/min)	Water Level (feet)	h_c (feet)
5.05	3.0	0.59	8.50	0.91
5.15	3.0	0.58	8.50	0.91
5.17	3.0	0.58	8.51	0.92
5.08	3.0	0.59	8.51	0.92
5.17	3.0	0.58	8.52	0.93
		0.58 average		0.92 average

Permeability Equation: $K = \frac{Q \ln(L/R)}{2\pi L h_c}$

Q: Discharge (cm^3/sec) = 36.74
R: intake point radius (cm) = 10.16
L: length of intake interval (cm) = 259.08
h_c = Constant head (cm) = 28.04

Isotropic Permeability: $K = 2.6 \times 10^{-3}$

1/P10595.2a

PROJECT NAME: NYSDEC Phase II Investigation PROJECT NO.: 8C1301G

LOCATION: Donner-Hanna Coke DATE: 11/17/88

PERFORMED BY: R. Steiner TYPE OF TEST: Falling Head

REFERENCE POINT: Top of Case HOLE NO.: GW-2

TEST INTERVAL: 4.5 minutes ELEVATION: 573.46 ft.

STATIC GROUNDWATER LEVEL: 4.42 ft. HOLE DEPTH: 16.90 ft. STICK UP: 2.96 ft.

N	TIME (seconds)	WATER DEPTH (feet)	HT (feet)	HEAD RATIO (H+/HO)
1	0	3.28	1.14	1
2	30	3.61	0.81	0.711
3	60	3.78	0.64	0.561
4	90	3.95	0.47	0.412
5	120	4.08	0.34	0.298
6	150	4.22	0.20	0.175
7	210	4.25	0.17	0.149
8	270	4.29	0.13	0.114

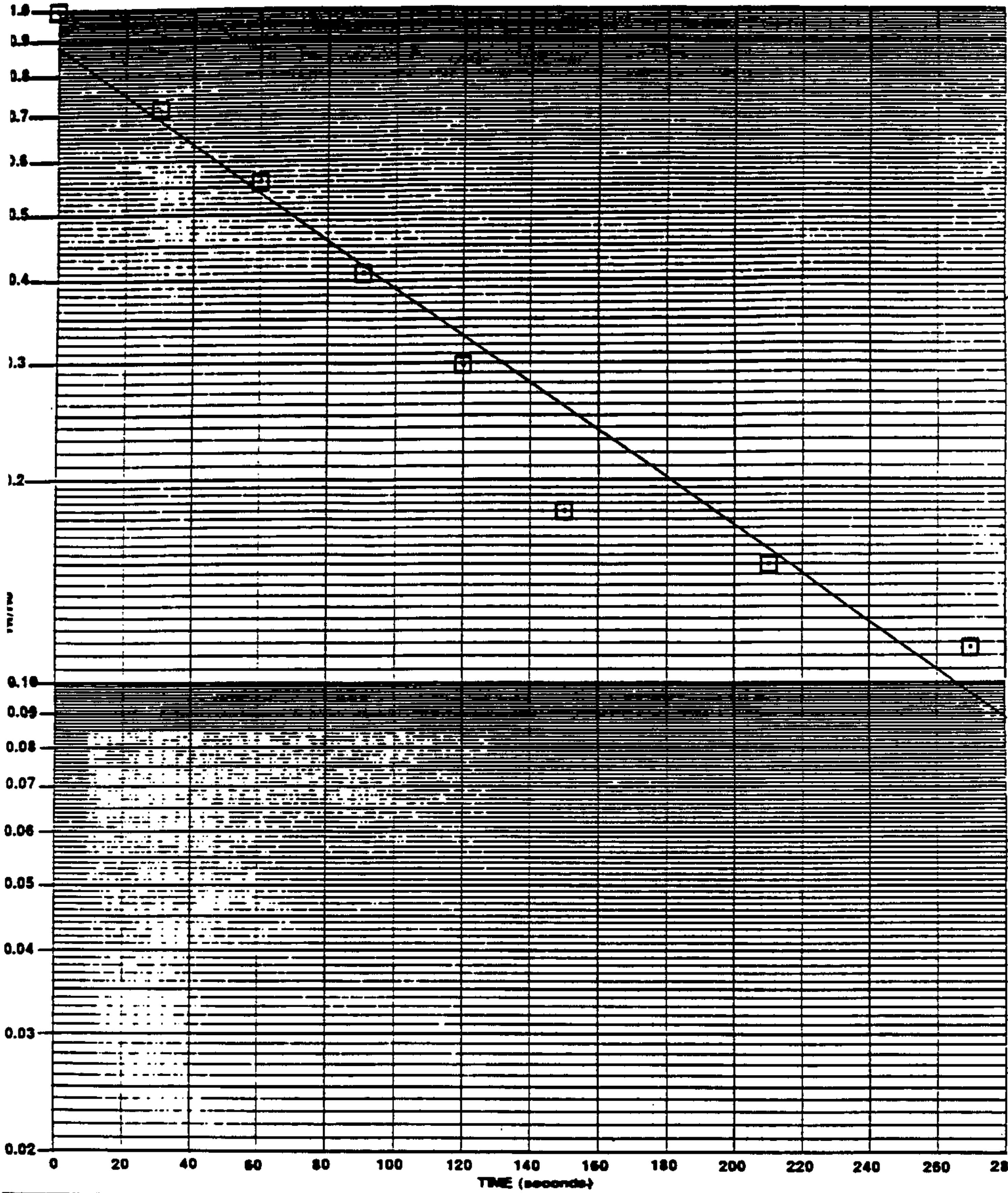
Permeability Equation: $K = r^2/2L \times Ln(mL/R) \times [Ln(H1/H2)/(t2-t1)]$

r: standpipe radius (cm) = 2.54
R: intake point radius (cm) = 10.16
L: length of intake interval (cm) = 304.8
m: square root of (Kh/Kv), ratio of horizontal to vertical permeability, m=1 for isotropy
t1: time (sec) for data point 1 = 10
t2: time (sec) for data point 2 = 210
H1: head ratio for data point 1 = 0.8092
H2: head ratio for data point 2 = 0.1508

Regression Equation: Log (Ht/Ho) = -3.6×10^{-3} t - 0.0555

Correlation Coefficient: - 0.9763

Isotropic Permeability: K = 3.0×10^{-4} cm/sec



RECRA ENVIRONMENTAL, INC.

Well I.D. GW-2

Type of Test FALLING HEAD

Project Title DONNER-HANNA COKE

Project No. 8C1301G

PERMEABILITY DATA PLOT

1/P10595.2

PROJECT NAME: NYSDEC Phase II Investigation PROJECT NO.: 8C1301G

LOCATION: Donner-Hanna Coke DATE: 11/17/88

PERFORMED BY: R. Steiner TYPE OF TEST: Rising Head

REFERENCE POINT: Top of Case HOLE NO.: GW-2

TEST INTERVAL: 4.0 minutes ELEVATION: 573.46 ft.

STATIC GROUNDWATER LEVEL: 4.42 ft. HOLE DEPTH: 16.90 ft. STICK UP: 2.96 ft.

N	TIME (seconds)	WATER DEPTH (feet)	HT (feet)	HEAD RATIO (H+/HO)
1	0	5.40	0.98	1
2	30	5.00	0.58	0.592
3	60	4.71	0.29	0.296
4	90	4.67	0.25	0.255
5	120	4.59	0.17	0.173
6	240	4.47	0.05	0.051

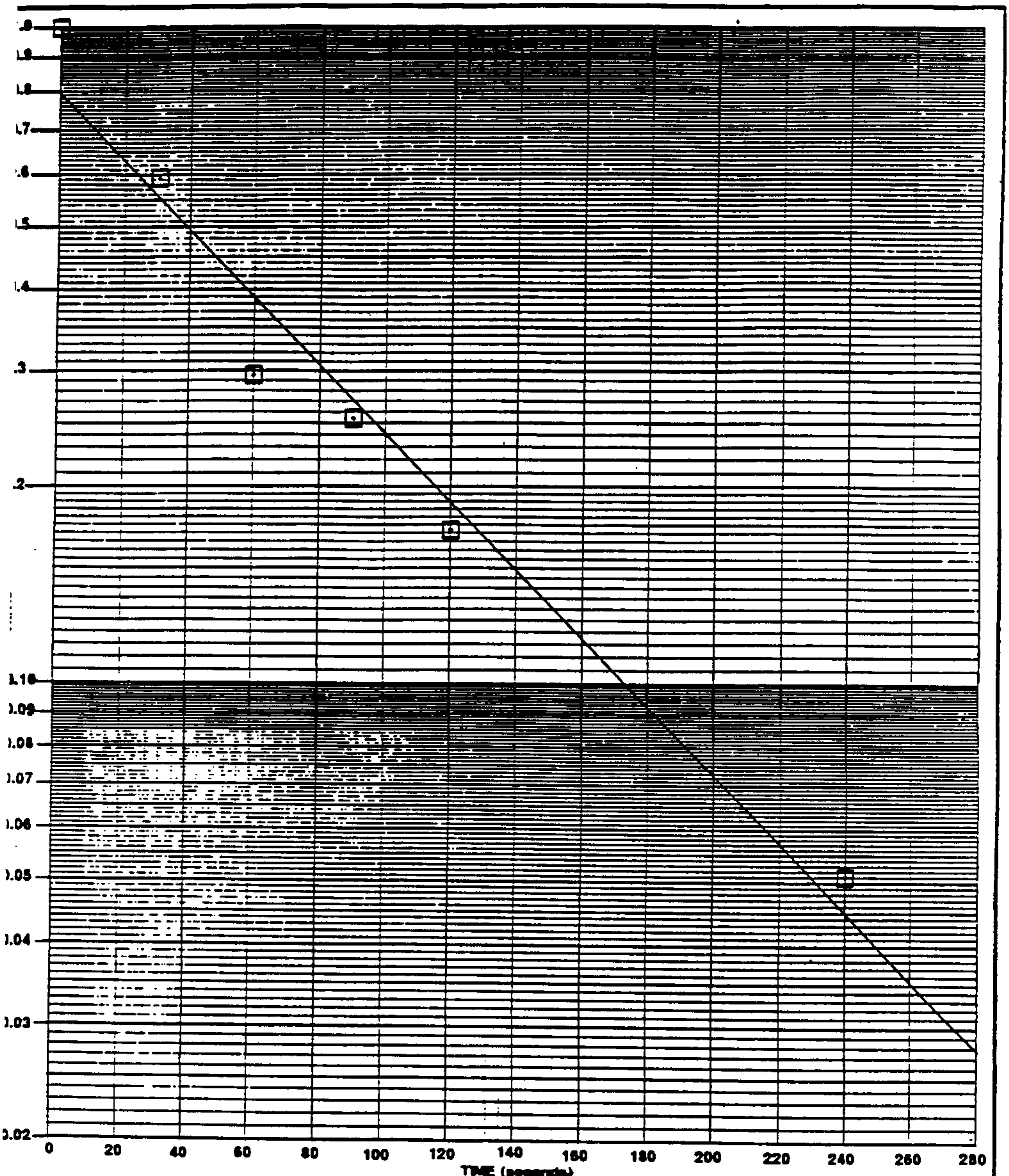
Permeability Equation: $K = r^2/2L \times Ln(mL/R) \times [Ln(H1/H2)/(t2-t1)]$

- r: standpipe radius (cm) = 2.54
- R: intake point radius (cm) = 10.16
- L: length of intake interval (cm) = 304.8
- m: square root of (Kh/Kv), ratio of horizontal to vertical permeability, m=1 for isotropy
- t1: time (sec) for data point 1 = 10
- t2: time (sec) for data point 2 = 210
- H1: head ratio for data point 1 = 0.7057
- H2: head ratio for data point 2 = 0.0644

Regression Equation: $Log (Ht/Ho) = -5.2 \times 10^{-3} t - 0.0994$

Correlation Coefficient: - 0.9851

Isotropic Permeability: $K = 4.3 \times 10^{-4}$ cm/sec



RECRA ENVIRONMENTAL, INC.

Well I.D. GW-2

Type of Test RISING HEAD

Project Title DONNER-HANNA COKE

Project No. 8C1301G

PERMEABILITY DATA PLOT

1/P10595.3

PROJECT NAME: NYSDEC Phase II Investigation PROJECT NO.: 8C1301G

LOCATION: Donner-Hanna Coke DATE: 11/17/88

PERFORMED BY: R. Steiner TYPE OF TEST: Falling Head

REFERENCE POINT: Top of Case HOLE NO.: GW-3

TEST INTERVAL: 5.5 minutes ELEVATION: 573.89 Ft.

STATIC GROUNDWATER LEVEL: 6.16 ft HOLE DEPTH: 16.54 ft. STICK UP: 3.29 f

N	TIME (seconds)	WATER DEPTH (feet)	HT (feet)	HEAD RATIO (H+/HO)
1	0	5.42	0.74	1
2	30	5.67	0.49	0.662
3	60	5.79	0.37	0.500
4	90	5.91	0.25	0.338
5	150	5.98	0.18	0.243
6	210	6.03	0.13	0.176
7	330	6.11	0.05	0.068

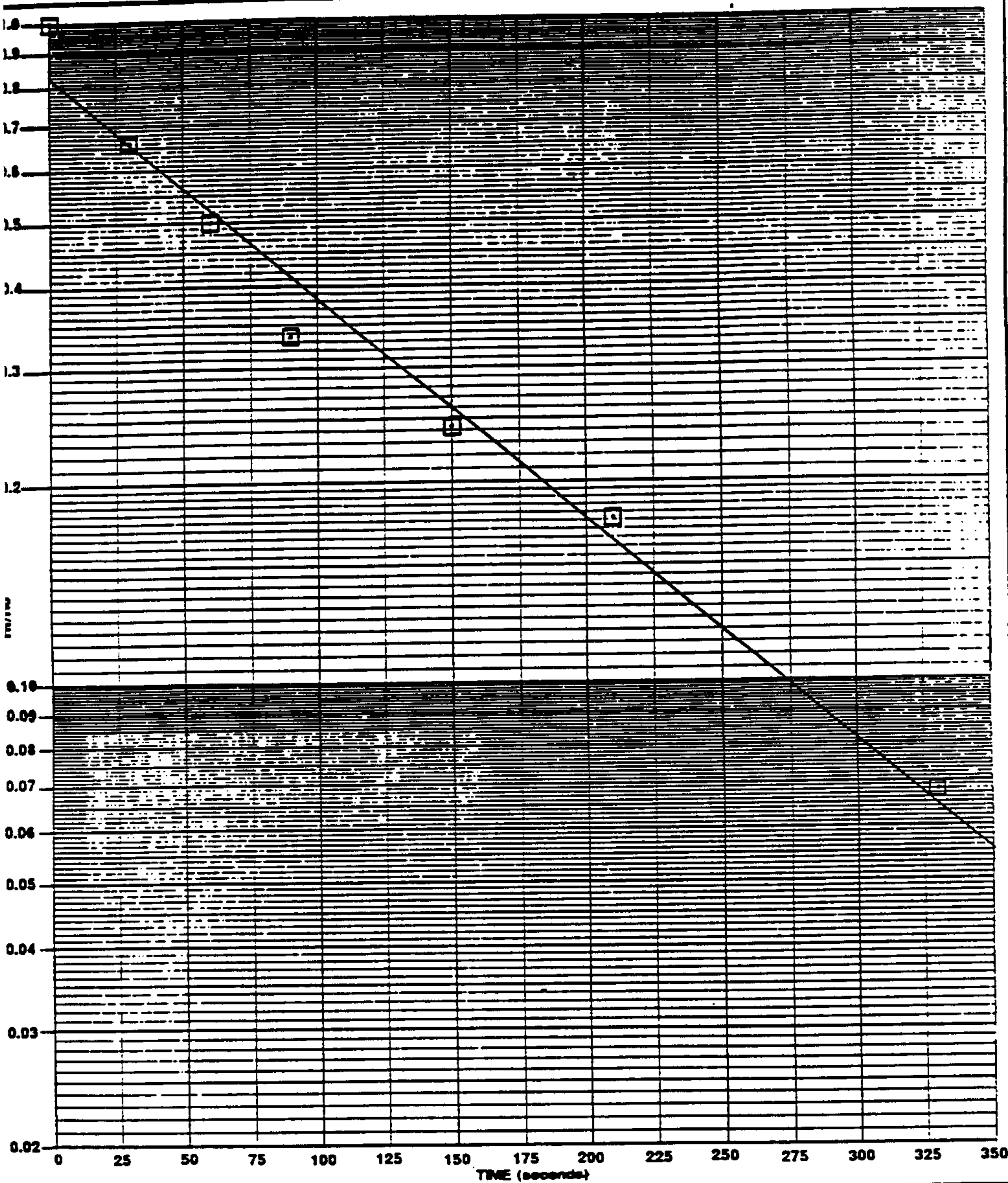
Permeability Equation: $K = r^2/2L \times Ln(mL/R) \times [Ln(H1/H2)/(t2-t1)]$

r: standpipe radius (cm) = 2.54
R: intake point radius (cm) = 10.16
L: length of intake interval (cm) = 304.8
m: square root of (Kh/Kv), ratio of horizontal to vertical permeability, m=1 for isotropy
t1: time (sec) for data point 1 = 10
t2: time (sec) for data point 2 = 310
H1: head ratio for data point 1 = 0.7676
H2: head ratio for data point 2 = 0.0757

Regression Equation: Log (Ht/Ho) = -3.4×10^{-3} t - 0.0813

Correlation Coefficient: - 0.9907

Isotropic Permeability: $K = 2.8 \times 10^{-4}$ cm/sec



RECRA ENVIRONMENTAL, INC.	Well I.D. GW-3 Type of Test FALLING HEAD Project Title DONNER-HANNA COKE Project No. 8C1301G	PERMEABILITY DATA PLOT

PROJECT NAME: NYSDEC Phase II Investigation PROJECT NO.: 8C1301G

LOCATION: Donner-Hanna Coke DATE: 11/17/88

PERFORMED BY: R. Steiner TYPE OF TEST: Rising Head

REFERENCE POINT: Top of Case HOLE NO.: GW-3

TEST INTERVAL: 5.5 minutes ELEVATION: 573.89

STATIC GROUNDWATER LEVEL: 6.16 ft. HOLE DEPTH: 16.54 ft. STICK UP: 3.29 ft.

N	TIME (seconds)	WATER DEPTH (feet)	HT (feet)	HEAD RATIO (H+/HO)
1	0	7.25	1.09	1
2	30	6.76	0.60	0.550
3	60	6.52	0.36	0.330
4	90	6.40	0.24	0.220
5	150	6.29	0.13	0.119
6	210	6.24	0.08	0.073
7	330	6.19	0.03	0.028

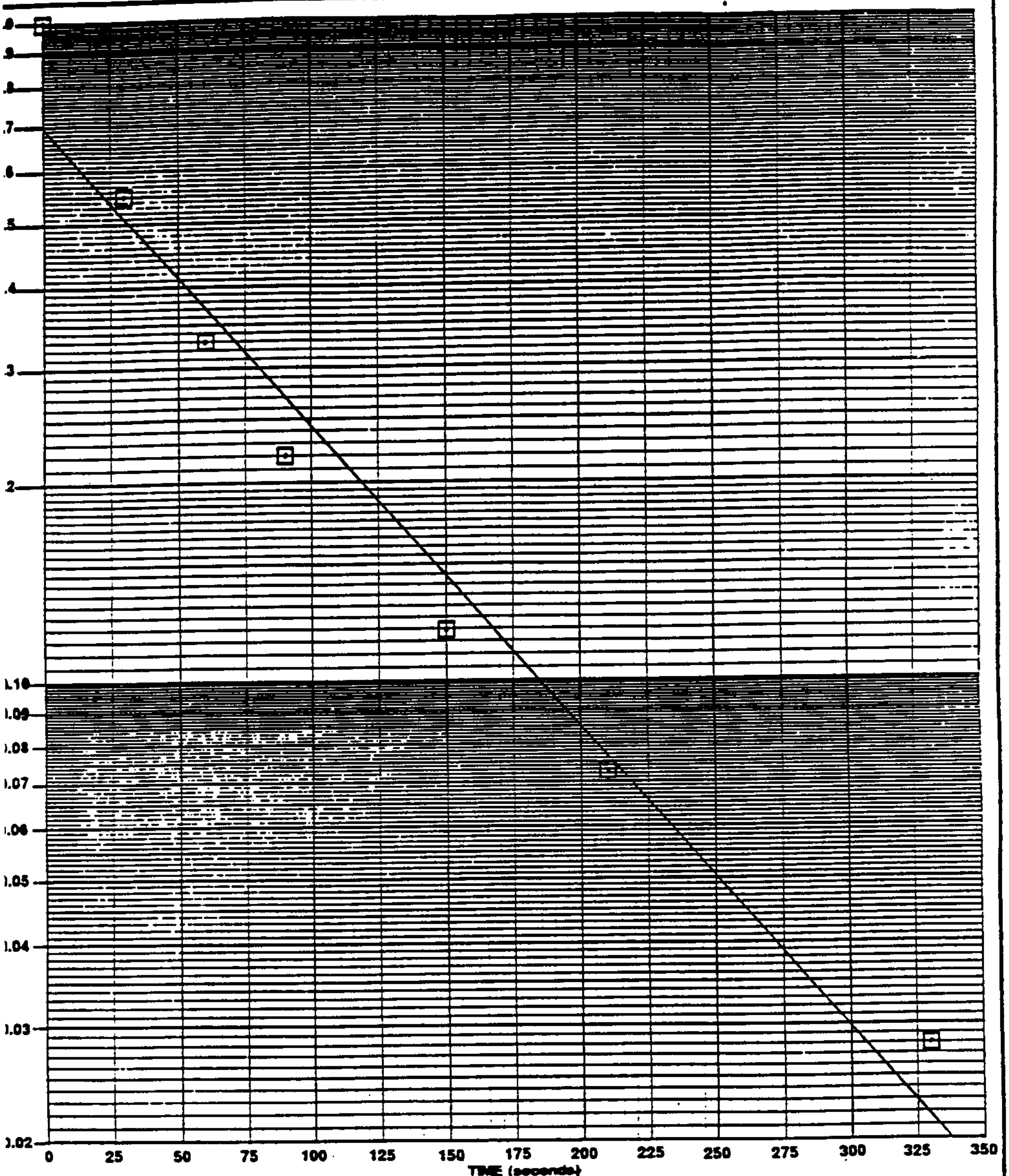
Permeability Equation: $K = r^2/2L \times Ln(mL/R) \times [Ln(H1/H2)/(t2-t1)]$

r: standpipe radius (cm) = 2.54
R: intake point radius (cm) = 10.16
L: length of intake interval (cm) = 304.8
m: square root of (Kh/Kv), ratio of horizontal to vertical permeability, m=1 for isotropy
t1: time (sec) for data point 1 = 10
t2: time (sec) for data point 2 = 310
H1: head ratio for data point 1 = 0.6341
H2: head ratio for data point 2 = 0.0277

Regression Equation: $Log (Ht/Ho) = - 4.5 \times 10^{-3} t - 0.1525$

Correlation Coefficient: - 0.9836

Isotropic Permeability: $K = 3.8 \times 10^{-4}$ cm/sec



RECRA ENVIRONMENTAL, INC.

Well I.D. GW-3

Type of Test RISING HEAD

Project Title DONNER-HANNA COKE

Project No. 8C1301G

PERMEABILITY DATA PLOT

1/P10595.5

PROJECT NAME: NYSDEC Phase II Investigation PROJECT NO.: 8C1301G

LOCATION: Donner-Hanna Coke DATE: 11/17/88

PERFORMED BY: R. Steiner TYPE OF TEST: Falling Head

REFERENCE POINT: Top of Case HOLE NO.: GW-4

TEST INTERVAL: 7.5 minutes ELEVATION: 575.03

STATIC GROUNDWATER LEVEL: 6.26 ft. HOLE DEPTH: 15.62 ft. STICK UP: 3.03 ft.

N	TIME (seconds)	WATER DEPTH (feet)	HT (feet)	HEAD RATIO (H+/HO)
1	0	5.42	0.84	1
2	30	5.64	0.62	0.738
3	60	5.78	0.48	0.571
4	90	5.89	0.37	0.440
5	150	6.04	0.22	0.262
6	210	6.11	0.15	0.179
7	330	6.18	0.08	0.095
8	450	6.21	0.05	0.060

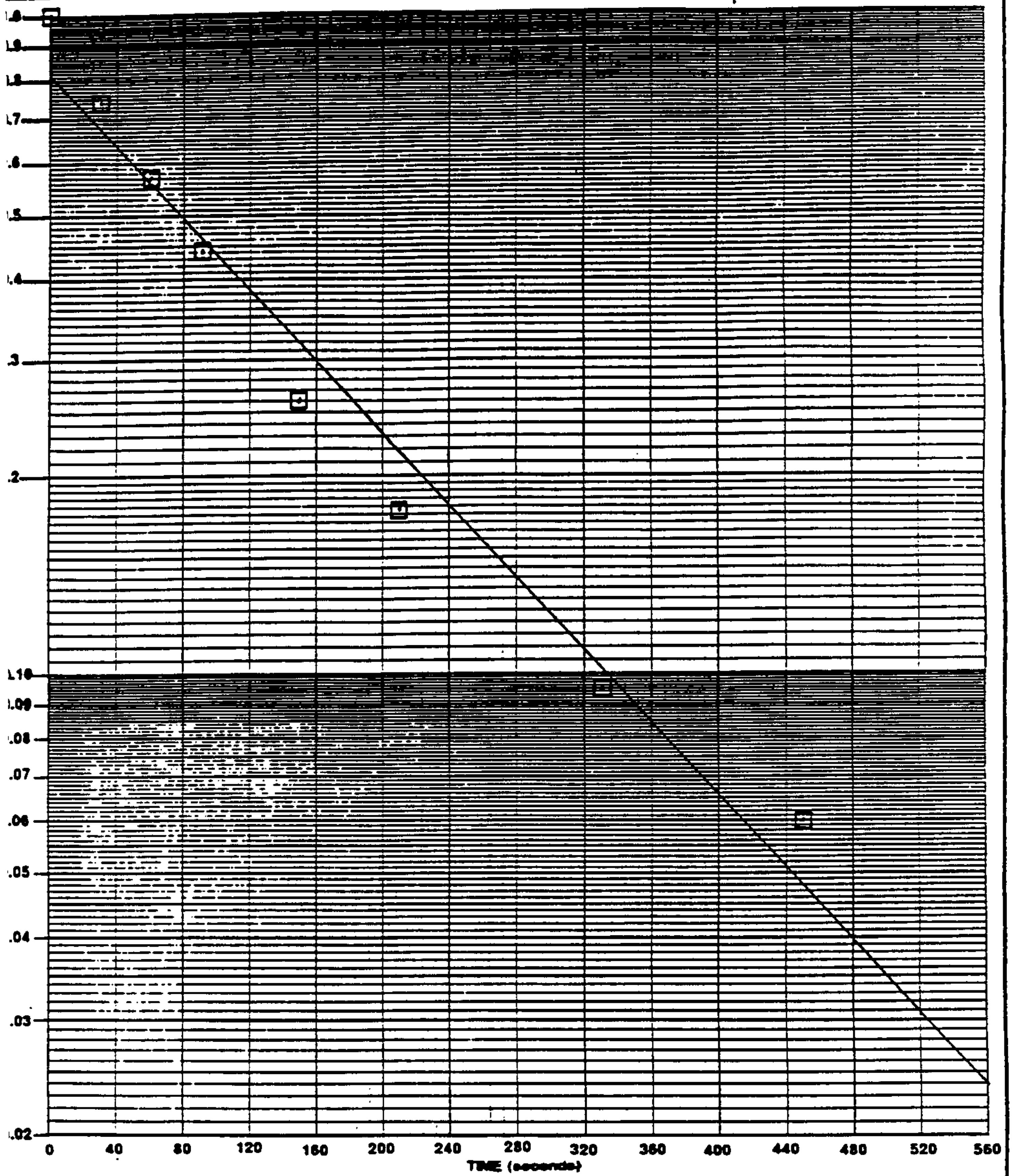
Permeability Equation: $K = r^2/2L \times Ln(mL/R) \times [Ln(H1/H2)/(t2-t1)]$

- r: standpipe radius (cm) = 2.54
- R: intake point radius (cm) = 10.16
- L: length of intake interval (cm) = 821.64
- m: square root of (Kh/Kv), ratio of horizontal to vertical permeability, m=1 for isotropy
- t1: time (sec) for data point 1 = 10
- t2: time (sec) for data point 2 = 410
- H1: head ratio for data point 1 = 0.7674
- H2: head ratio for data point 2 = 0.0621

Regression Equation: $Log (Ht/Ho) = -2.7 \times 10^{-3} t - 0.0877$

Correlation Coefficient: - 0.9869

Isotropic Permeability: $K = 2.4 \times 10^{-4}$ cm/sec



RECRA ENVIRONMENTAL, INC.

Well I.D. GW-4

Type of Test FALLING HEAD

Project Title DONNER-HANNA COKE

Project No. 8C1301G

PERMEABILITY DATA PLOT

PROJECT NAME: NYSDEC Phase II Investigation PROJECT NO.: 8C1301G

LOCATION: Donner-Hanna Coke DATE: 11/17/88

PERFORMED BY: R. Steiner TYPE OF TEST: Rising Head

REFERENCE POINT: Top of Case HOLE NO.: GW-4

TEST INTERVAL: 4.5 minutes ELEVATION: 575.03

STATIC GROUNDWATER LEVEL: 6.26 ft. HOLE DEPTH: 15.62 ft. STICK UP: 3.03 ft.

N	TIME (seconds)	WATER DEPTH (feet)	HT (feet)	HEAD RATIO (H+/HO)
1	0	7.65	1.39	1
2	30	7.42	1.16	0.835
3	90	6.92	0.66	0.475
4	150	6.61	0.35	0.252
5	210	6.42	0.16	0.115
6	270	6.32	0.06	0.043

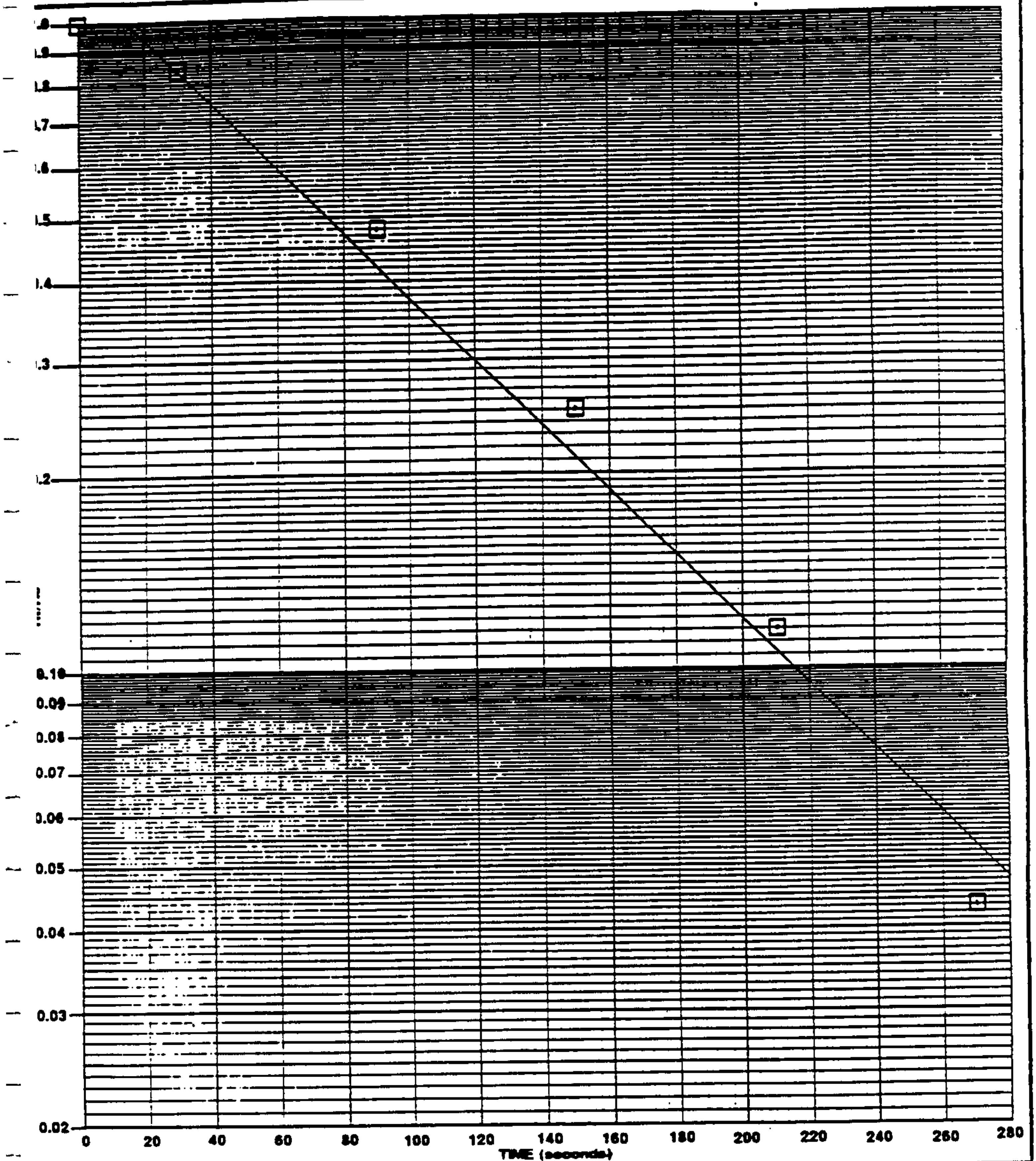
Permeability Equation: $K = r^2/2L \times Ln(mL/R) \times [Ln(H1/H2)/(t2-t1)]$

- r: standpipe radius (cm) = 2.54
- R: intake point radius (cm) = 10.16
- L: length of intake interval (cm) = 281.64
- m: square root of (Kh/Kv), ratio of horizontal to vertical permeability, m=1 for isotropy
- t1: time (sec) for data point 1 = 20
- t2: time (sec) for data point 2 = 220
- H1: head ratio for data point 1 = 0.9437
- H2: head ratio for data point 2 = 0.0940

Regression Equation: $Log (Ht/Ho) = -5.0 \times 10^{-3} t + 0.0750$

Correlation Coefficient: -0.9914

Isotropic Permeability: $K = 4.4 \times 10^{-4}$ cm/sec



RECRA ENVIRONMENTAL, INC.

Well I.D. GW-4

Type of Test RISING HEAD

Project Title DONNER-HANNA COKE

Project No. 8C1301G

PERMEABILITY DATA PLOT

APPENDIX F

RECRA ENVIRONMENTAL, INC.
FIELD SAMPLING DATA

DONNER HANNA COKE
#915017

DONNER HANNA COKE [illegible]
PHASE II INVESTIGATION
SAMPLING DATA

SITE Donner Hanna Coke #915017 WELL # GW-1

TYPE OF SAMPLE Groundwater (X) Grab ( ) Composite ( ) Other

EVACUATION INFORMATION

EVACUATION: Date/Time 10-26-88/11:10 Method of Evac. Peristaltic Pump

Well Casing Diameter (inches) 2 Total Well Depth (ft) 16.09

Top of Casing to Water Level (ft) 7.22 Standing Water Volume (gal.) 1.45

Total Volume Evac. (Gallons) 28

SAMPLING INFORMATION

SAMPLING: Date/Time 10-26-88/12:20 Method of Sampling PVC Bailer
Peristaltic Pump

Top of Casing to Water Level Measurement (ft) 7.35

FIELD MEASUREMENT DATA

pH (Standard Units)

Date 10/26/88
Time 1225
Taken By R. Steiner
Unit-Brand Hydac
Model # 897-4909

Standards Used (x) 4
(x) 7
( ) 10

Temp °C 11
pH 6.40

Turbidity (NTU)

Date 10/26/88
Time 1225
Taken By R. Steiner
Unit-Brand HF Scientific
Model # DRT-15C

Calib. Standard 0.1

Temp °C 11
Turbidity 8.1

Specific Conductance (umhos/cm)

Date 10/26/88
Time 1225
Taken By R. Steiner
Unit-Brand Hydac
Model # 897-4909

Calib. Standard 1413
Temp °C 11
Specific Conductance 2600

Time	pH (standard units)	Specific Conductance (umhos/cm)	Turbidity (NTU)	Temperature (°C)
12:25	6.40	2,600	8.1	11

GENERAL INFORMATION

Weather Conditions at Time of Sampling Cloudy, 40°F

Sample Characteristics Clear, slight sulfur odor

Comments and Observations Evacuated and sampled by R. Steiner and J. Stachowski
Standing water volume calculated for well casing and screen

DONNER HANNA COKE (#915017)
PHASE II INVESTIGATION
SAMPLING DATA

SITE Donner Hanna Coke #915017 WELL # GW-2

TYPE OF SAMPLE Groundwater (X) Grab ( ) Composite ( ) Other

EVACUATION INFORMATION

EVACUATION: Date/Time 10-26-88/11:00 Method of Evac. Peristaltic Pump

Well Casing Diameter (inches) 2 Total Well Depth (ft) 16.90

Top of Casing to Water Level (ft) 4.23 Standing Water Volume (gal.) 2.07

Total Volume Evac. (Gallons) 39

SAMPLING INFORMATION

SAMPLING: Date/Time 10-26-88/14:30 Method of Sampling PVC Bailer / Peristaltic Pump

Top of Casing to Water Level Measurement (ft) 5.12

FIELD MEASUREMENT DATA

pH (Standard Units)

Date 10/26/88
Time 1450
Taken By R. Steiner
Unit-Brand Hydac
Model # 897-4909

Standards Used (x) 4 (x) 7 ( ) 10

Temp °C 11
pH 8.22

Turbidity (NTU)

Date 10/26/88
Time 1450
Taken By R. Steiner
Unit-Brand HF Scientific
Model # DRT-15C

Calib. Standard 0.1

Temp °C 11
Turbidity 8

Specific Conductance (umhos/cm)

Date 10/26/88
Time 1450
Taken By R. Steiner
Unit-Brand Hydac
Model # 897-4909

Calib. Standard 1413
Temp °C 11
Specific Conductance 2500

Time	pH (standard units)	Specific Conductance (umhos/cm)	Turbidity (NTU)	Temperature (°C)
14:50	8.22	2,500	8	11

GENERAL INFORMATION

Weather Conditions at Time of Sampling Cloudy, 40°F

Sample Characteristics Clear sample

Comments and Observations Evacuated and sampled by R. Steiner and J. Stachowski
Standing water volume calculated for well casing and scree

DONNER HANNA COKE (#915017)
PHASE II INVESTIGATION
SAMPLING DATA

SITE Donner Hanna Coke #915017 WELL # GW-3

TYPE OF SAMPLE Groundwater (X) Grab ( ) Composite ( ) Other

EVACUATION INFORMATION

EVACUATION: Date/Time 10-25-88/12:05 Method of Evac. Peristaltic Pump

Well Casing Diameter (inches) 2 Total Well Depth (ft) 16.54

Top of Casing to Water Level (ft) 6.08 Standing Water Volume (gal.) 1.71

Total Volume Evac. (Gallons) 33

SAMPLING INFORMATION

SAMPLING: Date/Time 10-25-88/17:00 Method of Sampling PVC Bailer
Peristaltic Pump

Top of Casing to Water Level Measurement (ft) 6.93

FIELD MEASUREMENT DATA

pH (Standard Units)

Date 10/25/88
Time 1720
Taken By R. Steiner
Unit-Brand Hydac
Model # 897-4909

Standards Used (x) 4
(x) 7
( ) 10
Temp °C 11
pH 4.08

Turbidity (NTU)

Date 10/25/88
Time 1720
Taken By R. Steiner
Unit-Brand HF Scientific
Model # DRT-15C

Calib. Standard 0.1
Temp °C 11
Turbidity 200

Specific Conductance (umhos/cm)

Date 10/25/88
Time 1720
Taken By R. Steiner
Unit-Brand Hydac
Model # 897-4909

Calib. Standard 1413
Temp °C 11
Specific Conductance >20,000

Time	pH (standard units)	Specific Conductance (umhos/cm)	Turbidity (NTU)	Temperature (°C)
17:20	4.08	>20,000	200	11

GENERAL INFORMATION

Weather Conditions at Time of Sampling Windy, Rain, 40°F

Sample Characteristics Orange tint, no fines settling out

Comments and Observations Evacuated and sampled by R. Steiner and J. Stachowski
Standing water volume calculated for well casing and screen

PHASE II INVESTIGATION
SAMPLING DATA

SITE Donner Hanna Coke #915017 WELL # GW-4

TYPE OF SAMPLE Groundwater (X) Grab ( ) Composite ( ) Other

EVACUATION INFORMATION

EVACUATION: Date/Time 10-25-88/11:40 Method of Evac. Peristaltic Pump

Well Casing Diameter (inches) 2 Total Well Depth (ft) 15.62

Top of Casing to Water Level (ft) 6.32 Standing Water Volume (gal.) 1.52

Total Volume Evac. (Gallons) 30

SAMPLING INFORMATION

SAMPLING: Date/Time 10-25-88/12:45 Method of Sampling PVC Bailer
Peristaltic Pump

Top of Casing to Water Level Measurement (ft) 6.75

FIELD MEASUREMENT DATA

pH (Standard Units)

Date 10/25/88
Time 1315
Taken By R. Steiner
Unit-Brand Hydac
Model # 897-4909

Standards Used (x) 4
(x) 7
( ) 10

Temp °C 8
pH 6.09

Turbidity (NTU)

Date 10/25/88
Time 1315
Taken By R. Steiner
Unit-Brand HF Scientific
Model # DRT-15C

Calib. Standard 0.1

Temp °C 8
Turbidity 48

Specific Conductance (umhos/cm)

Date 10/25/88
Time 1315
Taken By R. Steiner
Unit-Brand Hydac
Model # 897-4909

Calib. Standard 1413
Temp °C 8
Specific Conductance 9,000

Time	pH (standard units)	Specific Conductance (umhos/cm)	Turbidity (NTU)	Temperature (°C)
13:15	6.09	9,000	48	8

GENERAL INFORMATION

Weather Conditions at Time of Sampling Windy, Rain, 40°F

Sample Characteristics Clear Sample

Comments and Observations Evacuated and sampled by R. Steiner and J. Stachowski
Standing water volume calculated for well casing and screen

DONNER HANNA COKE (915017)

PHASE II INVESTIGATION
SAMPLING DATA

SITE Donner Hanna Coke #915017 WELL # CW-6A Alltift Realty

TYPE OF SAMPLE Groundwater (X) Grab ( ) Composite ( ) Other

EVACUATION INFORMATION

EVACUATION: Date/Time 10-27-88/10:35 Method of Evac. PVC Bailer

Well Casing Diameter (inches) 2 Total Well Depth (ft) 63.65

Top of Casing to Water Level (ft) 10.75 Standing Water Volume (gal.) 8.63

Total Volume Evac. (Gallons) 166

SAMPLING INFORMATION

SAMPLING: Date/Time 10-27-88/14:30 Method of Sampling PVC Bailer
Peristaltic Pump

Top of Casing to Water Level Measurement (ft) 11.00

FIELD MEASUREMENT DATA

pH (Standard Units)

Date 10/27/88
Time 1440
Taken By R. Steiner
Unit-Brand Hydac
Model # 897-4909

Standards Used (x) 4
(x) 7
( ) 10

Temp °C 11
pH 7.62

Turbidity (NTU)

Date 10/27/88
Time 1440
Taken By R. Steiner
Unit-Brand HF Scientific
Model # DRT-15C

Calib. Standard 0.1

Temp °C 11
Turbidity 65

Specific Conductance (umhos/cm)

Date 10/27/88
Time 1440
Taken By R. Steiner
Unit-Brand Hydac
Model # 897-4909

Calib. Standard 1413
Temp °C 11
Specific Conductance 1020

Time	pH (standard units)	Specific Conductance (umhos/cm)	Turbidity (NTU)	Temperature (°C)
14:40	7.62	1,020	65	11

GENERAL INFORMATION

Weather Conditions at Time of Sampling Cloudy, 44°F

Sample Characteristics Clear, slight sulfur odor

Comments and Observations Evacuated and sampled by R. Steiner and J. Stachowski
Standing water volume calculated for well casing and screen

1/SD10595.6

DONNER HANNA COKE (#915017)
PHASE II INVESTIGATION
SAMPLING DATA

SITE Donner Hanna Coke #915017 WELL # CW-6B Alltift Realty

TYPE OF SAMPLE Groundwater (X) Grab ( ) Composite ( ) Other ____

EVACUATION INFORMATION

EVACUATION: Date/Time 12-21-88/13:22 Method of Evac. Stainless Steel Bailer

Well Casing Diameter (inches) 2 Total Well Depth (ft) 22.64

Top of Casing to Water Level (ft) 2.70 Standing Water Volume (gal.) 3.25

Total Volume Evac. (Gallons) 6 to dryness

SAMPLING INFORMATION

SAMPLING: Date/Time 12-21-88/16:00 Method of Sampling Stainless Steel Bai

Top of Casing to Water Level Measurement (ft) 5.37

FIELD MEASUREMENT DATA

pH (Standard Units)

Date 12/21/88
Time 1640
Taken By J. Contino
Unit-Brand Hydac
Model # 897-4909

Standards Used ( ) 4 (x) 7 (x) 10

Temp °C 5
pH 6.23

Turbidity (NTU)

Date 12/21/88
Time 1640
Taken By J. Contino
Unit-Brand HF Scientific
Model # DRT-15C

Calib. Standard 0.1

Temp °C 5
Turbidity 50

Specific Conductance (umhos/cm)

Date 12/21/88
Time 1640
Taken By J. Contino
Unit-Brand Hydac
Model # 897-4909

Calib. Standard 1413
Temp °C 5
Specific Conductance 4,950

Time	pH (standard units)	Specific Conductance (umhos/cm)	Turbidity (NTU)	Temperature (°C)
16:40	6.23	4,950	50	5

GENERAL INFORMATION

Weather Conditions at Time of Sampling Windy, 30°F

Sample Characteristics Clear sample

Comments and Observations Evacuated and sampled by J. Contino and R. Bianchi
Standing water volume calculated for well casing and screer

DONNER HANNA COKE (915017)

PHASE II INVESTIGATION
SAMPLING DATA

SITE Donner Hanna Coke #915017 WELL # SW-1

TYPE OF SAMPLE Surface Water (X) Grab ( ) Composite ( ) Other

SAMPLING INFORMATION

SAMPLING: Date/Time 10-27-88/11:30 Method of Sampling Manual Grab

FIELD MEASUREMENT DATA

pH (Standard Units)

Date 10/27/88
Time 1135
Taken By R. Steiner
Unit-Brand Hydac
Model # 897-4909

Standards Used ( ) 4
(x) 7
(x) 10
Temp °C 5
pH 8.70

Specific Conductance (umhos/cm)

Date 10/27/88
Time 1135
Taken By R. Steiner
Unit-Brand Hydac
Model # 897-4909

Calib. Standard 1413
Temp °C 5
Specific Conductance 1130

Time	pH (standard units)	Specific Conductance (umhos/cm)	Turbidity (NTU)	Temperature (°C)
11:35	8.70	1130	N/A	5

GENERAL INFORMATION

Weather Conditions at Time of Sampling Cloudy, 45°F

Sample Characteristics Clear Sample

Comments and Observations Sampled by Robert Steiner

1/SD10595.8

DONNER HANNA COKE (#915017)
PHASE II INVESTIGATION
SAMPLING DATA

SITE Donner Hanna Coke #915017 WELL # SW-2

TYPE OF SAMPLE Surface Water (X) Grab ( ) Composite ( ) Other ____

SAMPLING INFORMATION

SAMPLING: Date/Time 10-26-88/16:30 Method of Sampling Stainless Steel Bomb Sampler

FIELD MEASUREMENT DATA

pH (Standard Units)

Date 10/26/88
Time 1640
Taken By R. Steiner
Unit-Brand Hydac
Model # 897-4909

Standards Used (x) 4
(x) 7
( ) 10
Temp °C 10
pH 6.80

Specific Conductance (umhos/cm)

Date 10/26/88
Time 1640
Taken By R. Steiner
Unit-Brand Hydac
Model # 897-4909

Calib.
Standard 1413
Temp °C 10
Specific Conductance 2600

Time	pH (standard units)	Specific Conductance (umhos/cm)	Turbidity (NTU)	Temperature (°C)
16:40	6.80	2600	N/A	10

GENERAL INFORMATION

Weather Conditions at Time of Sampling Cloudy, 40°F

Sample Characteristics Slightly turbid, tan liquid

Comments and Observations Sampled by Robert Steiner and James Stachowski from corrugated steel standpipe.

PHASE II INVESTIGATION
SAMPLING DATA

SITE Donner Hanna Coke #915017 WELL # SW-3

TYPE OF SAMPLE Surface Water (X) Grab ( ) Composite ( ) Other

SAMPLING INFORMATION

SAMPLING: Date/Time 10-27-88/15:30 Method of Sampling Manual Grab

FIELD MEASUREMENT DATA

pH (Standard Units)

Date 10/27/88
Time 1535
Taken By R. Steiner
Unit-Brand Hydac
Model # 897-4909

Standards Used (x) 4
(x) 7
( ) 10
Temp °C 8
pH 8.92

Specific Conductance (umhos/cm)

Date 10/27/88
Time 1535
Taken By R. Steiner
Unit-Brand Hydac
Model # 897-4909

Calib. Standard 1413
Temp °C 8
Specific Conductance 660

Time	pH (standard units)	Specific Conductance (umhos/cm)	Turbidity (NTU)	Temperature (°C)
15:35	8.92	660	N/A	8

GENERAL INFORMATION

Weather Conditions at Time of Sampling Cloudy, 40°F

Sample Characteristics Slightly turbid, tan liquid

Comments and Observations Sampled by James R. Stachowski

1/SD10595.10

DONNER HANNA COKE (#915017)
PHASE II INVESTIGATION
SAMPLING DATA

SITE Donner Hanna Coke #915017 WELL # SW-4

TYPE OF SAMPLE Surface Water (X) Grab ( ) Composite ( ) Other ______

SAMPLING INFORMATION

SAMPLING: Date/Time 10-27-88/15:50 Method of Sampling Manual Grab

FIELD MEASUREMENT DATA

pH (Standard Units)

Date 10/27/88
Time 1555
Taken By R. Steiner
Unit-Brand Hydac
Model # 897-4909

Standards Used (x) 4
(x) 7
( ) 10

Temp °C 10
pH 7.25

Specific Conductance (umhos/cm)

Date 10/27/88
Time 1555
Taken By R. Steiner
Unit-Brand Hydac
Model # 897-4909

Calib. Standard 1413
Temp °C 10
Specific Conductance 1180

Time	pH (standard units)	Specific Conductance (umhos/cm)	Turbidity (NTU)	Temperature (°C)
1555	7.25	1180	NA	10

GENERAL INFORMATION

Weather Conditions at Time of Sampling Cloudy, 40°F

Sample Characteristics Clear liquid with blue sheen on surface

Comments and Observations Sampled by James R. Stachowski

1/SD10595.11

DONNER HANNA COKE (#915017)
PHASE II INVESTIGATION
SAMPLING DATA

SITE Donner Hanna Coke #915017 WELL # SW-5

TYPE OF SAMPLE Surface Water (X) Grab ( ) Composite ( ) Other

SAMPLING INFORMATION

SAMPLING: Date/Time 10-27-88/12:10 Method of Sampling Manual Grab

FIELD MEASUREMENT DATA

pH (Standard Units)

Date 10/27/88
Time 1215
Taken By R. Steiner
Unit-Brand Hydac
Model # 897-4909

Standards Used (x) 4
(x) 7
( ) 10

Temp °C 6
pH 9.78

Specific Conductance (umhos/cm)

Date 10/27/88
Time 1215
Taken By R. Steiner
Unit-Brand Hydac
Model # 897-4909

Calib. Standard 1413
Temp °C 6
Specific Conductance 1150

Time	pH (standard units)	Specific Conductance (umhos/cm)	Turbidity (NTU)	Temperature (°C)
12:15	9.78	1150	NA	6

GENERAL INFORMATION

Weather Conditions at Time of Sampling Cloudy, 45°F

Sample Characteristics Clear liquid

Comments and Observations Sampled by Robert Steiner

1/SD10595.12

DONNER HANNA COKE (#915017)
PHASE II INVESTIGATION
SAMPLING DATA

SITE Donner Hanna Coke #915017 WELL # SW-6

TYPE OF SAMPLE Surface Water (X) Grab ( ) Composite ( ) Other

SAMPLING INFORMATION

SAMPLING: Date/Time 10-27-88/12:30 Method of Sampling Manual Grab

FIELD MEASUREMENT DATA

pH (Standard Units)

Date 10/27/88
Time 1240
Taken By R. Steiner
Unit-Brand Hydac
Model # 897-4909

Standards Used (x) 4
(x) 7
( ) 10

Temp °C 6
pH 6.80

Specific Conductance (umhos/cm)

Date 10/27/88
Time 1240
Taken By R. Steiner
Unit-Brand Hydac
Model # 897-4909

Calib. Standard 1413
Temp °C 6
Specific Conductance 1360

Time	pH (standard units)	Specific Conductance (umhos/cm)	Turbidity (NTU)	Temperature (°C)
12:40	6.80	1360	NA	6

GENERAL INFORMATION

Weather Conditions at Time of Sampling Cloudy, 45°F

Sample Characteristics Clear liquid

Comments and Observations Sampled by Robert Steiner

PHASE II INVESTIGATION
SAMPLING DATA

SITE Donner Hanna Coke #915017 WELL # L-1

TYPE OF SAMPLE Leachate (X) Grab ( ) Composite ( ) Other

SAMPLING INFORMATION

SAMPLING: Date/Time 10-27-88/16:25 Method of Sampling Manual Grab Peristaltic

FIELD MEASUREMENT DATA

pH (Standard Units)

Date 10/27/88
Time 1630
Taken By R. Steiner
Unit-Brand Hydac
Model # 897-4909

Standards Used
( ) 4
(x) 7
(x) 10

Temp °C 10
pH 13.00

Specific Conductance (umhos/cm)

Date 10/27/88
Time 1630
Taken By R. Steiner
Unit-Brand Hydac
Model # 897-4909

Calib. Standard 1413
Temp °C 10
Specific Conductance 9,000

Time	pH (standard units)	Specific Conductance (umhos/cm)	Turbidity (NTU)	Temperature (°C)
16:30	13.00	9,000	NA	10

GENERAL INFORMATION

Weather Conditions at Time of Sampling Cloudy, 40°F

Sample Characteristics Yellow-Green liquid with white sheen on surface

Comments and Observations Sampled by Robert Steiner and James R. Stachowski

1/SD10595.14

DONNER HANNA COKE (#915017)
PHASE II INVESTIGATION
SAMPLING DATA

SITE Donner Hanna Coke #915017 WELL # SED-1

TYPE OF SAMPLE Sediment (X) Grab ( ) Composite ( ) Other

SAMPLING INFORMATION

SAMPLING: Date/Time 10-27-88/11:45 Method of Sampling Hand Trowel

FIELD MEASUREMENT DATA

Time	pH (standard units)	Specific Conductance (umhos/cm)	Temperature (°C)
N/A	N/A	N/A	N/A

GENERAL INFORMATION

Weather Conditions at Time of Sampling Cloudy, 45°F

Sample Characteristics Black, saturated sediment, tar odor

Comments and Observations Sampled by Robert Steiner

1/SD10595.15

DONNER HANNA COKE (#915017)
PHASE II INVESTIGATION
SAMPLING DATA

SITE Donner Hanna Coke #915017 WELL # SED-2

TYPE OF SAMPLE Sediment (X) Grab ( ) Composite ( ) Other

SAMPLING INFORMATION

SAMPLING: Date/Time 10-26-88/16:45 Method of Sampling Ponar Dredge

FIELD MEASUREMENT DATA

Time	pH (standard units)	Specific Conductance (umhos/cm)	Temperature (°C)
N/A	N/A	N/A	N/A

GENERAL INFORMATION

Weather Conditions at Time of Sampling Cloudy, 40°F

Sample Characteristics Black, saturated sediment

Comments and Observations Sampled by Robert Steiner and James R. Stachowski from corrugated steel standpipe

1/SD10595.16

DONNER HANNA COKE (#915017)
PHASE II INVESTIGATION
SAMPLING DATA

SITE Donner Hanna Coke #915017 WELL # SED-3

TYPE OF SAMPLE Sediment (X) Grab ( ) Composite ( ) Other

SAMPLING INFORMATION

SAMPLING: Date/Time 10-27-88/15:40 Method of Sampling Hand Trowel

FIELD MEASUREMENT DATA

Time	pH (standard units)	Specific Conductance (umhos/cm)	Temperature (°C)
N/A	N/A	N/A	N/A

GENERAL INFORMATION

Weather Conditions at Time of Sampling Cloudy, 40°F

Sample Characteristics Brown, saturated sediment

Comments and Observations Sampled by Robert Steiner

1/SD10595.17

DONNER HANNA COKE (#915017)
PHASE II INVESTIGATION
SAMPLING DATA

SITE Donner Hanna Coke #915017 WELL # SED-4

TYPE OF SAMPLE Sediment (X) Grab ( ) Composite ( ) Other

SAMPLING INFORMATION

SAMPLING: Date/Time 10-27-88/15:55 Method of Sampling Hand Trowel

FIELD MEASUREMENT DATA

Time	pH (standard units)	Specific Conductance (umhos/cm)	Temperature (°C)
N/A	N/A	N/A	N/A

GENERAL INFORMATION

Weather Conditions at Time of Sampling Cloudy, 40°F

Sample Characteristics Brown-black, saturated sediment

Comments and Observations Sampled by Robert Steiner

1/SD10595.18

DONNER HANNA COKE (#915017)
PHASE II INVESTIGATION
SAMPLING DATA

SITE Donner Hanna Coke #915017 WELL # SED-5

TYPE OF SAMPLE Sediment (X) Grab ( ) Composite ( ) Other

SAMPLING INFORMATION

SAMPLING: Date/Time 10-27-88/12:20 Method of Sampling Hand Trowel

FIELD MEASUREMENT DATA

Time	pH (standard units)	Specific Conductance (umhos/cm)	Temperature (°C)
N/A	N/A	N/A	N/A

GENERAL INFORMATION

Weather Conditions at Time of Sampling Cloudy, 45°F

Sample Characteristics Black, saturated sediment, tar odor

Comments and Observations Sampled by Robert Steiner

1/SD10595.19

DONNER HANNA COKE (#915017)
PHASE II INVESTIGATION
SAMPLING DATA

SITE Donner Hanna Coke #915017 WELL # SED-6

TYPE OF SAMPLE Sediment (X) Grab ( ) Composite ( ) Other

SAMPLING INFORMATION

SAMPLING: Date/Time 10-27-88/12:45 Method of Sampling Hand Trowel

FIELD MEASUREMENT DATA

Time	pH (standard units)	Specific Conductance (umhos/cm)	Temperature (°C)
N/A	N/A	N/A	N/A

GENERAL INFORMATION

Weather Conditions at Time of Sampling Cloudy, 45°F

Sample Characteristics Brown-black, saturated sediment

Comments and Observations Sampled by Robert Steiner

1/SD10595.20

DONNER HANNA COKE (#915017)
PHASE II INVESTIGATION
SAMPLING DATA

SITE Donner Hanna Coke #915017 WELL # Tar-1

TYPE OF SAMPLE Tar seep (X) Grab ( ) Composite ( ) Other

SAMPLING INFORMATION

SAMPLING: Date/Time 10-27-88/16:40 Method of Sampling Hand Trowel

FIELD MEASUREMENT DATA

Time	pH (standard units)	Specific Conductance (umhos/cm)	Temperature (°C)
N/A	N/A	N/A	N/A

GENERAL INFORMATION

Weather Conditions at Time of Sampling Cloudy, 40°F

Sample Characteristics Stiff, black tar

Comments and Observations Sampled by Robert Steiner

1/SD10595.21

DONNER HANNA COKE (#915017)
PHASE II INVESTIGATION
SAMPLING DATA

SITE Donner Hanna Coke #915017 WELL # Tar-2

TYPE OF SAMPLE Tar seep (X) Grab ( ) Composite ( ) Other

SAMPLING INFORMATION

SAMPLING: Date/Time 10-27-88/16:55 Method of Sampling Hand Trowel

FIELD MEASUREMENT DATA

Time	pH (standard units)	Specific Conductance (umhos/cm)	Temperature (°C)
N/A	N/A	N/A	N/A

GENERAL INFORMATION

Weather Conditions at Time of Sampling Cloudy, 40°F

Sample Characteristics Stiff, black tar

Comments and Observations Sampled by Robert Steiner

Geologic information.--The U.S. Geological Survey drilled four test borings in August 1982. Locations are shown in fig. A-19; the geologic logs are as follows:

Boring no.	Depth (ft)	Description
1	0 - 4.0	Black coke, fill material.
	4.0 - 5.0	Clay, dark olive green, wet.
	5.0 - 10.0	Clay, tan to yellowish, dry, tight, getting wet at about 8 ft and sandy. SAMPLE: 5 ft.
2	0 - 3.5	Topsoil and rubble, debris.
	3.5 - 6.0	Clay, sandy, gray-green, "soupy", becomes drier and tighter at 4.0. SAMPLE: 3.5 ft.
3	0 - 2.5	Topsoil and coke debris, black.
	2.5 - 5.0	Asphaltic-looking, watery material with gravel. Volatile sensing meter reading of 20 (2.5 background) Meter setting of 9 - calibrated for benzene. smells less asphaltic than in first hole.
	5.0 - 6.0	Clay, gray, green. SAMPLE: 3.5 ft.
4	0 - 3.0	Coke bed material, bricks, wood, etc.
	3.0 - 5.0	Sand, black, very coarse, damp.
	5.0 - 6.0	Soupy, black material. Sample would not burn.
	6.0 - 6.5	Clay, greenish, wetter than in other holes. SAMPLE: 5.5 ft.

Hydrologic information.--The test borings indicate a zone of ground water at 4 to 6 ft below land surface. This ground-water zone may be perched, as suggested by the second well log.

Chemical information.--The U.S. Geological Survey collected a substrate sample from each test boring for cyanide, iron, and organic compound analyses; results are given in table A-21. The samples revealed no cyanide but contained 21 organic priority pollutants, 18 organic nonpriority pollutants, and some unknown hydrocarbons.

Electromagnetic survey information.--The U.S. Geological Survey conducted an electromagnetic survey in November 1982; results are shown in figure A-20. The line both begins and ends in a wetland. The conductivity values recorded within the wetland, as well as those outside the wetland, show high readings of conductivity that possibly indicate buried waste (fig. A-20). The pattern of readings around the 420-ft mark would normally be considered evidence of buried metal but here may reflect remnants of a large coke pile that once occupied the area (fig. A-20). (Coke, a form of carbon, has a conductivity similar to that of metal.)

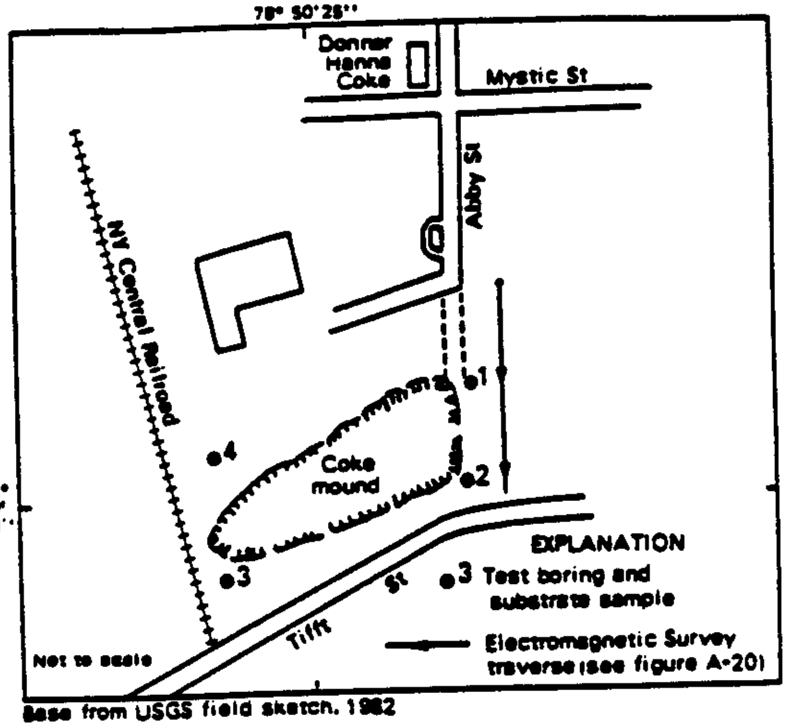


Figure A-19. Location of sampling holes and electromagnetic-conduc survey lines at Donner Hanna Coke, site 217, Buffalc

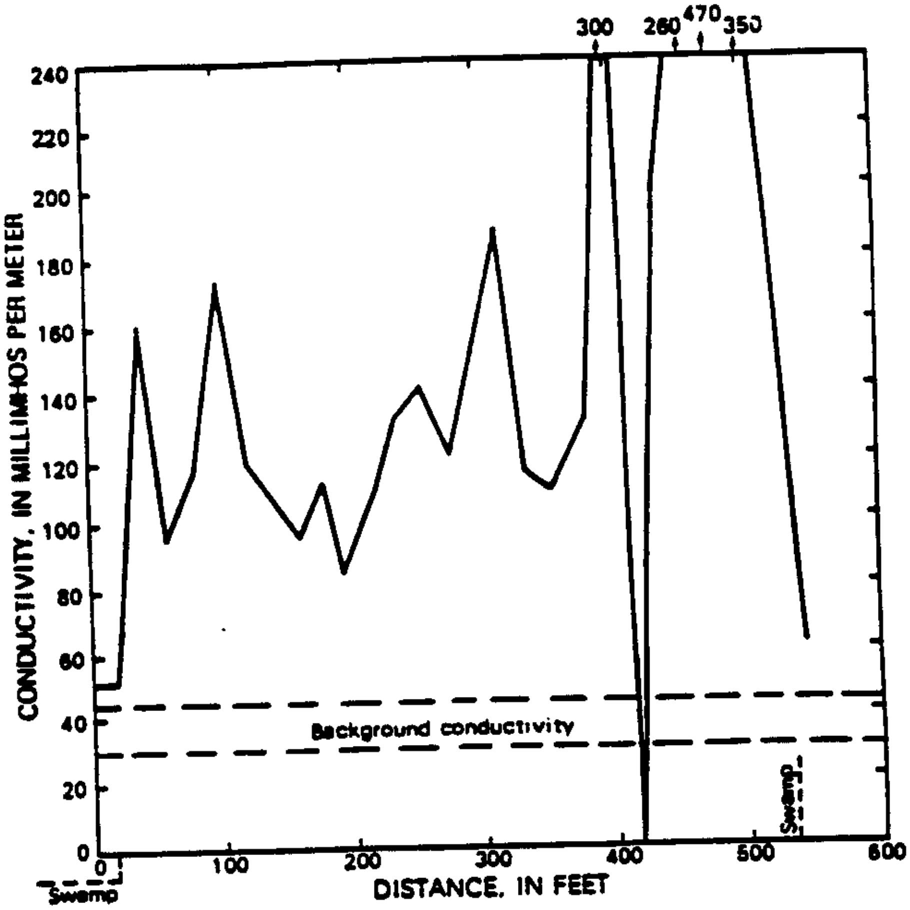


Figure A-20. Results of electromagnetic-conductivity survey c Donner Hanna Coke, site 217, Buffalo. (Location is shown in fig. A-19.)

Table A-21.—Analyses of substrate samples from Donner Hanna Coke, site 217, Buffalo, N.Y.

[Locations shown in fig. A-19. Concentrations are in µg/kg; dashes indicate that constituent or compound was not found, LT indicates it was found but below the quantifiable detection limit.]

First sampling (08-05-82)	Sample number and depth below land surface (ft) 1 (5.0)	2 (3.5)	3 (3.5)	4 (5.5)
Inorganic constituents				
Cyanide	—	—	—	—
Iron	8,100,000	5,000,000	5,200,000	2,400,000

Second sampling (05-18-83)	Sample number (depths are same as in first sampling) 1A	2A	3A	4A
Inorganic constituents				
Molecular sulfur[1]	27,000	680	—	—
Organic compounds				
Priority pollutants				
Benzene	14.0	18.5	37.8	51.8
Ethylbenzene	—	—	3.8	—
Toluene	2.5	—	21.6	—
2,4-Dimethylphenol	—	*	—	—
Phenol	—	*	—	—
Acenaphthene	—	*	*	*
Fluoranthene	*	*	*	*
1,2-Dichlorobenzene	—	*	—	—
Naphthalene	*	*	*	*
Benzo(a)anthracene	—	*	*	*
Benzo(a)pyrene	—	*	*	*
Benzo(b)fluoranthene and benzo(k)fluoranthene	*	*	*	*

[1] Tentative identification based on comparison with the National Bureau of Standards (NBS) library. No external standard was available. Concentration reported is semiquantitative and is based only on an internal standard. GC/MS spectra were examined and interpreted by GC/MS analysts.

* Compounds detected but not quantified--Holding time exceeded before GC/MS acid- and base-neutral extractable compounds were extracted.

Table A-21.—Analyses of substrate samples from Donner Hanna Coke, si
Buffalo, N.Y. (continued)
[Locations shown in fig. A-19. Concentrations are in µg/k
indicate that constituent or compound was not found, LT in
it was found but below the quantifiable detection limit.

Second sampling (continued)	Sample number (depths are same as first s		
	1A	2A	3A
Organic Compounds (continued)			
Priority pollutants (continued)			
Chrysene	--	*	*
Acenaphthylene	--	*	*
Anthracene	--	*	--
Benzo(ghi)perylene	--	*	*
Fluorene	--	*	*
Phenanthrene	--	*	*
Dibenzo(a,h)anthracene	--	*	--
Indeno(1,2,3-cd)pyrene	--	*	*
Pyrene	*	*	*
Nonpriority pollutants			
Acetone	399	346	--
Carbon disulfide	--	--	83.7
2-Hexanone	--	--	41.5
O-xylene	3.7	5.7	69.8
2-Methylphenol	--	*	--
4-Methylphenol	--	*	--
Dibenzofuran	--	*	*
2-Methylnaphthalene	--	*	*
9H-Carbazole[1]	--	*	--
3-Methylphenanthrene[1]	--	*	--
Hexadecanoic acid[1]	--	*	--
1-Methylpyrene[1]	--	*	--
Trichlorofluoromethane[1]	--	--	*
Methylcyclohexane[1]	--	--	*
4-Methyl-2-pentanone[1]	--	--	*
2,6,6-Trimethyl-bicyclo(3.1.1)-hepten-2-ene[1]	--	--	*
1,3- and 1,4-Dimethyl-benzene[1]	--	--	*
1-Ethenyl-2-methylbenzene[1]	--	--	*
Unknown hydrocarbons[1]	--	*	*

REF. 27✓

(34)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION II

In the Matter of DONNER HANNA COKE JOINT VENTURE, NYD002110971 Respondent. Proceeding Under Section 3008 of the Solid Waste Disposal Act, as amended.	COMPLAINT, COMPLIANCE ORDER, AND NOTICE OF OPPORTUNITY FOR HEARING Docket No. II RCRA-81-0202

COMPLAINT

This administrative proceeding is instituted pursuant to Section 3008 of the Solid Waste Disposal Act, as amended, 42 U.S.C. §6901 et seq. ("the Act"). [Note: Among the statutes amending the Act is the Resource Conservation and Recovery Act, 90 Stat. 2795, P.L. 94-580 (1976).]

The Director of the Enforcement Division of the U.S. Environmental Protection Agency ("EPA"), Region II, Complainant in this proceeding, has determined that Respondent, Donner Hanna Coke Joint Venture, has violated Section 3004 of the Act, 42 U.S.C. §6924, and the regulations promulgated thereunder, as hereinafter specified:

1. Respondent owns and operates a facility located at Abby and Mystic Streets, Buffalo, New York ("the facility").

2. By notification dated August 18, 1980, Respondent informed EPA that it conducts activities at the facility involving "hazardous waste," as that term is defined in Section 1004(5) of the Act, 42 U.S.C. §6904(5) and in 40 CFR §261.3. By application dated November 13, 1980, Respondent requested a permit to conduct its hazardous waste activities.

3. On or about December 4, 1980, an inspection of the facility conducted by duly-designated employees of EPA pursuant to Section 30 Act, 42 U.S.C. §6927. Said inspection was conducted for the purpose (enforcing the EPA regulations for hazardous waste management, 40 CFR ' 260 through 265 (published in 45 Fed. Reg. 33063 et seq., May 19, 19 promulgated pursuant to Subtitle C of the Act, 42 U.S.C. §6921 et seq.

4. The above-referenced inspection revealed that Respondent's ... was being used for the generation and storage of hazardous waste.

5. 40 CFR Part 265 sets interim status standards for treatment, and disposal facilities for hazardous wastes. These interim status apply until final administrative disposition of permit applications by the owners of these facilities has been made. No such final dispos has been made with respect to Respondent's facility, and thus the sta Part 265 apply to that facility.

6. 40 CFR §265.13 requires that the owner or operator of any t storage or disposal facility for hazardous waste must develop and fo... written waste analysis plan which describes the procedures he will ca to obtain detailed chemical and physical analysis of representative samples. No such written waste analysis plan was available on the d the above-referenced inspection. Therefore, Respondent is in violatic 40 CFR §265.13(b).

7. 40 CFR §265.15 requires that the owner or operator of any tr storage or disposal facility for hazardous waste must develop and fc written schedule for inspections of certain specified portions of its No written inspection schedule had been developed by Respondent by the the above-referenced inspection. Therefore, Respondent is in violat 40 CFR §265.15(b).

8. 40 CFR §265.50 requires that the owner or operator of any t storage or disposal facility for hazardous waste must have a continger for his facility that is designed to minimize hazards to human health environment. Respondent had no such contingency plan at the time of above-referenced inspection, thus violating 40 CFR §265.50.

PROPOSED CIVIL PENALTY

In view of the above-cited violations, and pursuant to the authority of Section 3008 of the Act, Complainant herewith proposes the assessment of a civil penalty in the amount of six-thousand dollars ($6,000.00) against the Donner Hanna Coke Joint Venture for the violations specified hereinabove.

COMPLIANCE ORDER

Based upon the foregoing, and pursuant to the authority of Section 3008 of the Act, Complainant herewith issues the following Compliance Order against Respondent herein:

1. By no later than April 1, 1981, Respondent shall formulate waste analysis, inspection, and contingency plans, as are required by the provisions of 40 CFR Part 265. Copies of said plans shall be submitted to Richard A. Baker, Chief, Permits Administration Branch, Planning and Management Division, EPA, Region II, 26 Federal Plaza, New York, New York 10278 within five days (5) days of their completion.

2. By no later than April 1, 1981, Respondent shall come into compliance with all other provisions of 40 CFR Parts 261 and 265. Special attention shall be paid to the provisions covering ignitable wastes, since such wastes have been identified at Respondent's facility.

NOTICE OF LIABILITY FOR ADDITIONAL CIVIL PENALTIES

Pursuant to the terms of Section 3008(a)(3) of the Act, a violator failing to take corrective action within the time specified in a Final Compliance Order is liable for a civil penalty of up to $25,000 for each day of continued noncompliance. Such continued noncompliance may also result in suspension or revocation of any permits issued to the violator pursuant to the authority of the Act.

NOTICE OF OPPORTUNITY TO REQUEST A HEARING

As provided in Section 3008(b) of the Act, and in accordance w[illegible] Consolidated Rules of Practices Governing the Administrative Assess[illegible] Civil Penalties and the Revocation or Suspension of Permits, 40 CFR P[illegible] 45 Fed. Reg. 24360 (April 9, 1980) (a copy of which accompanies this Compliance Order, and Notice of Opportunity for Hearing), you have [illegible] to request a hearing to contest any material fact set out in the Com[illegible] or to contest the appropriateness of the proposed penalty, or the ter[illegible] Compliance Order. (Consistent with the provisions of Section 3008([illegible] Act, the hearing provided will be noticed and open to the general p[illegible] should you specifically request such a public hearing. In the absenc[illegible] such a specific request, however, public notice of a schedule heari[illegible] be published.)

To avoid being found in default, and having the proposed civil assessed and the Compliance Order confirmed without further proceedi[illegible] must file a written answer to the Complaint, which must include a req[illegible] a hearing. Your answer (if any) must be addressed to the Regional [illegible] Clerk, U.S. Environmental Protection Agency, Region II, 26 Federal [illegible] York, New York 10278, and must be filed within thirty (30) days of yo[illegible] of this Complaint, Compliance Order, and Notice of Opportunity for [illegible] Your answer must clearly and directly admit, deny or explain each o[illegible] tual allegations contained in the Complaint, and should contain (1) [illegible] statement of the facts which constitute the grounds of your defense concise statement of the contentions which you intend to place in i[illegible] hearing.

The denial of any material fact, or the raising of any affirma[illegible] will be construed as a request for a hearing. Failure to deny any of tual allegations in the Complaint will be deemed to constitute an a[illegible] the undenied allegations. Your failure to file a written answer wi[illegible] (30) days of receipt of this instrument will be deemed to represent [illegible] admission of all facts alleged in the Complaint, and a waiver of yo[illegible] a formal hearing to contest any of the facts alleged by the Complai[illegible] default will result in the final issuance of the Compliance Order, ar[illegible] ment of the proposed civil penalty, without further proceedings.

INFORMAL SETTLEMENT CONFERENCE

Whether or not you request a hearing, the EPA encourages settlem[illegible] this proceeding consistent with the provisions of the Act. At an i[illegible] conference with a representative of the Complainant you may comment charges and provide whatever additional information you feel is rele[illegible] the disposition of this matter, including any actions you have take[illegible] correct the violation, and any other special circumstances you care [illegible]

The Complainant has the authority to modify the amount of the proposed penalty, where appropriate, to reflect any settlement agreement reached with you in such conference, or to recommend that any or all of the charges be dismissed, if the circumstances so warrant. Your request for an informal conference and other questions that you may have regarding this Complaint, Compliance Order, and Notice of Opportunity for Hearing should be directed to William J. Friedman, Esq., General Enforcement Branch, U.S. Environmental Protection Agency, Region II, 26 Federal Plaza, New York, New York 10278, telephone (212) 264-4940.

Please note that a request for an informal settlement conference does not extend the thirty (30) day period during which a written answer and request for a hearing must be submitted. The informal conference procedure may be pursued as an alternative to or simultaneously with the adjudicatory hearing procedure. However, no penalty reduction will be made simply because such a conference is held. Any settlement which may be reached as a result of such conference will be embodied in a written Consent Agreement and Final Compliance Order to be issued by the Regional Administrator of EPA, Region II, and signed by you or your representative. Your signing of such Consent Agreement would constitute a waiver of your right to request a hearing on any matter stipulated to therein.

RESOLUTION OF THIS PROCEEDING WITHOUT HEARING OR CONFERENCE

Instead of filing an answer requesting a hearing or requesting an informal settlement conference, you may choose to comply with the terms of the Complianc Order, and to pay the proposed penalty. In that case, payment should be made b sending to the Regional Hearing Clerk, EPA, Region II, a cashier's or certified check in the amount of the penalty specified in the "Proposed Civil Penalty" section of this instrument. Your check must be made payable to the United States of America.

DATED: New York, New York

February 10, 1981

COMPLAINANT:

/s/ JMS

Julio Morales-Sanchez
Director
Enforcement Division
U.S. Environmental Protection Agency
Region II
26 Federal Plaza
New York, New York 10278

TO: Mr. Ray Cardone
Mearl Corporation
1057 Lower South Street
Peekskill, New York 10566

cc: Laurens M. Vernon
Compliance Counsel
New York State Department of
Environmental Conservation

bcc: Edward A. Kurent,
John Josephs, (2
Richard A. Baker,
Lorraine Azzinaro,

CERTIFICATE OF SERVICE

This is to certify that on the 11th day of February, 19
a true and correct copy of the foregoing Complaint by certified ma
J. J. Repko, General Manager, Donner Hanna Coke Joint Venture, Ab
Mystic Streets, Buffalo, New York. I handcarried the original fo
Complaint to the Regional Hearing Clerk.

Antoinette M. Tede

ANTOINETTE M. TEDESCO
Clerk-Stenographer

NYD002110771 REF. 28

file

March 25, 1983

Chief, Solid Waste Branch
Air and Waste Management Division
U. S. Environmental Protection Agency,
Region II
26 Federal Plaza
New York, New York 10278

Attention: John Josephs

Subject: Action per Consent Order and Agreement

Re: Donner-Hanna Coke Joint Venture
Docket No. II RCRA-81-0202

Gentlemen:

9H
HWDMS
4/11/83

In response to the consent order signed by Donner-Hanna Coke Joint Venture February 3, 1983, Donner-Hanna has begun to eliminate the pile of Coal/Tar Sludge Mixture by an alternate means than that specified in the order. Mr. John Josephs was consulted by phone March 11, 1983 prior to the initial shipment of material offsite.

The result of this project will be the elimination of the pile. The expected cost of the alternate means of removing the pile will not exceed $50,000.

The following information describes the offsite recycling solution for the pile located at Donner-Hanna Coke Joint Venture:

1. The 4,000 ton mixture of tar sludge and coal will be recycled to the coke oven process in the same manner that would be used at Donner-Hanna; i.e., mixing with coal, crushing and charging to the coke oven as a raw material.

2. The mixture will be held in bins during mixing with the raw coal and Tonawanda Coke Corporation will make every effort to minimize contact of the mixture with the ground.

3. The mixture will be transported with a Hazardous Waste Manifest, which will be properly signed, receipted for and returned to the generator. Copies of all completed manifests will be sent to New York State DEC.

4. A. Receiving Facility:

Tonawanda Coke Corporation
River Road
Tonawanda, New York 14150
Contact: J. D. Crane 716-876-6222

B. Transporter:

Contractors Trucking Service
213 Gates Street
Buffalo, New York 14212
Phone Number: 716-668-5789

C. Generator:

Donner-Hanna Coke Joint Venture
Mystic and Abbey Streets
Buffalo, New York 14220
Contact: E. J. Hartman 716-822-1600

5. The recycling of the Coal/Tar Sludge Mixture in the mann- described will not negatively affect the deadline of January 1, 1985 for elimination of the pile.

Thank you for your assistance. Please direct any questions to thi office (216-622-5916).

David M. Gubanc

D. M. Gubanc

for Donner-Hanna Coke Joint Vent:
c/o Republic Steel Corporation
Post Office Box 6778, Room 820R
Cleveland, Ohio 44101

DMG/fh

cc: J. D. Crane, Tonawanda Coke Corp.
E. J. Hartman, Donner-Hanna
D. A. Calland, Thorp, Reed & Armstrong, Washington, DC
P. Radigan, National Steel Corp., Pittsburgh, PA

APPENDIX G

REFERENCES

DONNER-HANNA COKE

#915017

REFERENCES (continued)

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22. Kevin D. Mahar, Environmental Control Manager, Donner-Hanna Coke Corporation; letter to David A. Dooley, Interagency Task Force on Hazardous Wastes; December 6, 1978.

23. Kevin D. Mahar, Environmental Control Manager, Donner-Hanna Coke Corporation; letter to Donald McKenzie, Senior Sanitary Engineer, NYSDEC; November 19, 1981.

24. Jonathan Josephs, Chemical Engineer, USEPA; letter to Kevin D. Mahar, Environmental Control Manager, Donner-Hanna Coke Joint Venture; January 12, 1981.

25. Don Campbell, P.E., County of Erie Department of Environment and Planning Division of Environmental Control; memorandum to Lawrence G. Clare, P.E.; June 10, 1981.

26. USEPA, Preliminary Evaluation of Chemical Migration to Groundwater and the Niagara River From Selected Waste - Disposal Sites; March 1985.

27. USEPA; Compliant, Compliance Order, and Notice of Opportunity for Hearing, Docket No. II RCRA-81-0202, February 10, 1981.

28. David M. Gubanc, Donner-Hanna Coke Joint Venture c/o Republic Steel Corporation, letter to John Josephs, USPEA Region II, March 25, 1983.

1/R10595

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1. Alltift Realty Phase II Investigation, Prepared for New York State Department of Environmental Conservation; By Engineering-Science ir ciation with Dames and Moore, September 1986. 1990 Inactive Hazar Waste Disposal Report.

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4. Dangerous Properties of Industrial Materials; Sax, N., Irving; Sixth Edition.

5. Ronald D. Koczaja, County of Erie Department of Environment and Plar Division of Environmental Control; Memorandum to Donald Tamol; Augus 1978.

6. Ed Gillipan, Dames and Moore; telephone conversation with Ron Koczaj County Department of Health; September 20, 1985.

7. The New York State Water Resources Commission; Erie-Niagara Basin Ground-Water Resources; 1968.

8. Robert E. Steiner, Recra Environmental, Inc.; letter to Michael Mar Buffalo Director of Water; May 4, 1989.

9. USGS 7.5 minute Topographic Map of the Buffalo SE Quadrangle, 1965.

10. U.S. Department of Commerce; Rainfall Frequency Atlas of the Unite Technical Paper No. 40; 1963.

11. New York State Department of Transportation; Freshwater Wetlands M Buffalo Se Quadrangle; 1975.

12. Dames and Moore; telephone conversation with Jim Sneider, NYSDEC Re Fish and Wildlife; September 18, 1985.

13. New York State Department of Health, Division of Environmental Prot Bureau of Public Water Supply Protection; New York State Atlas of Water System Sources; 1982.

14. California Department of Health; Hazardous Waste Management Law Regulations and Guidelines for the Handling of Hazardous Waste; Fe 1975.

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FINAL REPORT

REF. 1

ENGINEERING INVESTIGATIONS AT INACTIVE HAZARDOUS WASTE SITES IN THE STATE OF NEW YORK

PHASE II INVESTIGATIONS

VOLUME I

Alltift Realty
City of Buffalo

Site No. 915054
Erie County

Prepared for:

New York State Department of Environmental Conservation

50 Wolf Road, Albany, New York 12233-0001
Henry G. Williams, *Commissioner*

Division of Solid and Hazardous Waste
Norman H. Nosenchuck, P.E., *Director*

By:

ENGINEERING-SCIENCE
In Association With
DAMES & MOORE

SEPTEMBER 1986

SECTION I
EXECUTIVE SUMMARY

SITE BACKGROUND

The Alltift Realty site (Site I.D. 915054) is located ir industrial area in the southern portion of the City of Buffalo, Er County, New York (see Figures I-1 and I-2). The landfill is curre owned and operated by Alltift Realty Company of New York. The site r been used as a landfill since the 1930's (RECRA, 1978).

The current landfill is located above a larger chemical landf which was used to dispose of metal sludges, naphthalene, monochloro zene, dye, oil sludges, and phenolic compounds during the early 196 (Roetzer, 1968; Rayer, 1978). Allied Chemical Company's Buffalo Plant was the only industry that was known to have disposed of wastes this site during its use as a chemical landfill. Since the Al Company bought the property in 1975, the site has been used for disposal of solid wastes including shredder waste from an autom manufacturer, fly ash, sand wastes, and demolition debris (RECRA, 19 The quantity of solid wastes disposed of at the site was estimated 40,000 to 60,000 cubic yards/year (RECRA, 1980).

PHASE II INVESTIGATION

The Phase II investigation was conducted to gather suffi information to calculate the final Hazard Ranking System (HRS) score to formulate a conceptual evaluation of remedial alternatives fo site. The site investigation included electrical resistivity and netometer surveys to provide subsurface stratigraphic data and to in the placement of the monitoring wells. In addition, sediment, face water, air and groundwater sampling and analysis was conducted to define the extent of potential contamination at the Alltift Realty site.

The geological stratigraphy at this site is complicated by a layered clay/silt aquitard that separates the groundwater into two aquifers under most of the site. It is believed that these aquifers are hydraulically connected at the southern end of the site. In general, the stratigraphy can be summarized as follows:

- Fill
- Silt Fine Sand and Clay
- Layered Clay and Silt
- Till
- Shale
- Limestone Bedrock

SITE ASSESSMENT

Sediment, air, surface water, and groundwater samples have been collected and analyzed as part of the Phase II investigation, and several other studies (RECRA and Wehran, 1978; RECRA, 1982). These studies have revealed contamination of the upper aquifer (iron, benzene, napthalene, arsenic, chromium, and mercury) and the lower aquifer (benzene, xylene, toluene, and iron).

Contamination was also found in the surface water and sediment samples collected from the pond to the south and the swamp to the west of the site. The contaminants found at concentrations in excess of the New York State Department of Environmental Conservation (NYSDEC) surface water quality standards were aluminum, antimony, chromium, iron, magnesium, manganese, zinc, copper, and phenols. The sediment samples were contaminated with benzene compounds, xylene, toluene, acenaphthene, and 3,3 dichlorobenzidine, in addition to the heavy metals present in the surface water. It is unknown if the source of the surface water and sediment contamination is from the Alltift Realty landfill or the Ramco Steel Company, who had a permit to discharge steel pickling liquor into

the pond at the southern end of the Alltift Realty site (Biss[illegible]
Merrill Associates, 1978).

A survey of the air quality with an HNu meter revealed no org[illegible] contamination of the air at the site.

HAZARD RANKING SYSTEM SCORE

The results of this investigation and previous studies were used [illegible] calculate the Hazard Ranking System (HRS) score. Three scores [illegible] calculated for the site. The S_M score reflects the potential for h[illegible] due to migration of hazardous substances away from the facility. I[illegible] the composite of a score for groundwater (S_{GW}), surface water (S_{SW}) [illegible] air (S_A) transport routes. The S_{FE} score reflects the potential [illegible] harm from fires or explosions, and the S_{DC} score reflects the poten[illegible] harm from direct contact with hazardous substances.

The HRS scores for the Alltift Realty site have been calculated [illegible] follows:

S_M = 13.10

S_{GW} = 6.12
S_{SW} = 21.82
S_A = 0.00

S_{DC} = 33.30
S_{FE} = 0.00

RECOMMENDATIONS

It is recommended that a remedial investigation and feasi[illegible] study be conducted at this site to determine the most approp[illegible] closure plan.

isolated on the north side of Tifft Street. Landfilling at the site appears to extend across the western boundary of the site onto Adrian Realty property. This is evident in the field as well as on air photos of the site.

The Alltift Realty site is located in a larger, previously swampy region bounded to the south by the Crystal Beach moraine (south of South Park), to the north by the Buffalo River, to the east approximately by the position of South Park Street, and to the west by Lake Erie. This region of the City was considered "less desireable" and consequently was used for junkyards, landfills, dredging disposal areas, heavy industry, and railroad yards. Most of the swamp was filled, although smaller swamps remain between the filled areas. These swamps appear to be hydraulically linked together via streams, ditches, and seepage through permeable fill. Together, they form a large NYS recognized wetland, which provides a habitat for local wildlife and migrating birds (including eagles and ospreys). However, this wetland is not a critical habitat for endangered species (Ozard, 1986).

There is no permanent surface water on the Alltift Realty site. A swamp occurs on the adjacent Adrian Realty property (see Figure IV-1) and drains north.

SITE HYDROLOGY

Regional Geology and Hydrology

The site is located in the Erie-Ontario lowlands physiographic province. The bedrock of this region is predominantly limestone, dolostone, sandstone and shale. Most of the rocks are deep aquifers with regional groundwater flow to the south.

In the recent past, most of New York State, including the site, has been repeatedly covered by a series of continental ice sheets. The activity of the glacier widened pre-existing valleys, and deposited widespread accumulations of till and stratified ice-contact sediment. The melting of ice, ending approximately 12,000 years ago, produced large volumes of meltwater; this water subsequently shaped channels a deposited thick accumulations of stratified, granular sediments.

As glacial ice retreated from the region, meltwater formed lakes in front of the ice margin. This region is covered by lake sediments, t most recent being from Lake Warren. The sediments consist of blanket sands and beach ridges which are occasionally underlain by lacustri silts and clays (indicating quiet or deep water deposition).

Granular deposits in this region frequently act as shallow aqu fers, whereas lacustrine clays, as well as tills, often inhibit ground water movement. However, fine-grained, water-lain sediments, such silts and clays, often contain horizontal laminations and sand seams. These internal features facilitate lateral groundwater movement throu otherwise low permeability materials.

Site Geology

Prior to the Phase II investigation, two major studies of t Alltift Landfill were performed by RECRA Research, Inc. in 1978 (joint with Wehran Engineering) and 1982. In addition, a recent study Malcolm Pirnie (1984) of the Marilla Street Landfill provides information regarding the area south of the site. The data from these stud have been combined with the information from the Phase II study and relatively complete picture of the site geology has been formed.

From all of these studies, a total of 22 sampled borings have b drilled and 23 wells have been installed. (However, only the 10 ne Phase II wells are presently useable.)

The following summary of site geology is based on the informati from these earlier studies, NYS Museum and Science Service Bedr Geology Map and Quaternary Geology Map, USGS topographic maps, LaSa (1968) and the Phase II field program.

Figures IV-3 through IV-5 depict the subsurface geology at the Alltift Realty site in cross sectional views. The bedrock surface beneath the site, as shown in map view on Figure IV-6, slopes to the northwest and has a maximum relief of approximately 60 feet. A northeast/southwest-oriented bedrock escarpment (cliff) exists through the center of the site; it accounts for approximately 20 feet of relief.

In the vicinity of the escarpment (center of the site), the bedrock has been identified as black shale (by RECRA Research and Wehran Engineers) and as black siltstone (Phase II investigation). A strong petroleum odor was noted from samples of this rock; it may be natural and consistent with its petroliferous character.

In the southern and northern parts of the site, the bedrock has been identified as grey limestone. (Earlier reports suggested a slightly different bedrock configuration, but they were based on less drilling information). Bedrock samples from the northern part of the site contained seams of black petroliferous material (apparently natural) and had strong petroleum odor.

In earlier studies, (RECRA, 1982) formational names had been identified for the northern limestone, central black "rock", and southern limestone.

The bedrock configuration, as identified from the Phase II investigation is consistent with the formational names as described and published by Buehler (1966).

Stafford Limestone Member of the Skaneateles Formation (Southern Limestone): "The Stafford is a gray limestone which weathers to chocolate brown. Bedding varies from massive to shaly."

Oatka Creek Member of the Marcellus Formation (Central Black Rock): "A dense, black fissile shale with a petroliferous odor. There are some beds of grey shale and several concretionary layers. Nodules of pyrite occur in the black shale near the base".

Moorehouse Limestone Member of the Onondaga Limestone (Northern Limestone): "Bears a coral-brachiopod-bryozoan fauna. The textu varies from coarse to very finely crystalline and the color from dark gray to tan. Chert, some light buff in color, and dissem nated bituminous matter are present."

Overlying the bedrock is a layer of sand/gravel/silt till whi occurs intermittently in thicknesses as great as 18 feet. The till wa deposited by glacial ice, and may be winnowed, sorted, or stratified some parts by the action of meltwater near the edge or beneath th glacier. The till is thickest at the base of the bedrock escarpment.

Overlying the till (or directly on bedrock in areas where the ti is absent), a thick sequence of lacustrine deposits blankets the site These fine-grained sediments were probably deposited in Lake Warren, large predecessor of Lake Erie. Much of the land surface along eastern shore of Lake Erie is covered with these sediments. They ha been mapped by Muller (NYS Quaternary Geology Map, 1977) and th presence on other nearby sites (Malcolm Pirnie, 1984 and Phase II inve tigation of Allied Chemical - Hopkin Street site) has been confirmed drilling. On the Alltift site, the total thickness of this lacustri sequence often exceeds 40 feet.

The lacustrine sediments on the site are believed to be layere the typical manner of most lake deposits. The lower part of sequence is predominantly grey clay and silt. Near the base, the c alternates between red and grey layers, indicating a contributio fine sediment probably originating north of the Niagara Falls area. sediments grade vertically upward into silt and fine sand and layers, indicating the decrease in water depth at the location of site as Lake Warren drained to form Lake Erie.

These two units, which comprise the lacustrine sequence on site are depicted on the cross sections. It can be seen that both ur are usually, but not always, present in the subsurface. In the n eastern corner of the site, the upper unit (silt, fine sand and clay absent. The distribution of the lower clay/silt unit is depicted on an isopach map (Figure IV-7) and is thickest in the northwest part of the site and absent at the southern end of the site. The shape of the upper surface of the clay/silt unit is depicted on Figure IV-8, and appears to form west-east ridges and swales with a maximum relief of approximately 20 feet. This pattern is consistent with possible wave-action direction from the west. Overall, this surface slopes to the west. Based on the data, no enclosed basins are believed to exist.

Overlying the upper silt, fine sand, and clay unit along the west edge of the land, recent swamp-type organic silts were encountered. This is consistent with the present day swamp adjacent to the site. Overlying the upper silt, fine sand and clay unit across most of the site is fill material, reaching thicknesses in excess of 20 feet.

Site Hydrology

Two aquifers have been identified in the subsurface of the Alltift Realty site and are defined as follows:

Upper Aquifer - the upper unit of the lacustrine sediment, hydraulically connected with the overlying fill material, the western surface water bodies and, at the southern end of the site, the lower aquifer.

Lower Aquifer - the upper part of the bedrock and the overlying till, hydraulically connected with the upper aquifer at the southern end of the site and possibly with the large pond south of the site.

In-situ permeability tests were performed on the CW-series wells during the Phase II investigation. Laboratory permeability tests were performed on undisturbed samples taken from wells B-2 and B-5 of the clay/silt unit (RECRA and Wehran, 1978). The results of these tests are presented in Table IV-1.

Generally, the permeability of the lower aquifer ranges from 10 cm/sec to 10^{-4} cm/sec and the upper aquifer ranges from 10^{-4} cm/sec 10^{-6} cm/sec. The aquitard permeability is approximately 10^{-8} cm/sec.

Groundwater flow directions can be inferred from the piezometr surfaces presented on Figures IV-9 and IV-10. The upper aquifer forms a mound in the east-center of the site, with radial flow to the wes north, and south. The gradient of this water table ranges from 1.0% to 0.5%. It is this aquifer that is recharged by rainwater percolati downward through the fill, and discharges along the western and souther boundaries as seeps. The Phase II investigation survey data shows t elevation of the ponds along the western boundaries to be equal to th elevation of the upper piezometric surface, thus inferring a hydrau connection between the upper aquifer and the western surface wat bodies. Additionally, survey data suggests a flow direction withi these linked-ponds to be northward. Flow rates within these swamp-l ponds is believed to be slow.

The piezometric surface of the lower aquifer shows a flow directic to the northwest with an average gradient of 0.4%. This gradient slightly less in the northern half of the site and much greater at t northwest corner of the site. (Earlier reports, based upon less v data, suggested a much lower gradient).

In the southern part of the site, the piezometric surfaces of t aquifers appear coincident. This occurrence, coupled with the lack an aquitard in the subsurface indicates a potential connection bet the two aquifers.

Further south of the site, the elevation of the surface water the large (Ramco Steel) pond is coincident with the inferred l aquifer piezometric surface in that area. Again, the possible lack an aquitard beneath the pond suggests a connection between the water and the lower aquifer.

Table 2.2 Range of Values of Hydraulic Conductivity and Permeability

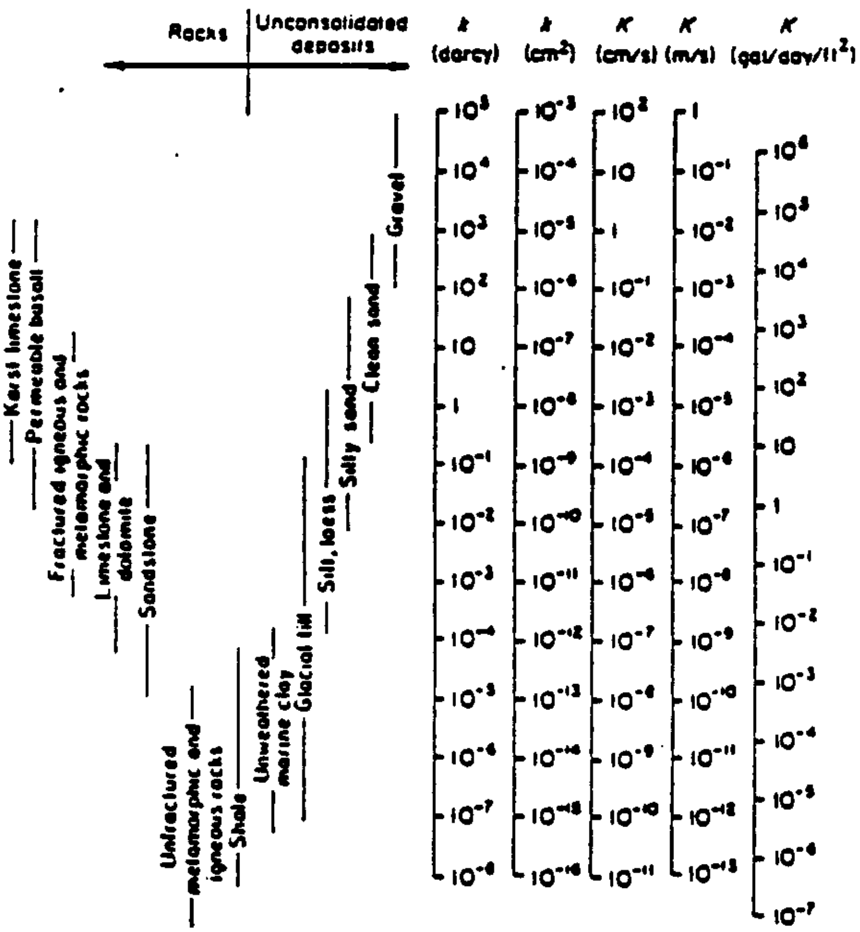

Table 2.3 Conversion Factors for Permeability and Hydraulic Conductivity Units

	Permeability, k*			Hydraulic conductivity, K		
	cm^2	ft^2	darcy	m/s	ft/s	$gal/day/ft^2$
cm^2	1	1.08×10^{-3}	1.01×10^{8}	9.80×10^{2}	3.22×10^{3}	1.85×10^{9}
ft^2	9.29×10^{2}	1	9.42×10^{10}	9.11×10^{5}	2.99×10^{6}	1.71×10^{12}
darcy	9.87×10^{-9}	1.06×10^{-11}	1	9.66×10^{-6}	3.17×10^{-5}	1.82×10^{1}
m/s	1.02×10^{-3}	1.10×10^{-6}	1.04×10^{5}	1	3.28	2.12×10^{6}
ft/s	3.11×10^{-4}	3.35×10^{-7}	3.15×10^{4}	3.05×10^{-1}	1	5.74×10^{5}
$gal/day/ft^2$	5.42×10^{-10}	5.83×10^{-13}	5.49×10^{-2}	4.72×10^{-7}	1.74×10^{-6}	1

*To obtain k in ft^2, multiply k in cm^2 by 1.08×10^{-3}.

DIVISION OF HAZARDOUS WASTE REMEDIATION
INACTIVE HAZARDOUS WASTE DISPOSAL REPORT

CLASSIFICATION CODE: 2 REGION: 9 SITE CODE:
EPA ID: NY

NAME OF SITE : Altift Realty
STREET ADDRESS: Tifft St.
TOWN/CITY: COUNTY: Z
Buffalo Erie

SITE TYPE: Open Dump- Structure- Lagoon- Landfill-X Treatment
ESTIMATED SIZE: 40 + Acres

SITE OWNER/OPERATOR INFORMATION:
CURRENT OWNER NAME....: Altift Realty
CURRENT OWNER ADDRESS.: PO Box 246, Buffalo, NY
OWNER(S) DURING USE...: Downing Cont.Serv.,Buffalo(C)Alltift,Inc
OPERATOR DURING USE...: Downing Cont Service
OPERATOR ADDRESS......: PO Box 246, Buffalo, NY
PERIOD ASSOCIATED WITH HAZARDOUS WASTE: From To

SITE DESCRIPTION:
This site is an old landfill previously used for domestic and i
wastes. Studies have shown surface and groundwater contamination
According to Phase II investigation documentation, Allied Corp.
(National Aniline Division) disposed monthly quantities of misc
organic chemicals, chrome sludge, copper sulfate, nitrobenzene,
chlorobenzene, and naphthalene at this site. The groundwater an
surface water at this site have been contaminated. The DEC is
ing with the responsible parties to conduct an RI/FS at this si
The Responsible parties have agreed to submit an RI/FS workplan
DEC review.

HAZARDOUS WASTE DISPOSED: Confirmed-X Suspected-

TYPE	QUANTITY (unit
Miscellaneous Organic Chemicals	Unknown
Inorganic Chemicals	"
Chrome Sludge	"
Copper Sulfate	"
Nitrobenzene	"
Monochlorobenzene	"
Napthalene	"

SITE CODE: 915054

ANALYTICAL DATA AVAILABLE:
Air- Surface Water-X Groundwater-X Soil- Sediment-X

CONTRAVENTION OF STANDARDS:
Groundwater-X Drinking Water- Surface Water-X Air-

LEGAL ACTION:

TYPE..: Consent Order State- X Federal-
STATUS: Negotiation in Progress- X Order Signed-

REMEDIAL ACTION:

Proposed- Under design- In Progress- Completed-
NATURE OF ACTION: None

GEOTECHNICAL INFORMATION:
SOIL TYPE: Clay
GROUNDWATER DEPTH: 0-20

ASSESSMENT OF ENVIRONMENTAL PROBLEMS:

The groundwater, surface waters and sediments have been contaminated with hazardous wastes. A remedial investigation is needed to assess the extent of contamination and possible remedies.

ASSESSMENT OF HEALTH PROBLEMS:

Contamination has been found on-site and off-site in groundwater, surface soil and water and sediment. The contaminants include heavy metals, benzene compounds, napthalene, phenols and pesticides. The landfill has not been properly closed. Industrial wastes remain exposed and oil stained soil is visible. There is potential for direct contact with exposed waste materials at the site although the area is in a sparsely populated industrial area of Buffalo. Access to the site is restricted. The area is served by public water. Additional sampling and investigation is needed to determine if contaminated surface water from the site flows from a drainage system to the Tifft Farm Nature Preserve. This information will be used by DOH to assess other potential concerns.

REF. 2

WEATHER ATLAS of the UNITED STATES

Originally titled: CLIMATIC ATLAS OF THE UNITED STATES

U.S. DEPARTMENT OF COMMERCE
C. R. Smith, Secretary

ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION
Robert M. White, Administrator

ENVIRONMENTAL DATA SERVICE
Woodrow C. Jacobs, Director

JUNE 1968

✓

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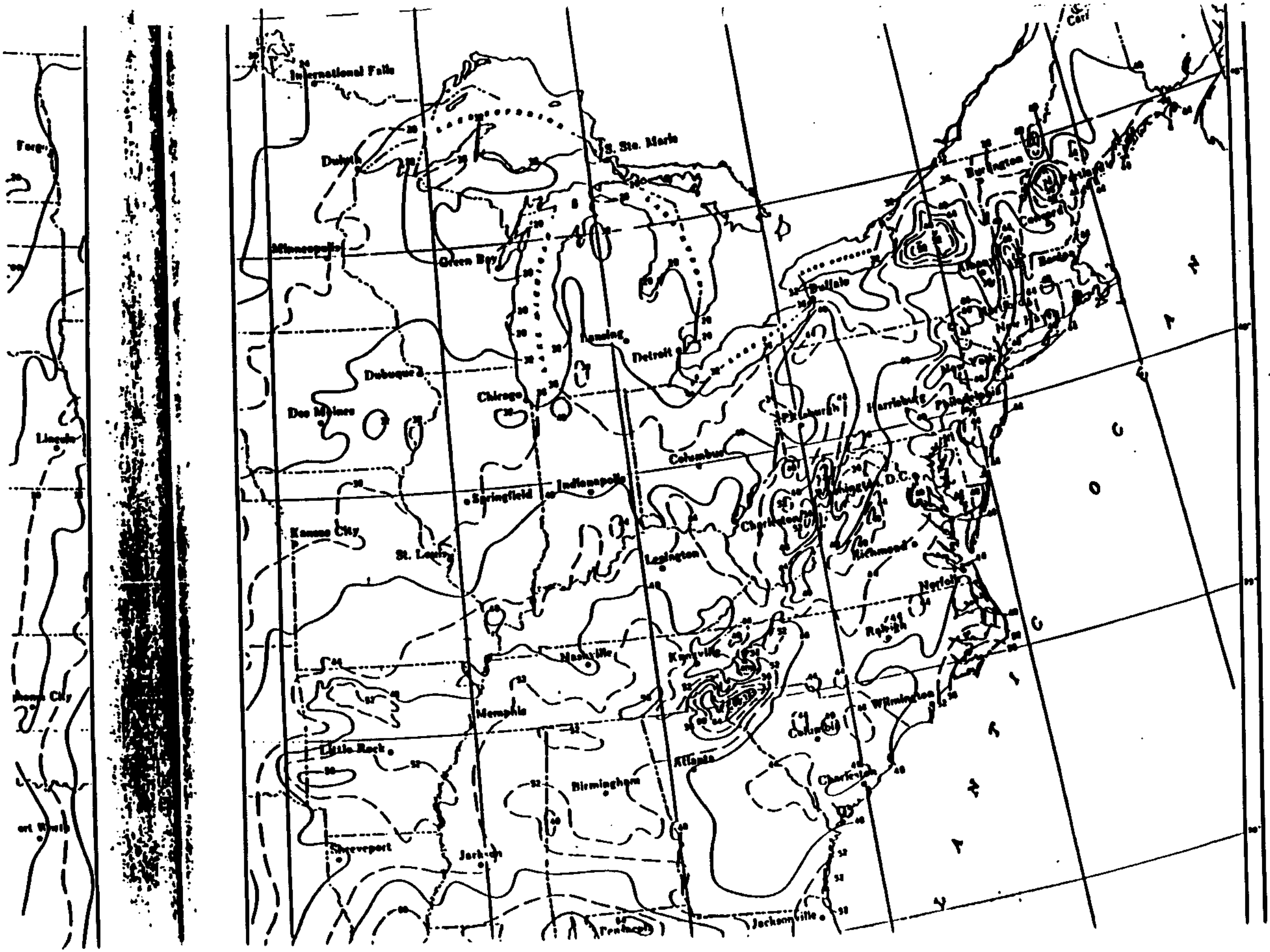
Book Tower, Detroit, Michigan 48226



International Falls
Duluth
S. Ste. Marie
Minneapolis
Green Bay
Burlington
Concord
Boston
Buffalo
Lansing
Detroit
Dubuque
Des Moines
Chicago
New York
Pittsburgh
Harrisburg
Philadelphia
Lincoln
Columbus
Springfield
Indianapolis
Washington, D.C.
Kansas City
St. Louis
Charleston
Richmond
Lexington
Norfolk
Raleigh
Nashville
Knoxville
Memphis
Wilmington
Columbia
Little Rock
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Birmingham
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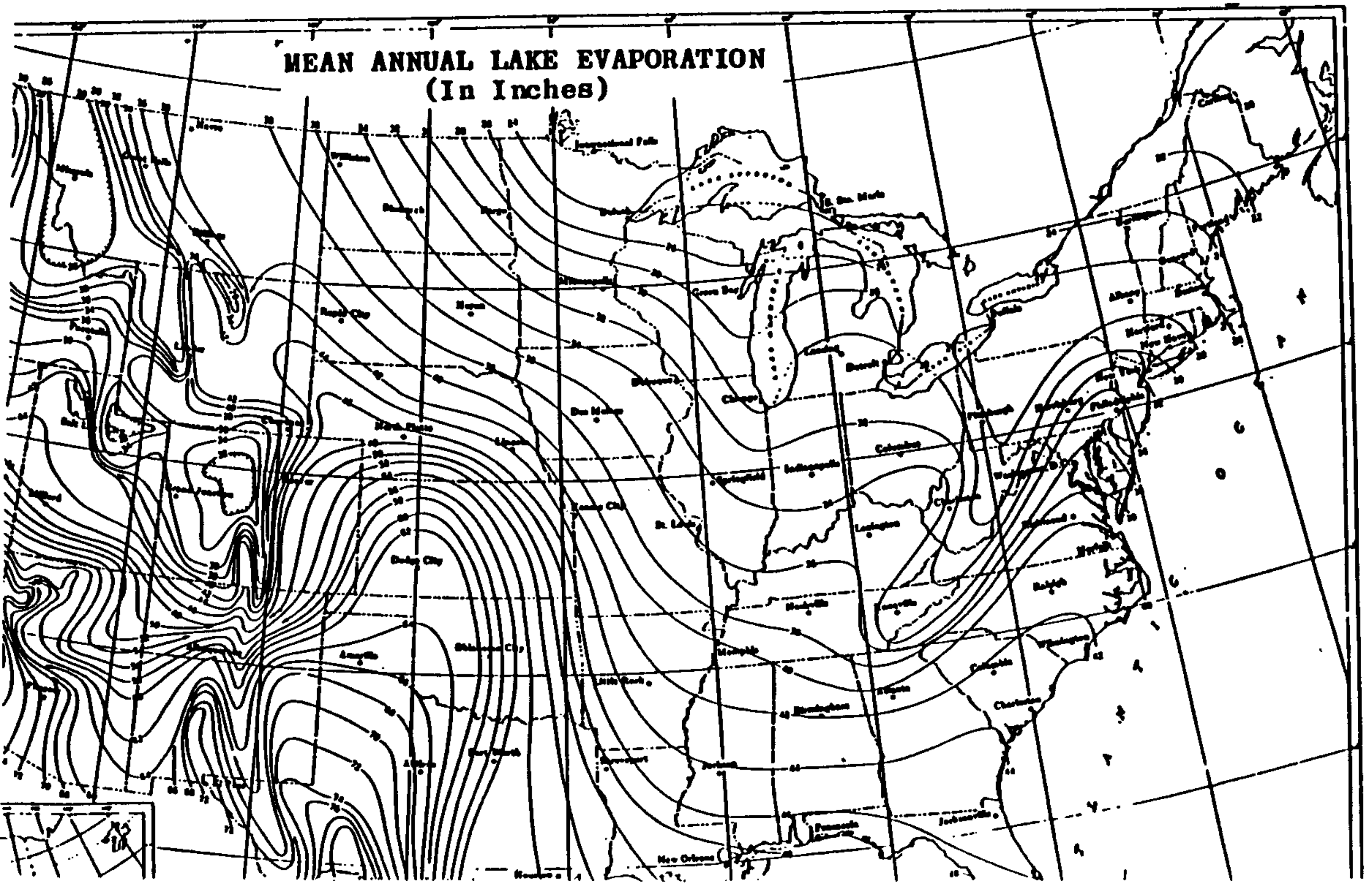
MEAN ANNUAL LAKE EVAPORATION
(In Inches)



ALBANY, NEW YORK 12233

INDUSTRIAL CHEMICAL SURVEY

PAR. I

...ASE COMPLETE AND RETURN TO THE ABOVE ADDRESS, ATTENTION: INDUSTRIAL CHEMICAL SURVEY.

...PANY NAME DONNER-HANNA COKE CORPORATION		SIC CODE (If known) 3312
...PANY MAILING ADDRESS Box A - South Park Station	CITY Buffalo	STATE New York
...NT NAME (If different)	CONTACT NAME Kevin D. Mahar	TELEPHONE Area
...NT ADDRESS (If different) Street	CITY	STATE

...NCIPAL BUSINESS OF PLANT
metallurgical coke manufacturing and by-product recovery

...TE: (If parent company, give name and addresses of all divisions, subsidiaries, etc. located in New York State. A separate questionnaire is to ... and submitted for each.)

PART II

Discharge Information

1. Does your plant discharge liquid wastes to a municipally owned sanitary sewer system?
   Name of System ______
2. Is your facility permitted to discharge liquid wastes under a State (SPDES) or Federal (NPDES) permit? Permit Number 0 0 0 3 3 1 0
3. Do you discharge liquid wastes in any other manner? ....
   Explain sanitary waste only to municipal system

If any of the above are "Yes":

a. Do you discharge process or chemical wastes — (i.e. water used in manufacturing including direct contact cooling water and scrubber water)? ....
b. Do you discharge non-contact cooling water? ....
c. Do you discharge collected storm drainage only? ....
d. Do you discharge sanitary wastes only? ....

1. Does your facility have sources of possible emissions to the atmosphere? ....
2. Enter Location and Facility Code as shown on your Air Pollution Control Application for Permits and Certification (If applicable) 1 4 0 2 0 0 4 4 7

LIQUID WASTES

1. List Name and Address of Firm (Including yourself) removing wastes other than office and cafeteria refuse.

Name	Downing Container Service
Address	191 Ganser Street, (City) Buffalo, (State) New York (Zip Code) 14205
Name	
Address	City State Zip Code

2. List Location(s) of Landfill(s) owned and used by your facility.

1 ______

2 ______

1. Does this facility:
   Manufacture Pesticides or Pesticide Product Ingredients? ....
   Produce Pesticides or Pesticide Product Ingredients? ....
   Formulate Pesticides? ....
   Repackage Pesticides? ....
2. EPA Establishment Number ______ – ___ – ___

SUBSTANCES OF CONCERN
(Refer to attached TABLE I)

omplete all information for these substances your facility has used, produced, stored, distributed or otherwise disposed of since January 1, 1971. Do no[t in]clude chemicals used only in analytical laboratory work. Enter the name and code from Table I. If facility uses a substance in any of the Classes A – F which is not specified in the list, enter it as code class plus 99, e.g. B99 with name, usage, etc.

NAME OF SUBSTANCE	CODE	AVERAGE ANNUAL USAGE	AMOUNT NOW ON HAND	(✓) CAL.	(✓) lb.	PURPOSE OF USE (State whether produced, reacted, blended, packaged, distributed, no longer used, etc.)
ol-ene	D02	84,000	10,000	X		solvent extraction of phenolic
ne	D05					from waste water
nol	F01	547,500	547,500		X	produced as above
Tar	E01	10 million	1 million	X		produced
t Oil (aromatic crude)	D99	4-1/2 "	0.1 "	X		produced

e chemicals of unknown composition, list trade name or other identification, name of supplier and complete information.

NAME OF SUBSTANCE	AVERAGE ANNUAL USAGE	AMOUNT NOW ON HAND	(✓) CAL.	(✓) lb.	SUPPLIER	PURPOSE OF USE (State whether produced, reacted, blended, packaged, distributed, no longer used, etc.)

I hereby affirm under penalty of perjury that information provided on this form is true to the best of my knowledge and belief. False statements made herein are punishable as a Class A misdemeanor pursuant to Section 210.45 of the Penal Law.

[SIGNA]TURE (Owner, Partner, or Officer): K[illegible] D. [illegible]

DATE: 12-20-76

[P]rinted or Typed): [Mar]vin D. Mahar

TITLE: Environmental Control Manager

ppointment Made 4 / / by ——
Date or (Phone) Visit 11/3/76 by BWK
Follow-up / / by
Form Completed 11/15/76 by BWK
Comments:
S.F. [illegible]

Company Name: Donner Hanna Coke
Address: PO Box A S PK S
Buffalo NY 14220
County: Erie Phone: 822
SIC Codes 1. 3312 3.
2. 4.

New York State Industrial Waste Survey
Department of Environmental Conservation
Division of Solid Waste Management
50 Wolf Road, Albany, N.Y. 12233 Telephone: (518) 457-6605

General Information

1. Company Name: Donner-Hanna Coke Corp.

Mailing Address: PO Box A (Street) Buffalo (City) N.Y. (State)

Plant Location: [ ] Same as above

Abby & Mystic St (Street) Buffalo (City) N.Y. (State)

2. If Subsidiary, Name of Parent Company

3. Individual Responsible for Plant Operations

Name

Title Phone

4. Individual Providing Information: Mr. K. Mahar (Name)

(Sales Manager) (Title) 822-1600 (Phone)

(Mgr. - Environmental Engr.)

5. Department of Environmental Conservation Interviewer: BWK

6. Standard Industrial Classification (SIC) Codes for Principal Products

Group Name	SIC Code (4 Digit)	Approximate % [X] Production / [ ] V.
a. Primary Metals	3312	100
b.		
c.		
d.		

7. Processes Used at Plant
a. By-Product Process
b.
c.
d.
e.

8. Products
a. Metallurgical Coke
b. Coal Chemicals
c.
d.
e.

hemicals used in manufacturing or produced as products:

a. Coal
b.
c.
d.
e.

f.
g.
h.
i.
j.

On Site Waste Water Treatment /X/ Yes /_/ No

On Site Waste Water Treatment by July 1977 /_/ Yes /X/ No

On Site Waste Water Treatment by July 1983 /_/ Yes /X/ No

Industrial Sewer Discharge /X/ Yes /_/ No Name of Sewage Treatment Plant ____

SPDES No. ____ NPDES No. ____

a. Air Pollution Control Devices /X/ Yes /_/ No Types ____

b. To Be Built /_/ Yes /_/ No by __/__/__

Air 100 Emission Point Registration Numbers ____

Number of manufacturing employees 367 b. Manufacturing Floor Space ____ sq.ft.

Attach a plat or sketch of the facility showing the location of on-site process waste storage (if available).

Attach flow diagrams of chemical processes including waste flow outputs (if available).

In-house waste treatment capabilities: Lime Neutralization

Is there a currently used or abandoned landfill, dump or lagoon on plant property? /X/ Yes /_/ No

Industrial wastes produced or expected to be produced by plant.

1) Ammonia Still Effluent
2)
3)
4)
5)
6)
7)
8)

Comments:

. Waste Characterization and Management Practice
(Use separate form for each waste stream)

1. Waste Stream No. 1 (from Form I, Number 17)

2. Description of process producing waste SPRAY WASH FROM WET SCRUBBER

3. Brief characterization of waste AMMONIA LIQUOR

4. Time period for which data are representative ______ to ______

5. a. Annual waste production 100-200 [X] tons/yr. [ ] gal./yr.

b. Daily waste production ______ [ ] tons/day [ ] gal./day

c. Frequency of waste production: [ ] seasonal [ ] occasional [X] continual

[ ] other (specify) ______

6. Waste Composition

a. Average percent solids ____% b. pH range __ to __

c. Physical state: [ ] liquid, [ ] slurry, [X] sludge, [ ] solid,

[ ] other (specify) ______

d. Component	Average Concentration	[ ] wet weight [ ] dry weight
1.		[ ] wt.% [ ] ppm
2.		[ ] wt.% [ ] ppm
3.		[ ] wt.% [ ] ppm
4.		[ ] wt.% [ ] ppm
5.		[ ] wt.% [ ] ppm
6.		[ ] wt.% [ ] ppm
7.		[ ] wt.% [ ] ppm
8.		[ ] wt.% [ ] ppm
9.		[ ] wt.% [ ] ppm
10.		[ ] wt.% [ ] ppm

e. Analysis of composition is /_/theoretical /_/laboratory /_/estimate
(attach copy of laboratory analysis if available)

SAME
f. Projected /_/increase, /_/decrease in volume from base year: _____ % by July 1977;

_____ % by July 1983.

g. Hazardous properties of waste: /_/flammable /X/toxic /_/reactive /_/explosive

/_/corrosive /_/other (specify) ______________

7. On Site Storage

a. Method: /_/drum, /_/roll-off container, /_/tank, /_/lagoon, /_/other (specify) ________

b. Typical length of time waste stored ______ /_/days, /_/weeks, /_/months

c. Typical volume of waste stored _________ /_/tons, /_/gallons

d. Is storage site diked? /_/Yes /_/No

e. Surface drainage collection /_/Yes /_/No

8. Transportation

a. Waste hauled off site by /_/you /_/others

b. Name of waste hauler ______________________________

Address ______________________________
Street City
______________________________ ( )
State Zip Code Phone

9. Treatment and Disposal

a. Treatment or disposal: /X/on site /_/off site

b. Waste is /_/reclaimed /X/treated /X/land disposed /_/incinerated

/_/other (specify) ______________

c. Off site facility receiving waste

Name of Facility ______________________________

Facility Operator ______________________________

Facility Location ______________________________
Street City
______________________________ ( )
State Zip Code Phone

III. Land Disposal Questionnaire (for currently used or abandoned landfills, dumps, or

1. a. Are there detailed design and operational plans for the site? /_/Yes /✓/

   b. Attach sketch of land disposal area showing location and distance to surfa soil classification, direction of groundwater flow, location of monitoring and other pertinent information.

2. a. Does disposal site have a liner? /_/Yes /✓/No

   b. Type of liner ____________

   c. Thickness ____________

3. a. Leachate collection? /_/Yes /✓/No

   b. Leachate treatment? /_/Yes /✓/No

   c. Type of treatment ____________

4. a. Shortest depth to groundwater ________ft.

   b. Classes of soils underlying site (correlate with sketch) ____________

5. a. Groundwater monitoring wells? /_/Yes /✓/No

   b. Number of wells ________ c. Well down gradient? /_/Yes /_/No

6. Non-industrial wastes disposed of at site? /_/Yes /✓/No

7. Are different waste(s) disposed in specially segregated areas of the site? /_

8. Is there security at disposal area (i.e. fences, signs)? /_/Yes /✓/No

9. Are there contingency plans and equipment to handle possible emergency situa... facility? /_/Yes /_/No Attach if available.

10. Industrial wastes disposed of at site:

Waste Stream Number	Waste	Volume/Year (please gallons, cubic yar...
1	Ammonia Sludge	100 - 200

REF. 4

Dangerous Properties of Industrial Materials

Sixth Edition

N. IRVING SAX

Assisted by:

Benjamin Feiner/Joseph J. Fitzgerald/Thomas J. Haley/Elizabeth K. Weisburger

VNR VAN NOSTRAND REINHOLD COMPANY
NEW YORK CINCINNATI TORONTO LONDON MELBOURNE

Yellow to amber clear liquid. Sol in water and org solvents. d: 1.068-1.075 @ 25°/25°; bp: 66°-68° @ 3 mm; fp: < −25°.

SYNS:

ACETIC ACID, 2,6-DIMETHYL-M-DIOXAN-4-YL ESTER
ACETOMETHOXAN
6-ACETOXY-2,4-DIMETHYL-M-DIOXANE
DIMETHOXANE
2,6-DIMETHYL-M-DIOXAN-4-OL ACETATE
2,6-DIMETHYL-M-DIOXAN-4-YL ACETATE
DIOXIN (BACTERICIDE) (OBS.)
NCI-C56213

TOXICITY DATA: 3	CODEN:
orl-rat TDLo:948 gm/kg/88W-I:CAR	JNCIAM 53,791,74
orl-rat LD50:1930 mg/kg	GCTB** 3/25/77

Carcinogenic Determination: Animal Positive IARC** 15,177,77. Selected by NTP Carcinogensis Bioassay as of December, 1980. Reported in EPA TSCA Inventory, 1980. EPA TSCA 8(a) Preliminary Assessment Information Proposed Rule FERREAC 45,13646,80.
THR: MOD orl. An exper CARC. See also esters.
Disaster Hazard: When heated to decomp it emits acrid smoke.

2'-ACETONAPHTHONE

CAS RN: 93083 NIOSH #: AL 2988000
mf: $C_{12}H_{10}O$; mw: 170.22

SYNS:

BETA-ACETONAPHTHALENE
BETA-ACETYLNAPHTHALENE
2-ACETYLNAPHTHALENE
ACETONAPHTHONE
BETA-ACETONAPHTHONE
2-ACETONAPHTHONE
KETONE, METHYL 2-NAPHTHYL
METHYL BETA-NAPHTHYL KETONE
METHYL 2-NAPHTHYL KETONE
BETA-METHYL NAPHTHYL KETONE
1-(2-NAPHTHALENYL)ETHANONE
BETA-NAPHTHYL METHYL KETONE
2-NAPHTHYL METHYL KETONE

TOXICITY DATA: 2	CODEN:
skn-hmn 500 mg/24H	FCTXAV 13,681,75
orl-mus LD50:599 mg/kg	MDZEAK 8,244,67

Reported in EPA TSCA Inventory, 1980.
THR: MOD orl. A hmn skn irr.
Disaster Hazard: When heated to decomp it emits acrid smoke.

ACETONE

CAS RN: 67641 NIOSH #: AL 3150000
mf: C_3H_6O; mw: 58.09

Colorless liquid, fragrant mint-like odor. mp: −94.6°, bp: 56.48°, ulc = 90, flash p: 0°F (CC), lel = 2.6%, uel = 12.8%, d: 0.7972 @ 15°, autoign. temp. (color): 869°F, vap. press: 400 mm @ 39.5°, vap. d: 2.00. Misc in water, alc, and ether.

SYNS:

ACETON (GERMAN, DUTCH, POLISH)
DIMETHYLFORMALDEHYDE
DIMETHYLKETAL
DIMETHYL KETONE
KETONE PROPANE
BETA-KETOPROPANE
METHYL KETONE
PROPANONE
2-PROPANONE
PYROACETIC ACID
PYROACETIC ETHER

TOXICITY DATA: 2-1	COI
ihl-man TDLo:440 µg/M³/6M	GISA
ihl-man TDLo:10 mg/M³/6H	GI
orl-man LD50:3000 mg/kg	PC
eye-hmn 500 ppm	JIHT
skn-rbt 395 mg open MLD	UCD
eye-rbt 3950 ug SEV	AJ
ihl-hmn TCLo:500 ppm:EYE	JII
ihl-man TCLo:12000 ppm/4H:CNS	AOH
unk-man LDLo:1159 mg/kg	85DC
orl-rat LD50:9750 mg/kg	UC
ihl-rat LCLo:64000 ppm/4H	AI
ipr-rat LDLo:500 mg/kg	JPPn
ihl-mus LCLo:110000 mg/m3/62M	AGC
ipr-mus LD50:1297 mg/kg	SC
orl-dog LDLo:24 gm/kg	AI
ipr-dog LDLo:8 gm/kg	AE
scu-dog LDLo:5 gm/kg	AEX
orl-rbt LD50:5300 mg/kg	12
skn-rbt LD50:20 gm/kg	UC
scu-gpg LDLo:5000 mg/kg	AC

Aquatic Toxicity Rating: TLm96 WQCHM* 4,-,74.
TLV: Air: 750 ppm DTLVS* 4,5,80. 27ZTAP 3,7,69. OSHA Standard: A (SCP-A) FEREAC 39,23540,74. Liquid, Label: Flammable Lic 57018,76. Occupational Exposure tc Air: TWA 590 mg/m3 NTIS** " Analytical Methods" VOL 1 127, in EPA TSCA Inventory, 1980.
THR: A hmn EYE, CNS. A skn, e MOD ipr, unk. LOW orl, ihl, LOW via dermal route. Acetone conc. In industry, no injurious e have been reported, other thar skn irr resulting from its defatt ache from prolonged inhal. A foo for human consumption. A com nant.
Fire Hazard: Dangerous, when exp or oxidizers. Incomp: with (CHC $Cr(OCl)_2$, (nitric + acetic acid), (ni NOCl, nitrosyl perchlorate, nitry nosulfuric acid, potassium tert-bu furic acid + potassium dichromat hydrogen peroxide), trichlorom air, HNO_3, activated C, chlorofo chromyl chloride, H_2O_2, F_2O_2, SCl chlorate, H_2O_6S.
Explosion Hazard: Mod when vapo
Disaster Hazard: Dangerous, due hazard, can react vigorously with
To Fight Fire: CO_2, dry chemical,
For further information see Vol. 1 port.

ACETONE CHLOROFORM

CAS RN: 57158 NIO
mf: $C_4H_7Cl_3O$; mw: 177.46

Crystals, camphor odor. mp: 97°, b

TOXICITY DATA: 3	CODEN:
orl-rat LD50:216 mg/kg	TXAPA9 18,185,71
ipr-rat LDLo:400 mg/kg	JPETAB 80,393,44
ipr-mus LD50:291 mg/kg	JMCMAR 9,221,66
ivn-mus LD50:100 mg/kg	CSLNX* NX#06774

Carcinogenic Determination: Human Positive IARC** 23,39,80. *Toxicology Review:* 85DHAX As,-,77. OSHA Standard: Air: TWA 500 ug(As)/m3 FEREAC 39,23540,74. Reported in EPA TSCA Inventory, 1980.

THR: A human CARC. HIGH orl, ivn, ipr. See also arsenic. A grasshopper bait; a food additive permitted in the feed and drinking water of animals and/or for the treatment of food-producing animals. See arsenic compounds and aniline.

Fire Hazard: Mod. Decomp by heat to yield flammable vapors.

Disaster Hazard: Dangerous; when heated to decomp or on contact with acid or acid fumes, emits highly tox As and NO_x.

ARSANILIC ACID, MONOSODIUM SALT

CAS RN: 127855 NIOSH #: CF 9625000

mf: $C_6H_7AsNO_3 \cdot Na$; mw: 239.05

Tetra hydrate; white odorless cryst powder, faint salty taste. Sol in water, somewhat sol in alc.

SYNS:

CI-C61176	SODIUM AMINOPHENOL ARSONATE
(4-AMINOPHENYL)ARSONIC ACID SODIUM SALT	SODIUM-p-AMINOPHENYLARSONATE
ANHYDROUS SODIUM ARSANILATE	SODIUM-ANILINE ARSONATE
ARSANILIC ACID SODIUM SALT	SODIUM ANILARSONATE
ATOXYL	SODIUM ARSANILATE
SODIUM AMINARSONATE	SODIUM-p-ARSANILATE
SODIUM-p-AMINOBENZENEARSONATE	SODIUM ARSONILATE

TOXICITY DATA: 3	CODEN:
scu-rat LD50:75 mg/kg	BIZEA2 184,360,27
scu-mus LD50:400 mg/kg	12VXA5 9,1108,76
scu-dog LDLo:5 mg/kg	HBAMAK 4,1289,35
scu-rbt LDLo:200 mg/kg	HBAMAK 4,1289,35

Toxicology Review: 85DHAX As,-,77. OSHA Standard: Air: TWA 500 ug(As)/m3 FEREAC 39,23540,74. Selected by NTP for Carcinogenesis Bioassay as of December 1980.

THR: HIGH scu. Poisonous. Can cause blindness. A food additive in feed and drinking water.

Disaster Hazard: When heated to decomp it emits very tox fumes of As and NO_x.

ARSENIC

CAS RN: 7440382 NIOSH #: CG 0525000

mf: As; mw: 74.92

Silvery to black, brittle, crystalline and amorphous metalloid. mp: 814° @ 36 atm, bp: subl @ 612°, d: black crystals 5.724 @ 14°; black amor 4.7, vap. press: 1 mm @ 372° (sublimes). Insol in water; sol in HNO_3. See also arsenic vapor.

SYNS:

ARSENICALS	COLLOIDAL ARSENIC
ARSENIC-75	GREY ARSENIC
ARSENIC BLACK	METALLIC ARSENIC
ARSEN (GERMAN, POLISH)	

TOXICITY DATA: 3	CODEN:
cyt-mus-ipr 4 mg/kg/48H-I	EXPEAM 37,129,81
orl-rat TDLo:605 ug/kg/(35 W Preg)	GISAAA (8)30,77
orl-mus TDLo:120 mg/kg/(preg):TER	TJADAB 15,31A,77
ipr-mus TDLo:40 mg/kg/(preg):TER	TJADAB 15,31A,77
imp-rbt TDLo:75 mg/kg:ETA	ZEKBAI 52,425,42
orl-man TDLo:7857 mg/kg/55Y:SKN	CMAJAX 120,168,79
orl-man TDLo:7857 mg/kg/55Y:GIT	CMAJAX 120,168,79
ims-rat LDLo:20 mg/kg	NCIUS* PH 43-64-886,SEPT,70
scu-rbt LDLo:300 mg/kg	ASBIAL 24,442,38
ipr-gpg LDLo:10 mg/kg	CRSBAW 81,164,18
scu-gpg LDLo:300 mg/kg	ASBIAL 24,442,38

Carcinogenic Determination: Human Positive IARC** 23,39,80. Carcinogenic Determination: Indefinite IARC** 2,48,73.

TLV: Air: 200 ug/m3 DTLVS* 4,24,80. *Toxicology Review:* AMIHAB 21,132,60; 85DHAX As,-,77; JAVMA4 164(3),277,74; CTOXAO 5(2),151,72; ARVPAX 16,95,76; KOTTAM 11(11),1300,75; FOREAE 7,313,42; AQMOAC #73-18,1973; PTPAD4 1,189,76; CLCHAU 19,361,73; 85CVA2 5,63,70; PEXTAR 12,102,69; JOCMA7 2,137,60; BNYMAM 54,413,78; AMTODM 3,209,77; 85CVA2 5,250,70; 27ZTAP 3,19,69. OSHA Standard: Air: TWA 500 ug/m3 FEREAC 39,23540,74. DOT: Poison B, Label: Poison FEREAC 41,57018,76. Occupational Exposure to Inorganic Arsenic recm std: Air: CL 2 ug/m3 NTIS**. "NIOSH Manual of Analytical Methods" VOL 1 139,140,180,188,192,196, VOL 3 S309, VOL 5 173#. NIOSH Current Intelligence Bulletin 14, 1976. Reported in EPA TSCA Inventory, 1980.

THR: Human CARC. A hmn SKN, GIT. An exper TER, ETA, ± CARC. MUT data. HIGH ims, scu, ipr. A poison. Used as a food additive in food for human ingestion. See also arsenic compounds.

Fire Hazard: Mod in the form of dust when exposed to heat or flame or by chemical reaction with powerful oxidizers such as bromates, chlorates, iodates, peroxides, Li, NCl_3, KNO_3, $KMnO_4$, Rb_2C_2, $AgNO_3$, NOCl, IF_5, CrO_3, ClF_3, ClO, BrF_3, BrF_5, BrN_3, RbC ≡ CH, CsC ≡ CH.

Explosion Hazard: Slight in the form of dust when exposed to flame.

Disaster Hazard: Dangerous; when heated or on contact with acid or acid fumes, emits highly tox fumes; can react vigorously on contact with oxidizing materials.

Incomp: Bromine azide, dirubidium acetylide, halogens, palladium, zinc, platinum, NCl_3, $AgNO_3$, CrO_3, Na_2O_2, hexafluoro isopropyl ideneamino lithium.

For further information see Vol. 1, No. 3 of *DPIM Report.*

M-ARSENIC ACID

CAS RN: 10102531 NIOSH #: CG 0760000

mf: $AsHO_3$; mw: 123.93

BENZEDRINE SULFATE

CAS RN: 156310 NIOSH #: SI 1225000
mf: $C_{18}H_{26}N_2 \cdot H_2O_4S$; mw: 368.54

SYNS:
PHENETHYLAMINE, ALPHA-METHYL-, SULFATE (2:1)
DIAMPHETAMINE SULFATE
DL-ALPHA-METHYLPHENETHYLAMINE SULFATE
1-PHENYL-2-AMINOPROPANE SULFATE

TOXICITY DATA: 3	CODEN:
ipr-rat LDLo:25 mg/kg	JPETAB 100,267,50
scu-rat LDLo:10 mg/kg	JPETAB 71,62,41
scu-mus LD50:14 mg/kg	JPETAB 87,214,46
ipr-gpg LDLo:50 mg/kg	JPETAB 100,267,50

THR: HIGH ipr, scu. See also sulfates.
Disaster Hazard: When heated to decomp it emits very tox fumes of SO_x and NO_x.

D-BENZEDRINE SULFATE

CAS RN: 51638 NIOSH #: SI 1400000
mf: $C_{18}H_{26}N_2 \cdot H_2O_4S$; mw: 368.54

SYNS:
AMPHEDRINE
AMPHEREX
(+)-AMPHETAMINE SULFATE
D-AMPHETAMINE SULFATE
DEXAMPHETAMINE SULFATE
DEXAMYL
DEXEDRINA
DEXEDRINE SULFATE
DEXIES
D-ALPHA-METHYLPHENETHYLAMINE SULFATE
OBESEDRIN
FASTBALLS
HEARTS
DEXTROAMPHETAMINE SULFATE
DEXTRO-ALPHA-METHYLPHENETHYLAMINE SULFATE
ORANGES
PHENEDRINE
PHENOPROMIN
D-1-PHENYL-2-AMINOPROPANE SULFATE
DEXTRO-1-PHENYL-2-AMINOPROPANE SULFATE
D-BETA-PHENYLISOPROPYLAMINE SULFATE
DEXTRO-BETA-PHENYLISOPROPYLAMINE SULFATE

TOXICITY DATA: 3	CODEN:
ipr-mus TDLo:50 mg/kg/(8D preg):TER	TJADAB 1,413,68
unk-mus TDLo:50 mg/kg/(8D preg):TER	TJADAB 1,413,68
orl-rat LD50:38 mg/kg	JOPDAB 69,663,66
ipr-rat LD50:70 mg/kg	TXAPA9 45(1),49,78
scu-rat LD50:200 mg/kg	12VXA5 8,335,68
ivn-rat LD50:30 mg/kg	JPETAB 110,180,54
orl-mus LD50:33 mg/kg	TXAPA9 21,302,72
ipr-mus LD50:72 mg/kg	JPETAB 128,176,60
scu-mus LD50:16 mg/kg	AIPTAK 184,34,70
ivn-mus LD50:30 mg/kg	JPETAB 137,365,62
orl-dog LD50:10 mg/kg	PSEBAA 118,557,65
ivn-dog LD50:3 mg/kg	PSEBAA 118,557,65
ivn-rbt LD50:10 mg/kg	JPETAB 110,180,54

Toxicology Review: ISYAM* -,343,70; 27ZTAP 3,46,69.
THR: An exper TER. HIGH orl, ipr, scu, ivn. A habit-forming stimulant. See also sulfates.
Disaster Hazard: When heated to decomp it emits very tox fumes of SO_x and NO_x.

L-BENZEDRINE SULFATE

CAS RN: 51627 NIOSH #: SI 1575000
mf: $C_{18}H_{26}N_2 \cdot H_2O_4S$; mw: 368.54

SYNS:
(-)-AMPHETAMINE SULFATE
L-AMPHETAMINE SULFATE
LEVEDRINE
L-1-PHENYL-2-A[illegible] SULFATE

TOXICITY DATA: 3	CODEN:
scu-rat LDLo:160 mg/kg	JPETAB [illegible]
ipr-mus LD50:232 mg/kg	JPETAB [illegible]

THR: HIGH scu, ipr. See also sulfates.
Disaster Hazard: When heated to decom[illegible] tox fumes of SO_x and NO_x.

BENZENAMINE HYDROCHLORIDE

CAS RN: 142041 NIOSH #:
mf: $C_6H_7N \cdot ClH$; mw: 129.60

Crystals. vap. d: 4.46, d: 1.22, mp: 198°, [illegible] p: 380°F (OC).

SYNS:
ANILINE HYDROCHLORIDE
"ANILINE SALT"
CHLORHYDRATE D'ANILINE (FRENCH)
CHLORID ANIL[illegible]
NCI-C03736
USAF EK-442

TOXICITY DATA: 3	CODE[illegible]
skn-rbt 500 mg/24H MOD	28ZPAK -,6[illegible]
eye-rbt 20 mg/24H SEV	28ZPAK -,6[illegible]
orl-rat TDLo:130 gm/kg/2Y-C:CARC	NCITR* [illegible] 130,78
orl-rat TD:238 gm/kg/2Y-C:CARC	NCITR* N[illegible] 130,78
orl-rat LD50:1072 mg/kg	NTIS** [illegible]
ipr-rat LDLo:500 mg/kg	NCNSA[illegible]
orl-mus LD50:841 mg/kg	NTIS** [illegible]
ipr-mus LD50:300 mg/kg	NTIS** AD[illegible]
orl-rat TD:137 gm/kg/60W-C:ETA	IARC** 27,[illegible]
orl-rat TD:2163 gm/kg/2Y-C:CAR	IARC** [illegible]
orl-rat TD:4326 gm/kg/2Y-C:CAR	IARC** [illegible]

Aquatic Toxicity Rating: TLm96:100-10 pp[illegible] 2,-,74. NCI Carcinogenesis Bioassay [illegible] sults Positive: Rat (NCITR* NCI-[illegible] NCI Carcinogenesis Bioassay Completed; [illegible]ative: Mouse (NCITR* NCI-CG-TR-[illegible] ported in EPA TSCA Inventory, 198[illegible] 8(a) Preliminary Assessment Inform[illegible] Rule FERREAC 45,13646,80.
THR: An exper CARC. HIGH ipr; MOD [illegible] skn irr, SEV eye irr in rbt. See also an[illegible]
Fire Hazard: Slight, when exposed to hea[illegible]
Spontaneous Heating: No.
Disaster Hazard: Dangerous; when heat[illegible] or on contact with acid or acid fume[illegible] toxic fumes of aniline and chlorine com[illegible] react vigorously with oxidizing materi[illegible].
To Fight Fire: Water, CO_2, water mist or s[illegible] ical.

BENZENE

CAS RN: 71432 NIOSH #:
mf: C_6H_6; mw: 78.12

Clear colorless liquid. mp: 5.51°, bp: 80.093°-80.094°, flash p: 12°F (CC), d: 0.8794 @ 20°, autoign. temp.: 1044°F, lel: 1.4%, uel: 8.0%, vap. press: 100 mm @ 26.1°, vap. d: 2.77, ulc: 95-100.

SYNS:

(6)ANNULENE	COAL NAPHTHA
BENZEEN (DUTCH)	CYCLOHEXATRIENE
BENZEN (POLISH)	FENZEN (CZECH)
BENZOL	MINERAL NAPHTHA
BENZOLENE	MOTOR BENZOL
BENZOLO (ITALIAN)	NCI-C55276
BICARBURET OF HYDROGEN	PHENYL HYDRIDE
CARBON OIL	PYROBENZOLE

TOXICITY DATA: 3	CODEN:
skn-rbt 15 mg/24H open MLD	AIHAAP 23,95,62
eye-rbt 88 mg MOD	AMIHAB 14,387,56
eye-rbt 2 mg/24H SEV	28ZPAK -,23,72
cyt-rat-scu 12 gm/kg/12D-I	GTPZAB 17(3),24,73
mnt-mus-ipr 500 uL/kg	ENMUDM 2,43,80
cyt-mus-orl 100 uL/kg	ENMUDM 2,43,80
cyt-mus-ipr 100 uL/kg	ENMUDM 2,43,80
dlt-mus-ipr 5 mg/kg	TPKVAL 15,30,79
cyt-rbt-scu 8400 mg/kg	PSDTAP 15,275,74
scu-mus TDLo:2700 mg/kg/(13D preg):TER	AMBNAS 17,285,70
ihl-hmn TCLo:100 ppm/10Y-I:CAR	TRBMAV 37,153,78
orl-rat TDLo:52 gm/kg/52W-I:CAR	MELAAD 70,352,79
skn-mus TDLo:1200 gm/kg/ 49W-I:NEO	BJCAAI 16,275,62
scu-mus TDLo:600 mg/kg/ 17W-I:ETA	KRANAW 9,403,32
par-mus TDLo:670 mg/kg/ 19W-I:ETA	KLWOAZ 12,109,33
ihl-hmn TC:400 ppm/8Y-I:ETA	BLOOAW 52,285,78
ihl-man TC:2100 mg/m3/4Y-I:CAR	NEJMAG 271,872,64
orl-rat TD:10 gm/kg/52W-I:CAR	MELAAD 70,352,79
orl-hmn TDLo:130 mg/kg:CNS	AHYGAJ 31,336,1897
ihl-hmn LCLo:20000 ppm/5M	29ZUA8 -,-,53
ihl-hmn TCLo:210 ppm:BLD	27ZXA3 -,341,63
ihl-rat TCLo:670 mg/m3/24H (15D pre/1-22D preg)	HYSAAV 33,327,68
ihl-rat TCLo:56600 ug/m3/24H (1-22D preg)	HYSAAV 33,112,68
ihl-rat TCLO:50 ppm/24H (7-14D preg)	JHEMA2 24,363,80
ihl-rat TCLO:150 ppm/24H (7-14D preg)	JHEMA2 24,363,80
scu-mus TDLo:1100 mg/kg (12D preg)	TOXID9 1,125,81
scu-mus TDLo:2700 mg/kg/(13D preg) TFX:TER	AMBNAS 17,285,70
orl-mus TDLo:9 gm/kg (6-15D preg)	TJADAB 19,41A,79
orl-mus TDLo:12 gm/kg (6-15D preg)	TJADAB 19,41A,79
orl-rat TD:10 gm/kg/52W-I TFX:CAR	MELAAD 70,352,79
ihl-hmn TCLo:100 ppm:CNS	INMEAF 17,199,48
unk-man LDLo:194 mg/kg	85DCAI 2,73,70
orl-rat LD50:3800 mg/kg	TXAPA9 19,699,71
ihl-rat LC50:10000 ppm/7H	28ZRAQ -,113,60
ipr-rat LDLo:1150 mg/kg	TXAPA9 1,156,59
orl-mus LD50:4700 mg/kg	HYSAAV 32,349,67
ihl-mus LC50:9980 ppm	JIHTAB 25,366,43
ipr-mus LD50:990 ug/kg	AGGHAR 18,109,60
orl-dog LDLo:2000 mg/kg	HBAMAK 4,1313,35
ihl-dog LCLo:146000 mg/m3	HBTXAC 1,324,56
ihl-cat LCLo:170000 mg/m3	HBTXAC 1,324,56
ivn-rbt LDLo:88 mg/kg	JTEHD6 -(Suppl.2),45,77
ipr-gpg LDLo:527 mg/kg	HBTXAC 1,42,56
scu-frg LDLo:1400 mg/kg	HBAMAK 4,1313,35
ihl-mam LCLo:20000 ppm/5M	AEPPAE 138,65,28

Aquatic Toxicity Rating: TLm96:100-10 ppm WQCHM* 2,-,74. Carcinogenic Determination: Human Suspected IARC** 7,203,74.

TLV: Air: 10 ppm DTLVS* 4,37,80. *Toxicology Review:* ARPAAQ 11,434,31; EVHPAZ 11,163,75; AEHLAU 22,373,71; PAREAQ 4,1,52; FNSCA6 2,67,73; MUREAV 47(2),75,78; AMSVAZ 118,354,44; ZHPMAT 166,113,78; JTEHD6 -(suppl.2),69,77; PHRPA6 41,1357,26; CTOXAO 11,531,77; BNYMAM 54, 413,78; KRANAW 9,403,32; 27ZTAP 3,22,69. OSHA Standard: Air: TWA 10 ppm; CL 25 ppm; Pk 50 ppm/10M/8H (SCP-U) FEREAC 39,23540,74. DOT: Flammable Liquid, Label: Flammable Liquid FEREAC 41,57018,76. Occupational Exposure to Benzene recm std: Air: CL 10 ppm/60M NTIS**. Currently Tested by NTP for Carcinogenesis by Standard Bioassay Protocol as of December 1980. "NIOSH Manual of Analytical Methods" VOL 1 127, VOL 3 S311. Reported in EPA TSCA Inventory, 1980. EPA TSCA 8E NO:12770027-Followup Sent as of April, 1979.

THR: Poisoning occurs most commonly through inhal of the vapor, though benzene can penetrate the skin, and poison in that way. Locally, benzene has a comparatively strong irr effect, producing erythema and burning, and, in more severe cases, edema and even blistering. Exposure to high conc of the vapor (3000 ppm or higher) may result from failure of equipment or spillage. Such exposure, while rare in industry, may result in acute poisoning, characterized by the narcotic action of benzene on the CNS. The anesthetic action of benzene is similar to that of other anesthetic gases, consisting of a preliminary stage of excitation followed by depression and, if exposure is continued, death through respiratory failure. The chronic, rather than the acute form, of benzene poisoning is important in industry. It is a recog leukemogen. There is no specific blood picture occurring in cases of chronic benzol poisoning. The bone marrow may be hypoplastic, normal, or hyperplastic, the changes reflected in the periphera blood. Anemia, leucopenia, macrocytosis, reticulocytosis, thromocytopenia, high color index, and prolongec bleeding time may be present. Cases of myeloid leukemia have been reported. For the supervision of th worker, repeated blood examinations are necessary, in cluding hemoglobin determinations, white and red cel counts and differential smears. Where a worker show a progressive drop in either red or white cells, or wher the white count remains below 5,000 per cu mm o the red count below 4.0 million per cu mm, on tw successive monthly examinations, he should be immedi ately removed from exposure. Following absorption c benzene, elimination is chiefly through the lungs, whe fresh air is breathed. The portion that is absorbed i oxidized, and the oxidation products are combined wit sulfuric and glycuronic acids and eliminated in th urine. This may be used as a diagnostic sign. Benzen has a definite cumulative action, and exposure to rela tively high conc is not serious from the point of vie of causing damage to the blood-forming system, pro vided the exposure is not repeated. On the other hanc daily exposure to conc of 100 ppm or less will usually cause damage if continued over a protracted period of time. In acute poisoning, the worker becomes confused and dizzy, complains of tightening of the leg muscles and of pressure over the forehead, then passes into a stage of excitement. If allowed to remain in exposure, he quickly becomes stupefied and lapses into coma. In non-fatal cases, recovery is usually complete and no permanent disability occurs. In chronic poisoning the onset is slow, with the symptoms vague; fatigue, headache, dizziness, nausea and loss of appetite, loss of weight and weakness are common complaints in early cases. Later, pallor, nosebleeds, bleeding gums, menorrhagia, petechiae and purpura may develop. There is great individual variation in the signs and symptoms of chronic benzene poisoning. Benzene is a common air contaminant. Exper MUT, CARC, TER, ETA, NEO.

Fire Hazard: Dangerous, when exposed to heat or flame; can react vigorously with oxidizing materials, such as BrF_5, Cl_2, CrO_3, O_2NClO_4, O_2, O_3, perchlorates, ($AlCl_3$ + $FClO_4$), (H_2SO_4 + permanganates), K_2O_2, ($AgClO_4$ + acetic acid), Na_2O_2.
Spontaneous Heating: No.
Explosion Hazard: Mod, when its vapors are exposed to flame. Use with adequate ventilation.
Disaster Hazard: Dangerous, highly flammable.
To Fight Fire: Foam, CO_2, dry chemical.
Incomp: diborane.
For further information see Vol. 2, No. 4 and Vol. 3, No. 3 of *DPIM Report.*

BENZENEACETALDEHYDE

CAS RN: 122781 NIOSH #: CY 1450000
mf: C_8H_8O; mw: 120.16

SYNS:
HYACINTHIN
PHENYLACETALDEHYDE
PHENYLETHANAL
ALPHA-TOLUALDEHYDE
ALPHA-TOLUIC ALDEHYDE

TOXICITY DATA: 2	CODEN:
skn-hmn 2%/48H	FCTXAV 17,357,79
orl-rat LD50:1550 mg/kg	FCTXAV 17,357,79
orl-mus LD50:3890 mg/kg	FCTXAV 17,357,79
orl-gpg LD50:3890 mg/kg	FCTXAV 17,357,79

Reported in EPA TSCA Inventory, 1980.
THR: MOD orl. Hmn skn irr. See also aldehydes.
Disaster Hazard: When heated to decomp it emits acrid smoke and irr fumes.

BENZENEARSONIC ACID

CAS RN: 98055 NIOSH #: CY 3150000
mf: $C_6H_7AsO_3$; mw: 202.05

Colorless crystals, water-sol. d: 1.760, mp: 160° decomp.

SYNS:
PHENYL ARSENIC ACID
PHENYLARSONIC ACID

TOXICITY DATA: 3	CODEN:
orl-rat LDLo:50 mg/kg	JPETAB 93,28
orl-mus LD50:270 ug/kg	CLDND*
ivn-rbt LD50:16 mg/kg	JPETAB 80,

Reported in EPA TSCA Inventory, 1980.
THR: HIGH via oral and ivn routes. A de
See also arsenic compounds.
Disaster Hazard: When heated to decomp it
fumes of As.

BENZENEBORONIC ACID

CAS RN: 98806 NIOSH #: C
mf: $C_6H_7BO_2$; mw: 121.94

SYNS:
ACIDE PHENYLBORIQUE (FRENCH)
BOROPHENYLIC ACID
PHENYLBORIC ACID
USAF BO-2

TOXICITY DATA: 3-2	CODEN:
orl-rat LD50:740 mg/kg	14KTAK -,70
ipr-mus LD50:500 mg/kg	NTIS** AD
ivn-mus LD50:320 mg/kg	CSLNX* N
ivn-dog LDLo:450 mg/kg	BANMAC 135
orl-rbt LDLo:600 mg/kg	14KTAK -,708
skn-rbt LDLo:4500 mg/kg	14KTAK -,7
ipr-gpg LD50:284 mg/kg	BANMAC 1

Reported in EPA TSCA Inventory, 1980.
THR: HIGH ivn, ipr. MOD orl, ipr, ivn, s
boron compds.
Disaster Hazard: When heated to decomp it
smoke and irr fumes.

BENZENECARBOTHIOAMIDE

CAS RN: 63906898 NIOSH #:
mf: C_7H_7NS; mw: 137.21

SYNS:
BENZOTHIAMIDE
BENZOTHIOAMIDE
THIOBENZAMIDE
TIOBENZAMIDE (

TOXICITY DATA: 3	CODEN:
orl-rat TDLo:6300 mg/kg/15W-C:ETA	BSIBAC 54,10
ipr-mus LD50:500 mg/kg	PCJOAU 11

THR: An exper ETA.
Disaster Hazard: When heated to decomp it
tox fumes of NO_x and SO_x.

BENZENECARBOXALDEHYDE

CAS RN: 63021329 NIOSH #:
mf: $C_{19}H_{15}N$; mw: 257.35

SYNS:
7-ETHYLBENZ(C)ACRIDINE
9-ETHYL-3,4-BENZACRIDINE
PHENYLMETHAN

TOXICITY DATA: 3	CODEN:
scu-mus TDLo:200 mg/kg:ETA	VOONAW

THR: An exper ETA. See also aldehydes.
Disaster Hazard: When heated to decomp it
fumes of NO_x.

See also beryllium compounds and aluminum compounds. Reported in EPA TSCA Inventory, 1980.

BERYLLIUM

CAS RN: 7440417 NIOSH #: DS 1750000
Af: Be; Aw: 9.01

A grayish-white, hard light metal. mp: 1278°, bp: 2970°, d: 1.85.

SYNS:
BERYLLIUM-9 GLUCINUM

TOXICITY DATA: 3	CODEN:
itr-rat TDLo: 13 mg/kg: NEO	ENVRAL 21,63,80
ivn-rbt TDLo: 20 mg/kg: ETA	LANCAO 1,463,50
ihl-hmn TCLo: 300 mg/m3: PUL	AEHLAU 9,473,64
ivn-rat LD50: 496 ug/kg	LAINAW 15,176,66

Aquatic Toxicity Rating: TLm96: 100-10 ppm WQCHM* 2,-,74. Carcinogenic Determination: Animal Positive IARC** 1,17,72; IARC** 23,143,80. Human Suspected IARC** 23,143,80.
TLV: Air: 2 ug/m3 DTLVS* 4,43,80. *Toxicology Review:* 31ZNAA 1,235,72; 85CVA2 5,63,70; CTOXAO 6(3), 497, 73; AEMBAP 40,239,73; AJMEAZ 38,409,65; NTIS** CONF-691001; AMTODM 3,209,77. OSHA Standard: Air: TWA 2 ug/m3; CL 5; Pk 25/30M/8H FEREAC 39,23540,74. Occupational Exposure to Beryllium recm std: Air: CL 0.5 ug/m3/130M NTIS**. "NIOSH Manual of Analytical Methods" VOL 1 121, VOL 3 S339, VOL 4 279*, VOL 5 173#,288#. Reported in EPA TSCA Inventory, 1980.
THR: An exper NEO, ETA and PUL. An exper CARC and a susp hmn CARC. See also beryllium compounds.
Fire Hazard: Mod, in the form of dust or powder, or when exposed to flame or by spont chemical reaction.
Explosion Hazard: Slight, in the form of powder or dust.
Disaster Hazard: When heated to decomp in air it emits very tox fumes of BeO.
Incomp: Halocarbons, i.e., CCl_4, C_2HCl_3. It will flash or spark on impact. Reacts with Li, P.
For further information see Vol. 1, No. 3 of *DPIM Report.*

BERYLLIUM ACETATE

CAS RN: 543817 NIOSH #: AF 5250000
mf: $C_4H_6O_4 \cdot Be$; mw: 127.11

Plates; decomp @ 300°. mp: decomp @ 300°.

SYN: BERYLLIUM ACETATE, NORMAL

TOXICITY DATA: 3	CODEN:
ipr-rat LD50: 317 mg/kg	XEURAQ UR-70,1949

Carcinogenic Determination: Indefinite IARC** 23,143,80. OSHA Standard: Air: TWA 2 ug/m3; CL 5; Pk 25/30M/8H FEREAC 39,23540,74. Occupational Exposure to Beryllium recm std: Air: CL 0.5 ug/m3/130M NTIS**.
THR: HIGH ipr. An exper ± CARC. See also beryllium compounds.
Disaster Hazard: When heated to decomp it emits tox fumes of BeO dust.

BERYLLIUM ALUMINUM ALLOY

CAS RN: 12770502 NIOSH #: DS 2200000

Alloy is 62% Beryllium and 38% Aluminum (ENVRAL 21,63,80)

SYNS:
ALUMINIUM ALLOY, AL,Be BERYLLIUM-ALLUMINIUM ALLOY
ALUMINUM BERYLLIUM ALLOY

TOXICITY DATA: 3	CODEN:
itr-rat TDLo: 13 mg/kg: ETA	ENVRAL 21,63,80

Carcinogenic Determination: Animal Positive IARC** 23,143,80.
THR: An exper CARC, ETA. See also beryllium compounds.
Disaster Hazard: When heated to decomp it emits very tox fumes of BeO.

BERYLLIUM CARBONATE

CAS RN: 66104243 NIOSH #: DS 2350000
mf: $C_2H_2Be_3O_8$; mw: 181.07

SYNS:
BERYLLIUM CARBONATE, BASIC BIS(CARBONATO(2-))DIHYDROXYTRIBERYLLIUM
BERYLLIUMOXIDE CARBONATE

TOXICITY DATA: 3 CODEN:
Carcinogenic Determination: Animal Positive IARC** 23,143,80. Human Suspected IARC** 23,143,80.
THR: An exper CARC. A susp hmn CARC. See also beryllium compounds.
Disaster Hazard: When heated to decomp it emits tox fumes of BeO dust.

BERYLLIUM CARBONATE (1:1)

CAS RN: 13106473 NIOSH #: DS 2400000
mf: $CO_3 \cdot Be$; mw: 69.02

SYN: CARBONIC ACID BERYLLIUM SALT (1:1)

TOXICITY DATA: 3	CODEN:
ipr-gpg LDLo: 300 mg/kg	NIHBAZ 181,20,43

OSHA Standard: Air: TWA 2 ug/m3; CL 5; Pk 25/30M/8H FEREAC 39,23540,74. Occupational Exposure to Beryllium recm std: Air: CL 0.5 ug/m3/130M NTIS**. Reported in EPA TSCA Inventory, 1980.
THR: See also beryllium compounds. HIGH ipr.
Disaster Hazard: When heated to decomp it emits highly tox fumes of BeO.

BERYLLIUM CHLORIDE

CAS RN: 7787475 NIOSH #: DS 2625000
mf: $BeCl_2$; mw: 79.91

Colorless deliquescent needles. mp: 440°, bp: 520°, d: 1.899 @ 25°, vap. press: 1 mm @ 291° (sublimes).

SYN: BERYLLIUM DICHLORIDE

TOXICITY DATA: 3	CODEN:
mmo-ham: lng 2 mmol/L	MUREAV 68,259,79
orl-rat LD50: 86 mg/kg	HYSAAV 30,169,65

tional Exposure to Carbon Dioxide recm std: Air: TWA 10000 ppm; CL 30000 ppm/10M NTIS**. "NIOSH Manual of Analytical Methods" VOL 3 S249. Reported in EPA TSCA Inventory, 1980.

THR: An exper TER. Asphyxiant. An eye irr @ > 200 000 ppm. Symptoms resulting only when such high conc are reached that there is insufficient oxygen to support life. The signs and symptoms are those which precede asphyxia, namely, headache, dizziness, shortness of breath, muscular weakness, drowsiness and ringing in the ears. Removal from exposure results in rapid recovery. Contact of carbon dioxide snow with the skin may cause a "burn." See also discussion of simple asphyxiants under Argon. Reacts vigorously with ($Al + Na_2O_2$), Cs_2O, $Mg(C_2H_5)_2$, Li, ($Mg + Na_2O_2$), K, KHC, Na, Na_2C_2, NaK, Ti.

Incomp: acrylaldehyde; aziridine; dicaesium oxide; metal acetylides; metals; sodium peroxide.

CARBON DIOXIDE (liquefied)

CAS RN: 124389 NIOSH #: FF 6425000

TOXICITY DATA:

DOT: Nonflammable Gas, Label: Nonflammable Gas FEREAC 41,57018,76. Occupational Exposure to Carbon Dioxide recm std: Air: TWA 10000 ppm; CL 30000 ppm/10M NTIS**. Reported in EPA TSCA Inventory, 1980.

THR: See carbon dioxide.

CARBON DIOXIDE (solid)

CAS RN: 124389 NIOSH #: FF 6430000

White snow-like solid. d: 1.35.

SYNS:

CARBONICE (DOT) DRY ICE (DOT)

TOXICITY DATA:

DOT: ORM-A, Label: None FEREAC 41,57018,76. Occupational Exposure to Carbon Dioxide recm std: Air: TWA 10000 ppm; CL 30000 ppm/10M NTIS**. Reported in EPA TSCA Inventory, 1980.

THR: See carbon dioxide. Normally the solid is very cold and can cause frostbite if handled.

CARBON DIOXIDE MIXED WITH OXYGEN

CAS RN: 8063772 NIOSH #: FF 6485000

SYN: CARBON DIOXIDE-OXYGEN MIXTURE (DOT)

TOXICITY DATA:

DOT: Nonflammable Gas, Label: Nonflammable Gas FEREAC 41,57018,76. Occupational Exposure to Carbon Dioxide recm std: Air: TWA 10000 ppm; CL 30000 ppm/10M NTIS**.

THR: NO data. See also components as listed.

CARBON DIOXIDE MIXED WITH NITROUS OXIDE

CAS RN: 53569623 NIOSH #: FF 6480000

Gas. Composition: $CO_2 + N_2O$.

SYN: CARBON DIOXIDE-NITROUS OXIDE MIXT

TOXICITY DATA:

DOT: Nonflammable Gas, Label: Non FEREAC 41,57018,76. Occupational bon Dioxide recm std: Air: TWA 100 ppm/10M NTIS**. Occupational Exp Anesthetic Agent recm std: Air: T NTIS**.

THR: See also components as listed.

Fire Hazard: Slight. An oxidizing mixtu

Disaster Hazard: Mod dangerous; can materials.

CARBON DISULFIDE

CAS RN: 75150 NIOS

mf: CS_2; mw: 76.13

Clear, colorless liquid, nearly odorle −110.8°, bp: 46.5°, lel = 1.3%, uel = 5 (CC), d: 1.261 @ 20°/20°, autoign. te press: 400 mm @ 28°, vap. d: 2.64.

SYNS:

CARBON BISULFIDE
CARBONE (SUFURE DE) (FRENCH)
CARBONIO (SOLFURO DI) (ITALIAN)
CARBON SULFIDE
DITHIOCARBONIC ANHYDRIDE
KOHLENDISULFID (SCHWEFELKOHLENSTOFF) (GERMAN)
KOOLSTOFDI
KOOLSTOF
NCI-C0455
SCHWEFE MAN)
SULPHOCAR
WEGLA D

TOXICITY DATA: 3 COD

ihl-rat TCLo:50 mg/m3/8H/(1-21D preg) TFX:TER TOLE
ihl-rat TCLo:100 mg/m3/8H (1-22D preg) TO
ihl-rat TCLo:100 mg/m3/8H (1-21D preg) TJAD
ihl-rat TCLo:50 mg/m3/8H (1-21D preg) TJ
ihl-mus TCLo:2000 mg/m3/2H (1-21D preg) BEXP
mmo-sat 100 uL/plate NI
ihl-rat TCLo:50 mg/m3/8H/(1-21D preg):TER TOLED5 2,129,78
orl-hmn LDLo:14 mg/kg 32ZW
ihl-hmn LCLo:4000 ppm/30M 29
unk-man LDLo:186 mg/kg 85I
ipr-gpg LDLo:400 mg/kg AIH
ihl-mam LCLo:2000 ppm/5M AEP

Aquatic Toxicity Rating: TLm WQCHM* 2,-,74.

TLV: Air: 10 ppm (skin) DTLVS* 4 *Review:* AHJOA2 83,100,72; 317 HAAP 35(2),55,74; KHZD CMTVAS 10(3),49,73. OSHA Stan ppm; CL 30; Pk 100/30M (SCP 23540,74. DOT: Flammable Liqu Liquid FEREAC 41,57018,76. O to Carbon Disulfide recm std: Air: 10 ppm/15M NTIS**. NTP Car Completed; No Report-Data I

Manual of Analytical Methods" VOL 1 179, VOL 3 S248. Reported in EPA TSCA Inventory, 1980.

THR: MUT data. An exper TER. HIGH orl, unk, ipr. MOD ihl. An insecticide. The chief toxic effect is on the CNS, acting as a narcotic and anesthetic in acute poisoning with death following from respiratory failure. The anesthetic action is much more powerful than that of chloroform. In chronic poisoning, the effect on the nervous system is one of central and peripheral damage, which may be permanent if the damage has been severe. Sensory symptoms usually precede motor involvement. A secondary anemia may be caused.

In acute poisoning, early excitation of the CNS resembling alcoholic intoxication occurs, followed by depression, with stupor, restlessness, unconsciousness, and possibly death. If recovery occurs, the patient usually passes through the after-stage of narcosis, with nausea, vomiting, headache, etc. In chronic poisoning, the picture is that of involvement of the nervous system, with neuritis and disturbance of vision being the commonest early changes. Sensory changes such as a crawling sensation in the skin, sensations of heaviness and coldness, and visually, "veiling" of objects so that they appear indistinct, are noticed first. Often there is pain in the affected parts, particularly the limbs. These symptoms are followed by gradually increasing loss of strength. Wasting of the muscles may occur. Mental symptoms vary from simple excitation or depression and irritability in the mild cases to mental deterioration, Parkinsonian paralysis, and even insanity. These changes are accompanied by insomnia, loss of memory, and personality changes. Chronic fatigue is a very common complaint. A fumigant. An eye irr @ 30 ppm.

Fire Hazard: Dangerous, when exposed to heat, flame, sparks or friction.

Spontaneous Heating: No.

Explosion Hazard: Severe; when exposed to heat or flame, reacts violently with Al, Cl_2, azides, CsN_3, ClO, ethylamine diamine, ethylene imine, F_2, $Pb(N_3)_2$, LiN_3, NO, N_2O_4, (H_2SO_4 + permangates), K, KN_3, RbN_3, NaN_3 Zn.

Disaster Hazard: Dangerous; when heated to decomp, emits highly tox fumes of SO_x; can react vigorously with oxidizing materials.

To Fight Fire: Water, CO_2, dry chemical, fog, mist.

Incomp: Air, rust; halogens; metal azides; metals; oxidants.

For further information see Vol. 1, No. 2 and Vol. 3, No. 5 of *DPIM Report.*

CARBONIC ACID BIS(2-METHYLALLYL) ESTER

CAS RN: 64057790 NIOSH #: FF 8750000
mf: $C_9H_{14}O_3$; mw: 170.23

TOXICITY DATA: 3	CODEN:
ivn-mus LD50:250 mg/kg	CBCCT* 6,139,54

Reported in EPA TSCA Inventory, 1980.

THR: HIGH ivn. See also esters.

Disaster Hazard: When heated to decomp it emits acrid smoke and irr fumes.

CARBONIC ACID-2-sec-BUTYL-4,6-DINITROPHENYL ISOPROPYL ESTER

CAS RN: 973217 NIOSH #: FF 9100000
mf: $C_{14}H_{18}N_2O_7$; mw: 326.34

SYNS:
2-sec-BUTYL-4,6-DINITROPHENYL ISOPROPYL CARBONATE
2,4-DINITRO-6-sec-BUTYLPHENYL ISOPROPYL CARBONATE
ENT 27,244
ISOPROPYL 2,4-DINITRO-6-sec-BUTYLPHENYL CARBONATE
ISOPROPYL-2-(1-METHYL-N-PROPYL)-4,6-DINITROPHENYL CARBONATE
2-(1-METHYL-2-PROPYL)-4,6-DINITROPHENYL ISOPROPYLCARBONATE

TOXICITY DATA: 3-2	CODEN:
orl-rat LD50:59 mg/kg	TXAPA9 14,515,69
skn-rat LDLo:1500 mg/kg	TXAPA9 14,515,69
unk-rat LD50:140 mg/kg	30ZDA9 -,100,71
orl-mus LD50:170 mg/kg	GTPZAB 19(9),55,75
ipr-mus LD50:125 mg/kg	BCPCA6 18,1389,69
unk-mus LD50:2540 mg/kg	30ZDA9 -,100,71
skn-rbt LD50:2500 mg/kg	FMCHA2 -,D107,80
orl-ckn LD50:150 mg/kg	GUCHAZ 6,224,73

THR: HIGH orl, unk, ipr. MOD skn, unk. See also esters.

Disaster Hazard: When heated to decomp it emits tox fumes of NO_x.

CARBONIC ACID, COMPOUND WITH GUANIDINE

CAS RN: 3425089 NIOSH #: FG 1750000
mf: $CH_5N_3 \cdot xCH_2O_3$; mw: 493.30

Columnar crystals. mp: 333°, d: 1.24.

SYN: GUANIDINE CARBONATE

TOXICITY DATA: 2	CODEN:
unk-mus LDLo:500 mg/kg	ATMPA2 32,177,38
scu-rbt LDLo:500 mg/kg	HBAMAK 4,1352,35

Reported in EPA TSCA Inventory, 1980.

THR: MOD scu, unk.

Disaster Hazard: When heated to decomp, it emits tox fumes of NO_x.

CARBONIC ACID CYCLIC PROPYLENE ESTER

CAS RN: 108327 NIOSH #: FF 9650000
mf: $C_4H_6O_3$; mw: 102.10

A clear liquid. bp: 242.1°, fp: −48.8°, flash p: 275°F (OC), d: 1.2069 @ 20°/20°, vap. press: 0.03 mm @ 20°.

SYNS:
CYCLIC METHYLETHYLENE CARBONATE
CYCLIC PROPYLENE CARBONATE
CYCLIC-1,2-PROPYLENE CARBONATE
1-METHYLETHYLENE CARBONATE
1,2-PROPANEDIOL CARBONATE
1,2-PROPANEDIOL CYCLIC CARBONATE
1,2-PROPANEDIYL CARBONATE
1,2-PROPYLENE CARBONATE
PROPYLENE GLYCOL CYCLIC CARBONATE

SYNS:
CYANSAN SAN-CYAN

TOXICITY DATA: 3	CODEN:
orl-hmn TDLo:5400 mg/kg/24W:EYE	AROPAW 94,927,76
ims-rat LD50:310 mg/kg	BJPCAL 1,186,46
orl-mus LDLo:4 mg/kg	APFRAD 19,740,61

Reported in EPA TSCA Inventory, 1980.
THR: Toxic to eye in hmn via orl. HIGH ims, orl. See also cyanates.
Disaster Hazard: When heated to decomp it emits very tox fumes of CN^- and Na_2O.

CYANIDE

CAS RN: 57125 NIOSH #: GS 7175000
mf: CN^-; mw: 26.02

SYN: CYANURE (FRENCH)

TOXICITY DATA: 3	CODEN:
ipr-mus LD50:3 mg/kg	NATUAS 228,1315,70

TLV: Air: 5 mg/m3 DTLVS* 4,109,80. *Toxicology Review:* CLCHAU 19,361,73. "NIOSH Manual of Analytical Methods" VOL 1 116, VOL 3 S250. Reported in EPA TSCA Inventory, 1980.
THR: Cyanide directly stimulates the chemoreceptors of the carotid and aortic bodies with a resultant hyperpnea. Cardiac irregularities are often noted, but the heart invariably outlasts the respirations. Death is due to respiratory arrest of central origin. It can occur within seconds or minutes of the inhalation of high concentrations of hydrogen cyanide gas. Because of slower absorption, death may be more delayed after the ingestion of cyanide salts, but the critical events still occur within the first hour.

Two other sources of cyanide have been responsible for human poisoning. One of these is amygdalin, a cyanogenic glycoside found in apricot, peach, and similar fruit pits and in sweet almonds. Amygdalin is a chemical combination of glucose, benzaldehyde, and cyanide from which the latter can be released by the action of β-glucosidase or emulsin. Although these enzymes are not found in mammalian tissues, the human intestinal microflora appears to possess these or similar enzymes capable of effecting cyanide release resulting in human poisoning. For this reason amygdalin may be as much as 40 times more toxic by the oral route as compared with intravenous injection. Amygdalin is the major ingredient of Laetrile, and this alleged anticancer drug has also been responsible for human cyanide poisoning. An ethical drug that may also cause cyanide poisoning in overdose is the potent vascular smooth muscle relaxant sodium nitroprusside. Although nitroprusside is related chemically to ferricyanide, unlike the latter it penetrates into erythrocytes and reacts with hemoglobin to release its cyanide (Smith and Kruszyna, 1974). Fortunately, the therapeutic margin for nitroprusside appears to be quite large.

Cyanide is commonly found in certain rat and pest poisons, silver and metal polishes, photographic solutions, and fumigating products. Compoun… potassium cyanide can also be readily purcha… chemical stores. Cyanide is readily absorbe… routes, including the skin, mu mem, and b… though alkali salts of cyanide are toxic only … gested. Death may occur with ingestion of ev… amounts of sodium or potassium cyanide an… within minutes or hours depending on rou… sure. Inhalation of toxic fumes represents a p… rapidly fatal type of exposure. Sodium ni… (Smith and Kruszyna, 1974) and apricot s… and Kaymakcalan, 1964) have also caused cya… soning. A blood cyanide level of greater than … ml is considered toxic. Lethal cases have … levels above 1 µg/ml. Clinically, cyanide p… reported to produce a bitter, almond odor on t… of the patient; however, only a small pro… the population is genetically able to discern t… teristic odor. Typically, cyanide has a bitt… taste, and following poisoning, symptoms of s… nausea without vomiting, anxiety, confusi… giddiness, lower jaw stiffness, convulsions, … nos, paralysis, coma, cardiac arrhythmias, and … respiratory stimulation followed by respirato… may occur. Bradycardia is a common find… most cases heartbeat usually outlasts respira… ler et al., 1947). A prolonged expiratory phase … ered to be characteristic of cyanide poiso… volatile cyanides resemble hydrocyanic acid … cally, inhibiting tissue oxidation and caus… through asphyxia. Cyanogen is probably as … hydrocyanic acid; the nitriles are generally … somewhat less toxic, probably because of … volatility. The non-volatile cyanide salts app… relatively non-toxic systemically, so long … not ingested and care is taken to prevent th… of hydrocyanic acid. Workers, such as elec… and picklers, who are daily exposed to cyanide … may develop a "cyanide" rash, characterize… and by macular, papular, and vesicular eru… quently there is secondary infection. Exposur… amounts of cyanide compounds over long … time is reported to cause loss of appetite … weakness, nausea, dizziness, and sympto… the upper respiratory tract and eyes. See als… compounds.
Fire Hazard: Mod, by chemical reaction with … ture, acid. Many cyanides evolve hydrocy… rather easily. This is a flam gas and is hi… Carbon dioxide from the air is sufficient … liberate hydrocyanic acid from cyanide so… also hydrocyanic acid.
Explosion Hazard: See hydrocyanic acid. … melted with nitrite or chlorate @ about 4… reaction with F_2, Mg, nitrates, HNO_3, nitrit…
Disaster Hazard: Dangerous; on contact with …

* Casarett and Doull's "Toxicology, the basic Science o… ed. Doull, Klaassen and Amdur (eds). Macmillan Pub. C… York, N.Y.

fumes, water or steam, they will produce toxic and flam vapors.

CYANIDOL

NIOSH #: LK 9820000

mf: $C_{15}H_{11}O_6$; mw: 287.26

SYN: 3,3',4',5,7-PENTAHYDROXYFLAVYLIUM ACID ANION

TOXICITY DATA: 3-2	CODEN:
ipr-rat LD50:2350 mg/kg	CHTPBA 2,33,67
ivn-rat LD50:240 mg/kg	CHTPBA 2,33,67
ipr-mus LD50:4110 mg/kg	CHTPBA 2,33,67
ivn-mus LD50:840 mg/kg	CHTPBA 2,33,67

THR: HIGH ivn. MOD ivn, ipr.
Disaster Hazard: When heated to decomp it emits acrid smoke and irr fumes.

CYANINE DYE 715

CAS RN: 548845 NIOSH #: VC 3542500
mf: $C_{26}H_{28}N_3 \cdot Cl$; mw: 418.02

SYN: 6-DIMETHYLAMINO-2-(2-(2,5-DIMETHYL-1-PHENYL)3-PYRROLYL)VINYL)-1-METHYLQUINOLINIUM), CHLORIDE

TOXICITY DATA: 3	CODEN:
orl-rat LD50:161 mg/kg	JPETAB 107,315,53
orl-mus LD50:7900 ug/kg	JPETAB 107,315,53

THR: HIGH orl.
Disaster Hazard: When heated to decomp it emits very tox fumes of NO_x and Cl^-.

2-CYANOACETAMIDE

CAS RN: 107915 NIOSH #: AB 5950000
mf: $C_3H_4N_2O$; mw: 84.09

White powder; mp: 119°; bp: decomp.

SYNS:

CYANACETAMIDE
CYANOACETAMIDE
CYANOIMINOACETIC ACID
MALONAMIDE NITRILE
MALONAMONITRILE
NITRILOMALONAMIDE
USAF KF-14

TOXICITY DATA: 2	CODEN:
orl-mus LD50:1680 mg/kg	KHZDAN 9,50,66
ipr-mus LD50:750 mg/kg	NTIS** AD691-490

Reported in EPA TSCA Inventory, 1980.
THR: MOD orl, ipr. See also nitriles.
Disaster Hazard: When heated to decomp it emits tox fumes of NO_x and CN^-.

CYANOACETIC ACID

CAS RN: 372098 NIOSH #: AG 3675000
mf: $C_3H_3NO_2$; mw: 85.07

Solid; mp: 66°; bp: 108° @ 15 mm.

SYNS:

ACIDE CYANACETIQUE (FRENCH)
CYANESSIGSAEURE (GERMAN)
MALONIC MONONITRILE
MONOCYANOACETIC ACID
USAF KF-17

TOXICITY DATA: 3-2	CODEN:
orl-rat LD50:1500 mg/kg	LONZA# 12JAN81
ipr-mus LD50:200 mg/kg	NTIS** AD691-490
scu-rbt LDLo:2000 mg/kg	AIPTAK 5,161,1899
scu-frg LDLo:2000 mg/kg	AIPTAK 5,161,1899

Reported in EPA TSCA Inventory, 1980. EPA TSCA 8(a) Preliminary Assessment Information Proposed Rule FERREAC 45,13646,80.
THR: HIGH ipr; MOD orl, scu. See also nitriles. Reacts violently with furfuryl alcohol.
Disaster Hazard: When heated to decomp it emits tox fumes of NO_x and CN^-.

N-CYANOACETYL ETHYL CARBAMATE

CAS RN: 6629045 NIOSH #: EZ 3480000
mf: $C_6H_8N_2O_3$; mw: 156.16

TOXICITY DATA: 3	CODEN:
ipr-mus TDLo:2400 mg/kg/4W-I:NEO	CNREA8 29,2184,69

THR: An exper NEO. See also carbamates and cyanides.
Disaster Hazard: When heated to decomp it emits tox fumes of NO_x.

1-CYANO-3-tert-AMYLGUANIDINE

CAS RN: 1113106 NIOSH #: MF 0175000
mf: $C_7H_{14}N_4$; mw: 154.25

SYNS:

1-CYANO-3,6-PENTYLGUANIDINE
GUANCIDINE

TOXICITY DATA: 3-2	CODEN:
orl-rat LD50:300 mg/kg	JPETAB 161,88,68
ipr-rat LD50:313 mg/kg	JPETAB 161,88,68
orl-mus LD50:1400 mg/kg	JPETAB 161,88,68
ipr-mus LD50:322 mg/kg	JPETAB 161,88,68

THR: HIGH orl, ipr. MOD orl.
Disaster Hazard: When heated to decomp it emits very tox fumes of NO_x and CN^-.

p-CYANOBENZALDEHYDE

CAS RN: 105077 NIOSH #: CU 5250000
mf: C_8H_5NO; mw: 131.14

SYNS:

4-CYANOBENZALDEHYDE
p-CYANOBENZENECARBOXALDEHYDE
p-FORMYLBENZONITRILE
4-FORMYLBENZONITRILE
TEREPHTHALALDEHYDONITRILE
USAF KF-1

TOXICITY DATA: 3	CODEN:
ipr-mus LD50:100 mg/kg	NTIS** AD277-689

Reported in EPA TSCA Inventory, 1980.
THR: HIGH ipr. See also nitriles and aldehydes.
Disaster Hazard: When heated to decomp it emits tox fumes of NO_x.

10-CYANO-1,2-BENZANTHRACENE

CAS RN: 7476086 NIOSH #: CW 1050000
mf: $C_{19}H_{11}N$; mw: 253.31

Disaster Hazard: Dangerous; shock will explode it; when heated, burns and emits acrid fumes; can react on contact with oxidizing materials.

NAPHTHA, COAL TAR

CAS RN: 8030306 NIOSH #: QI 9450000

Dark straw-colored to colorless liquid. Sol in benzene, toluene, xylene, etc. bp: 149°-216°, flash p: 107°F (CC), d: 0.862-0.892, autoign. temp.: 531°F.

SYNS:

BENZIN	NAPHTHA
160 DEGREE BENZOL	NAPHTHA, PETROLEUM
COAL TAR NAPHTHA DISTILLATE	PETROLEUM BENZIN
LIGHT LIGROIN	PETROLEUM NAPHTHA
NAFTA (POLISH)	

TOXICITY DATA: 2	CODEN:
ihl-rat LCLo:1600 ppm/6H	CHINAG 17,1078,39

TLV: Air: 300 ppm DTLVS* 4,433,80. OSHA Standard: Air: TWA 100 ppm (SCP-G) FEREAC 39,23540,74. "NIOSH Manual of Analytical Methods" VOL 2 S86. Reported in EPA TSCA Inventory, 1980.

THR: MOD via inhal route. Can cause unconsciousness which may go to coma, stentorious breathing and bluish tint to the skin. Recovery follows removal from exposure. In mild form, intoxication resembles drunkenness. On a chronic basis no true poisoning; sometimes headache, lack of appetite, dizziness, sleeplessness, indigestion and nausea. A common air contaminant. See oils, mineral.

Fire Hazard: Mod, when exposed to heat or flame; can react with oxidizing materials. Keep containers tightly closed.

Explosion Hazard: Slight.

To Fight Fire: Foam, CO_2, dry chemical.

alpha-NAPHTHAL

CAS RN: 66773 NIOSH #: QJ 0175000

TOXICITY DATA: 3	CODEN:
scu-dog LDLo:330 mg/kg	ZMWIAJ 19,545,1881

Reported in EPA TSCA Inventory, 1980.

THR: HIGH scu.

NAPHTHALENE

CAS RN: 91203 NIOSH #: QJ 0525000

mf: $C_{10}H_8$; mw: 128.18

Aromatic odor, white, crystalline, volatile flakes. mp: 80.1°, bp: 217.9°, flash p: 174°F (OC), d: 1.162, lel = 0.9%, uel = 5.9%, vap. press: 1 mm @ 52.6°, vap. d: 4.42. Autoign temp: 1053°F (567°C); sol in alc, benzene. Insol in water; very sol in ether, CCl_4, CS_2 hydronaphthalenes, in fixed and volatile oils.

SYNS:

CAMPHOR TAR	NAPHTHENE
MOTH BALLS	NCI-C52904
MOTH FLAKES	TAR CAMPHOR
NAFTALEN (POLISH)	WHITE TAR
NAPHTHALINE	

TOXICITY DATA: 3	COI
ipr-rat TDLo:5925 mg/kg (1-15D preg)	TXA
skn-rbt 495 mg open MLD	UC
eye-rbt 100 mg MLD	BIC.
scu-rat TDLo:3500 mg/kg/12W-I:ETA	APA
orl-chd LDLo:100 mg/kg	282
unk-man LDLo:74 mg/kg	85I
orl-rat LD50:1780 mg/kg	BIOF
ipr-mus LD50:150 mg/kg	NTIS
scu-mus LD50:969 mg/kg	TO
ivn-mus LD50:100 mg/kg	CSI
orl-dog LDLo:400 mg/kg	HBA
orl-cat LDLo:1000 mg/kg	HBA
orl-rbt LDLo:3 gm/kg	HB
orl-mam LD50:1000 mg/kg	FM

Aquatic Toxicity Rating: TLm96:10-1 3,-,74. *TLV:* Air: 10 ppm DTLVS* ogy *Review:* 38ZNAA 1(1),93,71; 27ZTAP 3,30,69. OSHA Standard: (SCP-T) FEREAC 39,23540,74. DO None FEREAC 41,57018,76. C NTR for Carcinogenesis by Standa as of Sept 1980. "NIOSH Manual of ods" VOL 3 S292. Reported in EPA 1980.

THR: MOD orl and HIGH ipr, i May be used as an insecticide. Syst clude nausea, headache, diaphores anemia, liver damage, vomiting, co Poisoning may occur by ing of lar skn absorption.

Fire Hazard: Mod, when exposed t acts with oxidizing materials. R CrO_3.

Spontaneous Heating: No.

Explosion Hazard: Mod, in the for posed to heat or flame.

To Fight Fire: Water, CO_2, dry chemi

Incomp: Dinitrogen pentaoxide.

1-NAPHTHALENEACETAMIDE

CAS RN: 86862 NIO

mf: $C_{12}H_{11}NO$; mw: 185.24

SYNS:

NAPHTHALENE ACETAMIDE	ALPHA-N
ALPHA-NAPHTHALENEACETAMIDE	1-NAPHT

TOXICITY DATA: 2	CO
orl-mam LD50:1000 mg/kg	FM

Reported in EPA TSCA Inventory, 19

THR: MOD orl.

Disaster Hazard: When heated to fumes of NO_x.

1-NAPTHTALENEACETIC ACID

CAS RN: 86873 NIOS

mf: $C_{12}H_{10}O_2$; mw: 186.22

THR: MOD orl. A skn irr. See also aldehydes.
Disaster Hazard: When heated to decomp it emits acrid smoke and fumes.

TOLUENE

CAS RN: 108883 NIOSH #: XS 5250000
mf: C_7H_8; mw: 92.15

Colorless liquid, benzol-like odor. Flammable. mp: −95° to −94.5°, bp: 110.4°, flash p: 40°F (CC), ulc: 75-80, lel = 1.27%, uel = 7%, d: 0.866 @ 20°/4°, autoign. temp.: 896°F, vap. press: 36.7 mm @ 30°, vap. d: 3.14. Insol in water; sol in acetone; misc in absolute alc, ether, chloroform.

SYNS:

METHYLBENZENE	TOLUEEN (DUTCH)
METHYLBENZOL	TOLUEN (CZECH)
NCI-C07272	TOLUOL
PHENYLMETHANE	TOLUOLO (ITALIAN)

TOXICITY DATA: 3	CODEN:
cyt-rat-scu 12 gm/kg/12D-I	GTPZAB 17(3),24,73
ihl-rat TCLo:1500 mg/m3/24H (1-8D preg)	TXCYAC 11,55,78
ihl-rat TCLo:1000 mg/m3/24H (7-14D preg)	FMORAO 28,286,80
orl-mus TDLo:9 gm/kg (6-15D preg)	TJADAB 19,41A,79
orl-mus TDLo:15 gm/kg (6-15D preg)	TJADAB 19,41A,79
orl-mus TDLo:30 gm/kg (6-15D preg)	TJADAB 19,41A,79
ihl-mus TCLo:500 mg/m3/24H (6-13D preg)	TXCYAC 11,55,78
unk-rat LD50:6900 mg/kg	GISAAA 45(12),64,80
unk-mus LD50:2000 mg/kg	GISAAA 45(12),64,80
eye-hmn 300 ppm	JIHTAB 25,282,43
skn-rbt 435 mg MLD	UCDS** 7/23/70
eye-rbt 870 ug MLD	UCDS** 7/23/70
eye-rbt 2 mg/24H SEV	28ZPAK -,23,72
cyt-rat-ihl 610 mg/m3/16W-I	GISAAA 42(1),32,77
ihl-hmn TCLo:200 ppm:CNS	JAMAAP 123,1106,43
ihl-man TCLo:100 ppm:PSY	WEHSAL 9,131,72
orl-rat LD50:5000 mg/kg	AMIHAB 19,403,59
ihl-rat LCLo:4000 ppm/4H	AIHAAP 30,470,69
ipr-rat LDLo:800 mg/kg	TXAPA9 1,156,59
ihl-mus LC50:5320 ppm/8H	JIHTAB 25,366,43
ipr-mus LD50:1120 ug/kg	AGGHAR 18,109,60
skn-rbt LD50:14 gm/kg	UCDS** 7/23/70
scu-frg LDLo:920 mg/kg	AEPPAE 130,250,28

Aquatic Toxicity Rating: TLm96:100-10 ppm WQCHM* 4,-,74.
TLV: Air: 100 ppm DTLVS* 4,400,80. *Toxicology Review:* AEHLAU 22,373,71; CTOXAO 11(5),549,77; FNSCA6 2,67,73; MUREAV 47(2),75,78; CTOXAO 11(5),549,77; 27ZTAP 3,144,69. OSHA Standard: Air: TWA 200 ppm; CL 300; Pk 500/10M (SCP-V) FEREAC 39,23540,74. DOT: Flammable Liquid, Label: Flammable Liquid FEREAC 41,57018,76. Occupational Exposure to Toluene recm std: Air: TWA 100 ppm; CL 200 ppm/10M NTIS**. Currently Tested by NTP for Carcinogenesis by Standard Bioassay Protocol as of December 1980. Reselected by NTP Carcinogenesis Bioassay as of December 1980. "NIOSH Manual of Analytical Methods" VOL 1 127, VOL 3 S343. Reported in EPA TSCA Inventory, 1980. EPA TSCA 8(a) Preliminary Assessment Information Proposed Rule FERREAC 45,13646,80. EPA TSCA 8E No. 02780079P-Followup Sent as of April, 1979.
THR: MUT data. A skn, eye irr. A hmn CNS, PSY. MOD ihl, ipr, scu; HIGH ipr; LOW orl, skn. Toluene is derived from coal tar, and commercial grades usually contain small amounts of benzene as an impurity. Acute poisoning, resulting from exposures to high conc of the vapors, are rare with toluene. Inhal of 200 ppm of toluene for 8 hrs may cause impairment of coordination and reaction time; with higher conc (up to 800 ppm) these effects are increased and are observed in a shorter time. In the few cases of acute toluene poisoning reported, the effect has been that of a narcotic, the workman passing through a stage of intoxication into one of coma. Recovery following removal from exposure has been the rule. An occasional report of chronic poisoning describes an anemia and leucopenia, with biopsy showing a bone marrow hypoplasia. These effects, however, are less common in people working with toluene, and they are not as severe.

Exposure to conc up to 200 ppm produces few symptoms. At 200-500 ppm, headache, nausea, eye irr, loss of appetite, a bad taste, lassitude, impairment of coordination and reaction time are reported, but are not usually accompanied by any laboratory or physical findings of significance. With higher conc, the above complaints are increased and in addition, anemia, leucopenia and enlarged liver may be found in rare cases.

A common air contaminant.
Fire Hazard: Slight, when exposed to heat, flame or oxidizers.
Explosion Hazard: Mod, when exposed to flame or reacted with (H_2SO_4 + HNO_3), N_2O_4, $AgClO_4$, BrF_3, UF_6.
Disaster Hazard: Mod dangerous; when heated it emits irr fumes; can react vigorously with oxidizing materials.
To Fight Fire: Foam, CO_2, dry chemical.
For further information see Vol. 2, No. 1 of *DPIM Report.*

p-TOLUENEBORONIC ACID, CYCLIC-2-METHYL-2-PROPYLTRIMETHYLENE ESTER

CAS RN: 2430468 NIOSH #: XS 7875000
mf: $C_{14}H_{21}BO_2$; mw: 232.16

SYNS:

DIOSSOBORONO	5-METHYL-5-PROPYL-2-(p-TOLYL)-1,3,2-DIOXABORINANE
2-METHYL-2-PROPYL-1,3-PROPANEDIOL-p-METHYLBENZENEBORONATE	

TOXICITY DATA: 2	CODEN:
ipr-rat LD50:1600 mg/kg	27ZQAG -,319,72
ipr-mus LD50:3350 mg/kg	27ZQAG -,319,72

THR: MOD ipr. See also boron compounds and esters.
Disaster Hazard: When heated to decomp it emits acrid smoke and fumes.

TOLUENEBORONIC ACID, CYCLIC NEOPENTANETETRYL ESTER

CAS RN: 7091410 NIOSH #: XS 7950000
mf: $C_{19}H_{23}B_2O_4$; mw: 336.03

ivn-mus LD50:90 mg/kg	TXAPA9 19,705,71
orl-dog LD50:100 mg/kg	TXAPA9 19,705,71
ivn-dog LD50:23 mg/kg	TXAPA9 14,182,69
orl-cat LD50:60 mg/kg	TXAPA9 19,705,71
orl-rbt LD50:50 mg/kg	TXAPA9 19,705,71
ipr-gpg LD50:100 mg/kg	TXAPA9 19,705,71
orl-hmn TDLo:7 mg/kg:CNS	BMJOAE 1,740,67
orl-mus LD50:170 mg/kg	THERAP 20,297,65

THR: A hmn CNS. HIGH orl.
Disaster Hazard: When heated to decomp it emits very tox fumes of F^-, NO_x and HCl.

PHENIDONE

CAS RN: 92433 NIOSH #: UQ 8750000
mf: $C_9H_{10}N_2O$; mw: 162.21 mp: 121°.

SYNS:
1-PHENYL-3-OXOPYRAZOLIDINE
1-PHENYL-3-PYRAZOLIDINONE
1-PHENYL-3-PYRAZOLIDONE

TOXICITY DATA: 3	CODEN:
orl-rat LD50:200 mg/kg	KODAK* -,-,71
ipr-rat LD50:200 mg/kg	KODAK* -,-,71

Reported in EPA TSCA Inventory, 1980.
THR: HIGH orl, ipr.
Disaster Hazard: When heated to decomp it emits tox fumes of NO_x.

PHENIODOL

CAS RN: 577913 NIOSH #: MW 5150000
mf: $C_{15}H_{12}I_2O_3$; mw: 494.07

SYNS:
3,5-DIIODO-ALPHA-PHENYLPHLORETIC ACID
BETA-(4-HYDROXY-3,5-DIIODOPHENYL)-ALPHA-PHENYLPROPIONIC ACID
IODOALPHIONIC ACID

TOXICITY DATA: 3-2	CODEN:
orl-mus LD50:3800 mg/kg	JMCMAR 13,997,70
ivn-mus LD50:400 mg/kg	JMCMAR 13,997,70

THR: HIGH ivn; MOD orl.
Disaster Hazard: When heated to decomp it emits very tox fumes of I^-.

PHENIPRAZINE

CAS RN: 55527 NIOSH #: MV 7350000
mf: $C_9H_{14}N_2$; mw: 150.25

SYNS:
(ALPHA-METHYLPHENETHYL)-HYDRAZINE
BETA-PHENYLISOPROPYLHYDRAZINE
1-PHENYL-2-HYDRAZINOPROPANE
PHENYLISOPROPYLHYDRAZINE

TOXICITY DATA: 3	CODEN:
orl-rat LD50:34 mg/kg	27ZQAG -,353,72
ipr-rat LD50:40 mg/kg	27ZQAG -,353,72
scu-rat LD50:45 mg/kg	27ZQAG -,353,72
ivn-rat LD50:44 mg/kg	27ZQAG -,353,72
orl-mus LD50:164 mg/kg	JPETAB 131,115,61
ipr-mus LD50:122 mg/kg	JPETAB 128,7,60
scu-mus LD50:95 mg/kg	ANYAA9 80,568,59
ivn-mus LD50:12 mg/kg	ARZNAD 12,352,62

THR: HIGH orl, ipr, scu, ivn.
Disaster Hazard: When heated to decomp it emits tox fumes of NO_x.

PHENIPRAZINE HYDROCHLORIDE

CAS RN: 66057 NIOSH #: MV 7400000
mf: $C_9H_{14}N_2 \cdot ClH$; mw: 186.71

SYN: (1-METHYL-2-PHENYLETHYL)-HYDRAZINEIUM CHLORIDE

TOXICITY DATA: 3	CODEN:
orl-mus LD50:59 mg/kg	UNEAQ 5,125,66
ipr-mus LD50:117 mg/kg	UNEAQ 5,125,66
scu-mus LD50:87 mg/kg	UNEAQ 5,125,66
ivn-mus LD50:66 mg/kg	UNEAQ 5,125,66

THR: HIGH orl, ipr, scu, ivn.
Disaster Hazard: When heated to decomp it emits very tox fumes of Cl^-, NO_x and HCl.

PHENODIANISYL HYDROCHLORIDE

CAS RN: 537053 NIOSH #: MF 2000000
mf: $C_{23}H_{25}N_3O_3 \cdot ClH$; mw: 427.97

Crystals, odorless. mp: 176°. Very sol in alc; insol in water, oils.

SYNS:
ALPHA,GAMMA-DI-P-ANISYL-BETA-(ETHOXYPHENYL)GUANIDINE HYDROCHLORIDE
DIANISYL-MONOPHENETHYLGUANIDINE HYDROCHLORIDE
2-(4-ETHOXYPHENYL)-1,3-BIS(4-METHOXYPHENYL)GUANIDINE HYDROCHLORIDE
GUANICAINE
N,N'-BIS(4-METHOXYPHENYL)-N''-(4-ETHOXYPHENYL)-GUANIDINE HYDROCHLORIDE

TOXICITY DATA: 3	CODEN:
orl-dog LDLo:75 mg/kg	HBAMAK 4,1291,35
scu-rbt LD50:150 mg/kg	12VXA5 9,940,76
scu-gpg LDLo:150 mg/kg	HBAMAK 4,1291,35

THR: HIGH orl, scu. Solutions decomp by light.
Disaster Hazard: When heated to decomp it emits very tox fumes of HCl and NO_x.

PHENOL

CAS RN: 108952 NIOSH #: SJ 332500(
mf: C_6H_6O; mw: 94.12

White, crystalline mass which turns pink or red if no perfectly pure, burning taste, distinctive odor. mp: 40.6° bp: 181.9°, flash p: 175°F (CC), d: 1.072, autoign. temp. 1319°F, vap. press: 1 mm @ 40.1°, vap. d: 3.24. Sol i water; misc in alc, ether.

SYNS:
ACIDE CARBOLIQUE (FRENCH)
BAKER'S P AND S LIQUID AND OINTMENT
CARBOLIC ACID
CARBOLSAURE (GERMAN)
FENOL (DUTCH, POLISH)
FENOLO (ITALIAN)
HYDROXYBENZENE
MONOHYDROXYBENZENE
NCI-C50124
OXYBENZENE
PHENIC ACID
PHENOLE (GERMAN)
PHENYL HYDRATE
PHENYL HYDROXIDE
PHENYLIC ACID
PHENYLIC ALCOHOL

TOXICITY DATA: 3	CODEN:
skn-rbt 500 mg/24H SEV	BIOFX* 27-4/73
skn-rbt 535 mg open SEV	UCDS** 1/6/66
eye-rbt 5 mg SEV	UCDS** 1/6/66
mmo-sat 400 uL/plate	BECTA6 24,590,80
sce-hmn:lym 200 umol/L	CNREA8 40,1189,80
dnd-mam:lym 250 mmol/L	PNASA6 48,686,62
orl-rat TDLo:14 kg/kg/2Y-C:ETA	NCITR* NCI-CG-TR-203,80
orl-mus TDLo:27 kg/kg/2Y-C:ETA	NCITR* NCI-CG-TR-203,80
skn-mus TDLo:16 gm/kg/40W-I:CARC	CNREA8 19,413,59
skn-mus TD:4000 mg/kg/24W-I:NEO	CNREA8 19,413,59
orl-hmn LDLo:140 mg/kg	29ZWAE -,329,68
orl-rat LD50:414 mg/kg	BIOFX* 27-4/73
skn-rat LD50:669 mg/kg	BJIMAG 27,155,70
ipr-rat LD50:250 mg/kg	BJPCAL 13,20,58
scu-rat LDLo:650 mg/kg	HBAMAK 4,1319,35
orl-mus LD50:300 mg/kg	JPETAB 88,400,46
ipr-mus LD50:360 mg/kg	AFREAW 3,197,51
scu-mus LD50:344 mg/kg	INHEAO 5,143,67
ivn-mus LD50:112 mg/kg	QJPPAL 12,212,39
orl-dog LDLo:500 mg/kg	HBAMAK 4,1319,35
par-dog LDLo:2000 mg/kg	RMSRA6 15,561,1895
orl-cat LDLo:80 mg/kg	HBAMAK 4,1319,35
scu-cat LDLo:80 mg/kg	JPETAB 80,233,44
par-cat LDLo:500 mg/kg	RMSRA6 15,561,1895
orl-rbt LDLo:420 mg/kg	JPETAB 80,233,44
skn-rbt LD50:850 mg/kg	AIHAAP 37(10),596,76
ipr-rbt LDLo:620 mg/kg	JPETAB 80,233,44
scu-rbt LDLo:620 mg/kg	JPETAB 80,233,44
ivn-rbt LDLo:180 mg/kg	JPETAB 80,233,44
par-rbt LDLo:300 mg/kg	RMSRA6 15,561,1895
ipr-gpg LDLo:300 mg/kg	HBTXAC 1,228,56
scu-gpg LDLo:450 mg/kg	HBTXAC 1,228,56
scu-frg LDLo:75 mg/kg	HBAMAK 4,1319,35
par-frg LDLo:290 mg/kg	AEPPAE 166,437,32
scu-frg LDLo:290 mg/kg	HBTXAC 1,228,56

Aquatic Toxicity Rating: TLm96:100-10 ppm WQCHM* 4,-,74.

TLV: Air: 5 ppm (skin) DTLVS* 4,328,80. *Toxicology Review:* CMTVAS 10(3),49,73; JIHTAB 31,146,49; MUREAV 47(2),75,78; FNSCA6 2,67,73; ZKKOBW 78,99,72. OSHA Standard: Air: TWA 5 ppm (skin) (SCP-L) FEREAC 39,23540,74. DOT: Poison B, Label: Poison FEREAC 41,57018,76. Occupational Exposure to Phenol recm std: Air: TWA 20 mg/m3; CL 60 mg/m3/15M NTIS**. Carcinogenesis Bioassay Completed; Results Negative (NCITR* NCI-CG-TR-203,80). "NIOSH Manual of Analytical Methods" VOL 3 S330. Reported in EPA TSCA Inventory, 1980.

THR: MUT data. A skn, eye irr. An exper CARC, NEO, ETA. HIGH orl, ipr, scu, par. MOD skn, scu, orl, par. In acute phenol poisoning, the main effect is on the CNS. Absorption from spilling phenolic solutions on the skin may be very rapid, and death results from collapse within 30 min to several hrs. Death has resulted from absorption of phenol through a skin area of 64 in. Where death is delayed, damage to the kidneys, liver, pancreas and spleen and edema of the lungs may result. Absorbed phenol is partly excreted by the kidneys, partly oxidized. Part of the excreted portion is combined with sulfuric and glycuronic acids; the remainder is excreted unchanged. The symptoms develop rapidly, frequently within 15-20 min following [illegible] of phenol on the skin. Headache, dizziness, n[illegible] weakness, dimness of vision, ringing in the ears, [illegible]lar and rapid breathing, weak pulse, and dysp[illegible] all develop, and may be followed by loss of c[illegible]ness, collapse and death. When taken internally, [illegible] is also nausea, with or without vomiting, severe ab[illegible]nal pain, and corrosion of the lips, mouth[illegible] esophagus and stomach. There may be perfora[illegible] the skin, the affected area is white, wrinkle[illegible] softened, and there is usually no immediate c[illegible] of pain; later, intense burning is felt, followed [illegible] anesthesia and still later, by gangrene. Chronic p[illegible]ing, following prolonged exposures to low conc[illegible] vapor or mist, results in digestive disturbance[illegible]ing, difficulty in swallowing, excessive salivati[illegible] rhea, loss of appetite), nervous disorders (hea[illegible] fainting, dizziness, mental disturbances) and sk[illegible]tions. Chronic poisoning may terminate fatall[illegible] where there has been extensive damage to th[illegible] or liver. Dermatitis resulting from contact with [illegible] or phenol-containing products is fairly comm[illegible] dustry. A common air contaminant. As little [illegible] (oral) has killed.

Fire Hazard: Mod, when exposed to heat, flame or [illegible]ers and reacts violently with ($AlCl_3$ + nitro[illegible] butadiene, peroxydisulfuric acid, peroxymon[illegible] acid.

Spontaneous Heating: No.

Disaster Hazard: Dangerous; when heated it [illegible] fumes; can react with oxidizing materials.

To Fight Fire: Alcohol foam, CO_2, dry chemical.

For further information see Vol. 3, No. 4 in *[illegible]port.*

PHENOL (liquid)

CAS RN: 108952 NIOSH #: SJ 3[illegible]

mf: $C_6H_5 \cdot OH$; mw: 94.11

Colorless needles; d: 1.071 @ 25°/4°; mp: 4[illegible] 181.8°; sol in water; misc in alc and ether. A liq[illegible] acid containing over 50% benzophenol ([illegible] 41,15972,76)

SYN: CARBOLIC ACID, LIQUID (DOT)

TOXICITY DATA: 3 CODEN:

Toxicology Review: JIHTAB 31,146,49. DOT: [illegible] Label: Poison FEREAC 41,57018,76. Occupatio[illegible]posure to Phenol recm std: Air: TWA 20 mg/[illegible] 60 mg/m3/15M NTIS**. Reported in EPA [illegible]ventory, 1980.

THR: HIGH orl, ihl, skn. A poison. See al[illegible]nol.

PHENOL-para-ARSONIC ACID

CAS RN: 98146 NIOSH #: C[illegible]

mf: $C_6H_7AsO_4$; mw: 218.05

DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF ENVIRONMENTAL CONTROL

REF. 5

MEMORANDUM

FROM Ronald D. Koczaja DATE August 25, 1978

TO Donald Tamol

SUBJECT On-Site Disposal - Donner Hanna Coke - Abby and Mystic - City of Buffalo

The writer met with Mr. K. Mahar, Environmental Engineer, of Donner Hanna to discuss on-site disposal practices. Mr. Mahar related that most waste tars or residues generated at the plant are recycled into the coking operation.

A waste water stream reportedly containing NH_4Cl (3-5 ppm) and low (0.03 ppm) level phenol and cyanide concentrations must be treated however prior to discharge to the Buffalo River. Following a treatment with lime the waste water passes through a newly constructed concrete settling basin and two ponds. The settled material is reported to be the silt contained in raw Lake Erie process water plus $CaCl_2$. It is possible some phenol and cyanide would be contained as well. This material is dredged from the settling basin and ponds and disposed of in the bulk product storage area. The material is dumped in the area and once dry leveled. Coke is also stored in this area. From discussions with Mr. Mahar, it appears that almost the entire plant area and storage site was at one time low lying wet or swamp land. Marshy areas can be seen on two sides of the bulk storage site. A pile of recently dumped dredge material was observed. It was light brown in color and had a silty appearance. It had dried and formed a cracked case. This material will be graded level. Since the concrete settling basin has been installed, the amount of dredgings have been reduced from 255 tons in 1976 to 42 tons in 1977. Mr. Mahar indicated that the 42 tons would be representative of the amount of waste material requiring disposal this year and in the future.

RDK:jH

cc: Mr. Voell
Mr. Ibrashi

SAVE OUR ENVIRONMENT USE RECYCLED PAPER

RECORD OF TELEPHONE CONVER

DATE 9/20/85 ~8:30am JOB NO.: Phas

RECORDED BY: E D Gillespie OWNER/CLIENT: NYSD

TALKED WITH: Ron Koczaja OF Erie Co

NATURE OF CALL: INCOMING ☐ OUTGOING ☒

ROUTE TO: INFORMATION ACTI

MAIN SUBJECT OF CALL: groundwater use at INS A... area

ITEMS DISCUSSED:

Koczaja gave me the following i

INS - no known usage of upper aq

~~#~~3 very deep (1000' possibly) bedro

~~is~~ may be used for cooling water supp.

at Dunlop (on River Rd ~.5'

1.2 miles S of site. When it

use, no one theoretically sh

come in contact with it, b.

conservatively speaking a ra

may be 0-20 people

Allied Chem - Hopkins St | No use for eit

Alltift | shallow or dee

within 2 or 3 mi

Donna Hanna Coke Company had

industrial well, but the fac

is closed down now.

REF. 7

Erie-Niagara Basin

Ground-Water Resources

ERIE-NIAGARA BASIN REGIONAL WATER RESOURCES PLANNING BOARD

THE NEW YORK STATE WATER RESOURCES COMMISSION

CONSERVATION DEPARTMENT • DIVISION OF WATER RESOURCES

Table 6.--Records of selected wells in the Erie-Niagara basin (Continued)

Well number	County	Owner	Year completed	Type of well	Depth of well (feet)	Diameter (inches)	Depth to bedrock (feet)	Water-bearing material	Altitude above sea level (feet)	Water level: Below land surface (feet)	Water level: Date	Method of lift	Estimated pumpage or flow (gallons per day)	Use	Remarks
251-850-1	Erie	Donner-Hanna Coke Corp.	1920	Dr1	r119	6	--	Limestone	585	--	--	AL	35,000	I	H_2S; yield 30 gpm (r); in use about 150 days per year during summer and early fall; a test boring nearby penetrated 68.5 ft of silty clay, refusal at 68.5 ft.
-2	do.	do.	1920	Dr1	r116	6	--	do.	585	--	--	AL	35,000	I	Anal; also see remarks for well 251-850-1.
252-816-1	Genesee	A. Waite	1963	Dr1	99	6	--	Sand and gravel	1,125	p46.3	6-18-64	Jet	500	F	Bailed 5 gpm (r).
252-815-1	do.	F. Stevens	1963	Dr1	88	5 5/8	80	Shale	975	23.8	6-18-64	Jet	--	D	
252-818-1	do.	E. Snyder	1959	Dr1	r23.5	6	e19	do.	1,040	r8	--	Su	300	D	Anal; iron; H_2S; yield 5 gpm (r).
252-850-1	Erie	Arctic Ice Co.	e1900	Dr1	r180	6	e20	Limestone; Camillus Shale	590	r30	1951	Tur	--	U	Anal; yield 300 gpm (r); supplied 300,000 gpd.
252-851-1	do.	New York Telephone Co.	1955	Dr1	r80	12	53	Limestone	605	30	3-30-63	Tur	--	U	H_2S; pumping test 85 gpm, swl 30 ft, dd 7 ft after 36 hours of pumping.
-2	do.	W & F Manufacturing Co.	1947	Dr1	r101	8	8	do.	590	r,p37	1951	Tur	--	I	H_2S; water-bearing zones from 89 to 101 ft depth, underlying cherty beds in Onondaga Limestone; pumping data, 30 gpm, dd 17 ft (r).
-3	do.	Fairmont Foods Co., Inc.	1925	Dr1	r127	8	30	do.	580	rflow	1951	Tur	40,000	I	Anal; H_2S.
253-813-1	Genesee	D. Lapp	--	Dr1	65.3	6	--	Sand and gravel	990	16.1	6-12-64	Jet	250	D	
253-820-1	do.	F. Pearl	1963	Dr1	53.7	6	--	do.	1,060	19.3	7-30-64	Su	250	D	
253-826-1	do.	A. Baginski	1960	Dr1	44.1	6	--	do.	995	5.7	8- 8-63	Jet	150	D	Anal; yield 3 gpm (r).
253-829-1	Erie	J. Murray	1961	Dr1	26.1	8	--	Shale	900	p11.3	7-31-63	Su	250	D	Anal; iron; water level occasionally is pumped down to bottom of suction pipe at 26 ft.
-2	do.	do.	1961	Dr1	22.0	6	--	do.	900	9.10	7-31-63	Su	--	U	Iron.
-3	do.	Village of Alden	1961	Dr1	r27	60, 10	27	Sand and gravel	840	--	--	Tur	75,000	PS	Concrete tile from 0-16 ft installed 1947; 10-inch diameter screen, gravel packed, from 16-27 ft installed 1961.
253-833-1	do.	D. Ellinwood	1957	Dr1	47.8	6	e40	Shale	830	11.3	7-31-63	Jet	250	D	Anal; iron; yield 10 gpm (r).
253-834-1	do.	J. Gilbride	1962	Dr1	64.7	6	--	do.	775	30.8	7-31-63	Jet	250	D	Anal; iron; H_2S; yield 10 gpm (r).
253-840-1	do.	D. Kloch	--	Dr1	24.3	5	e8	do.	660	9.3	6-27-63	Su	--	U	Anal; temp 48.
253-850-1	do.	Rivoli Theater	1944	Dr1	r110	8	30	Limestone	605	r,p40	1951	Tur	50,000	C	Air-conditioning use; water is returned to ground through a disposal well 130 ft away; pumping data, 150 gpm, dd 4 ft (r).
-2	do.	Roosevelt Theater	1936	Dr1	r60	8	30	do.	605	r,p30	1951	Tur	60,000	C	H_2S; air-conditioning use; water is returned to ground through a disposal well 150 ft away.
254-813-1	Genesee	E. Rhodes	1959	Dr1	33.3	6	--	Sand and gravel	905	13.0	6-16-64	Jet	1,250	F	Iron; yield 15 gpm (r).
254-826-1	do.	F. Kaczmarek	1950	Dr1	67.5	6	e50	Shale	940	11.8	8- 9-63	Jet	1,250	F	Anal; iron; H_2S; yield 8 gpm (r).
254-829-1	Erie	Village of Alden	1957	Dr1	r35.7	16, 8	36	Sand and gravel	830	r7.1	1-31-58	Tur	100,000	PS	Iron; H_2S; screen, 8-inch diameter, 125-slot from 29-36 ft; gravel packed from 22-36 ft; pumping test, 200 gpm, swl 8.6 ft, dd 11.0 ft after 8 hours pumping.
-2	do.	do.	--	Dug	r14	140	--	do.	835	--	--	Su	9,000	PS	One of a group of three dug wells at Alden No. 1 pumping plant; total pumpage from these three wells is about 27,000 gpd.

1/L10595.1

REF. 8

RECRA ENVIRONMENTAL, INC.

Chemical Waste Analysis, Prevention and Control

May 4, 1989

RECEIVED
MAY 26 1989
RECRA ENVIRONMENTAL, INC.

Mr. Michael Martin
Director of Water
City Hall
Buffalo, NY 14202

Dear Mr. Martin:

Below is a brief outline of the information supplied by you in our May 3, 1989 telephone conversation, concerning the water supply in South Buffalo where the Donner-Hanna Coke Site is located:

> The Community water supply mains were installed for Abby and Mystic Streets in 1896 and 1897.

In order to reference the given information, a signed document is required by the New York State DEC (see enclosed letter). Please review the information and make any revisions that you deem necessary (initial any such changes). Include your signature on this correspondence and please return it to my attention.

Your help in this matter is greatly appreciated. If you have any questions, please contact me at (716) 691-2600.

Sincerely,

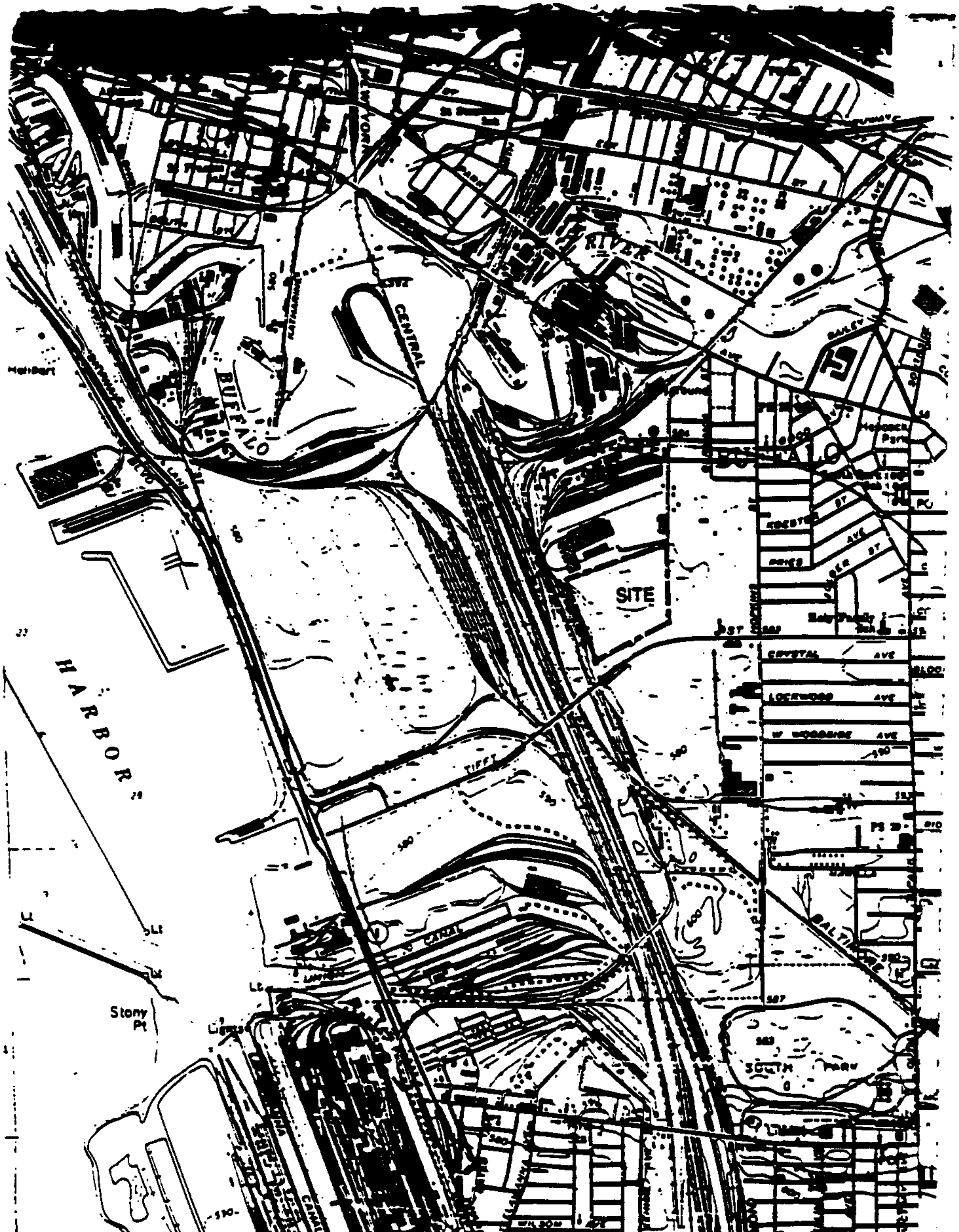
Robert E. Steiner

Robert E. Steiner
Staff Geologist

bg

I agree with the information as presented above.

Michael J Martin ______ 5/24/89 ______
Michael Martin Date



SCALE 1:24 000

1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 KILOMETER

CONTOUR INTERVAL 10 FEET

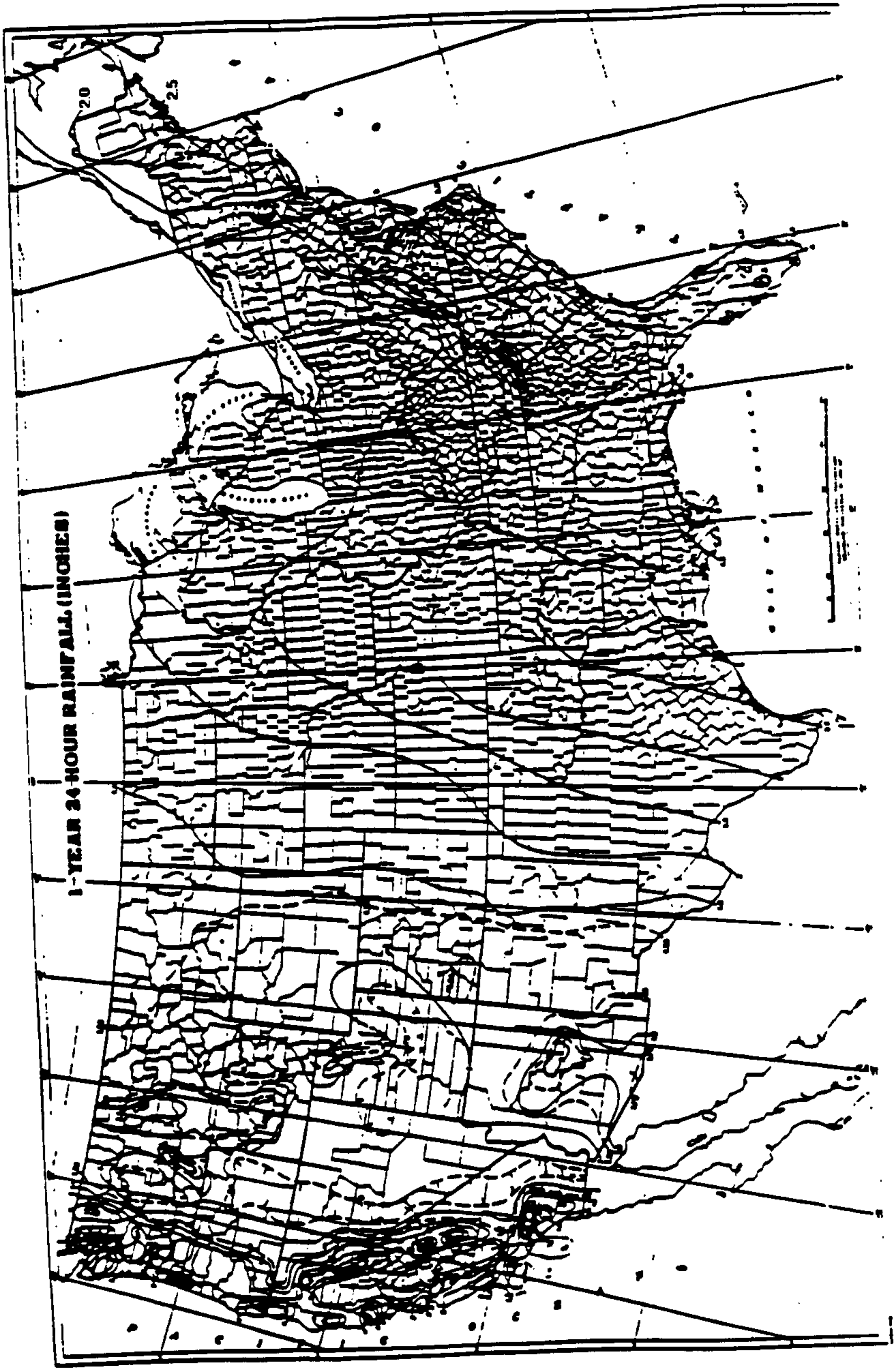
BUFFA

SE/4 BUFFAL

N4245–

AMS 5269 IV

REF. 10



New York State Freshwater Wetlands Map

Erie County

[illegible]

This map was promulgated, pursuant to Article 24 of the Environmental Conservation Law (The Freshwater Wetlands Act) or [illegible] by the Commissioner of New York State Department of Environmental Conservation.

LEGEND:

Approximate wetland boundary

U Upland inclusion

AA-00 Wetland identification code

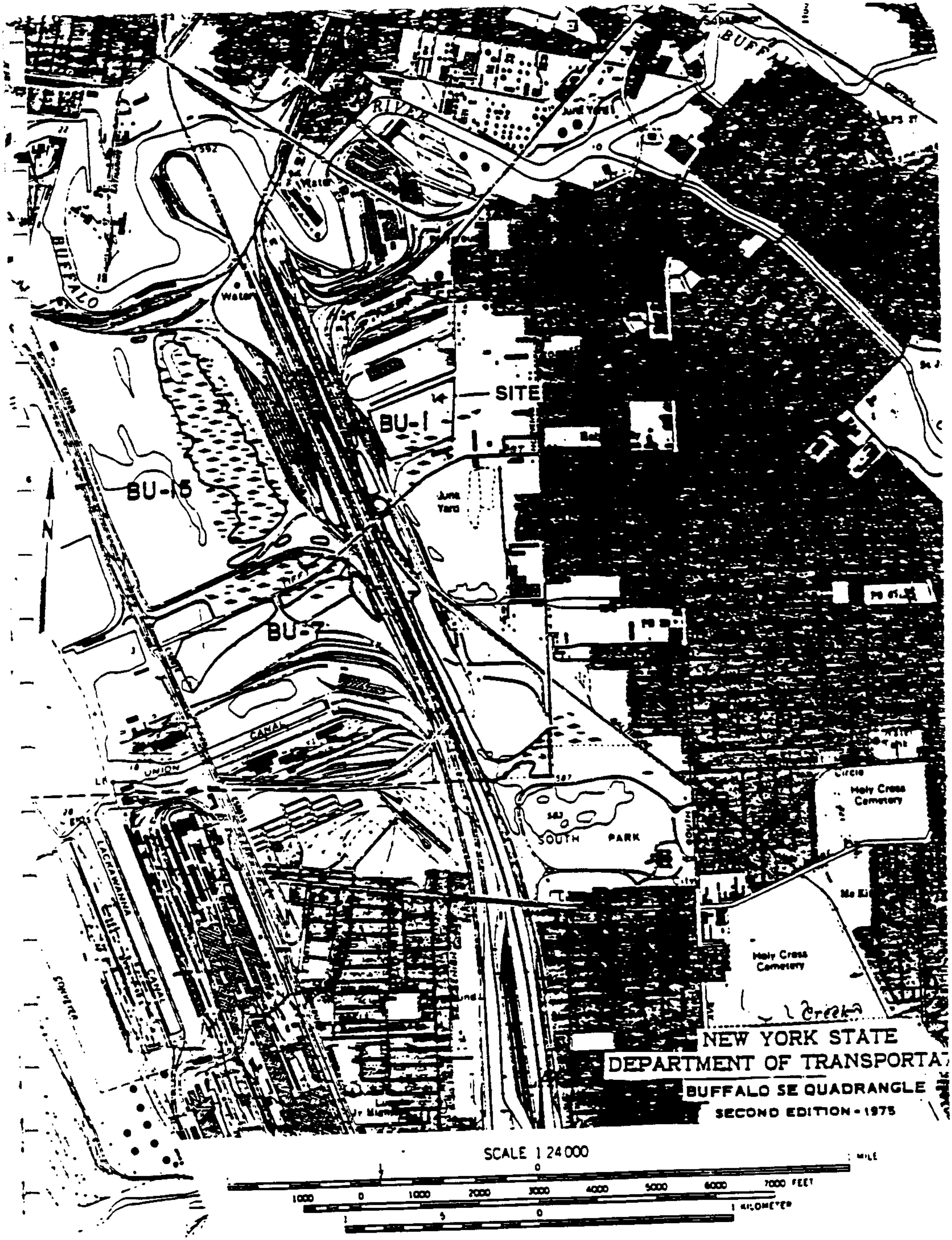
NOTES:

This map indicates the approximate location of the actual boundaries of wetlands regulated according to the Freshwater Wetlands Act.

Map information other than the wetland boundaries was prepared by the New York State Department of Transportation and the United States Geological Survey. The locational information provided on the map is for reference only. Marsh symbols do not necessarily indicate the location of a regulated wetland.

Adjacent areas of the regulated wetlands are those areas within 100 feet of the boundary of the wetland. These areas are subject to regulation pursuant to the Freshwater Wetlands Act but are not delineated on this map. An adjacent area may be extended by special order of the Commissioner of the New York State Department of Environmental Conservation or the local regulatory authority.

Copies of Freshwater Wetlands Maps are available from the regional offices of the Department of Environmental Conservation. Maps are available for inspection at these offices and local government clerks offices.



SITE
BU-1
BU-15
BU-7
BUFFALO
RIVER
CANAL
UNION
SOUTH PARK
LACKAWANNA
CANAL
Holy Cross Cemetery
Holy Cross Cemetery
N
NEW YORK STATE
DEPARTMENT OF TRANSPORTAT
BUFFALO SE QUADRANGLE
SECOND EDITION - 1975
SCALE 1:24 000
0
1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 KILOMETER
1 .5 0

RECORD OF TELEPHONE CONVER

DATE 9/18/85 JOB NO.: 1L

RECORDED BY: EDGillspan OWNER/CLIENT: D&M

TALKED WITH: Jim Snieder OF DEC F.S.

NATURE OF CALL: INCOMING ☒ OUTGOING ☒ Rep

ROUTE TO: INFORMATION ACT..

(616) 847-4585

MAIN SUBJECT OF CALL: wetlands & critical ha

ITEMS DISCUSSED:

All of our sites (INS, Allied Chem, Hopkins St and Alltift) are adj to wetlands and each may used by eagles and ospreys di winter migration. However, they are not within 1 mile of any "critical habitats". ~~They~~ The we are essential habitats for loca wildlife: ducks, ~~fea~~ pheasant muskrats.

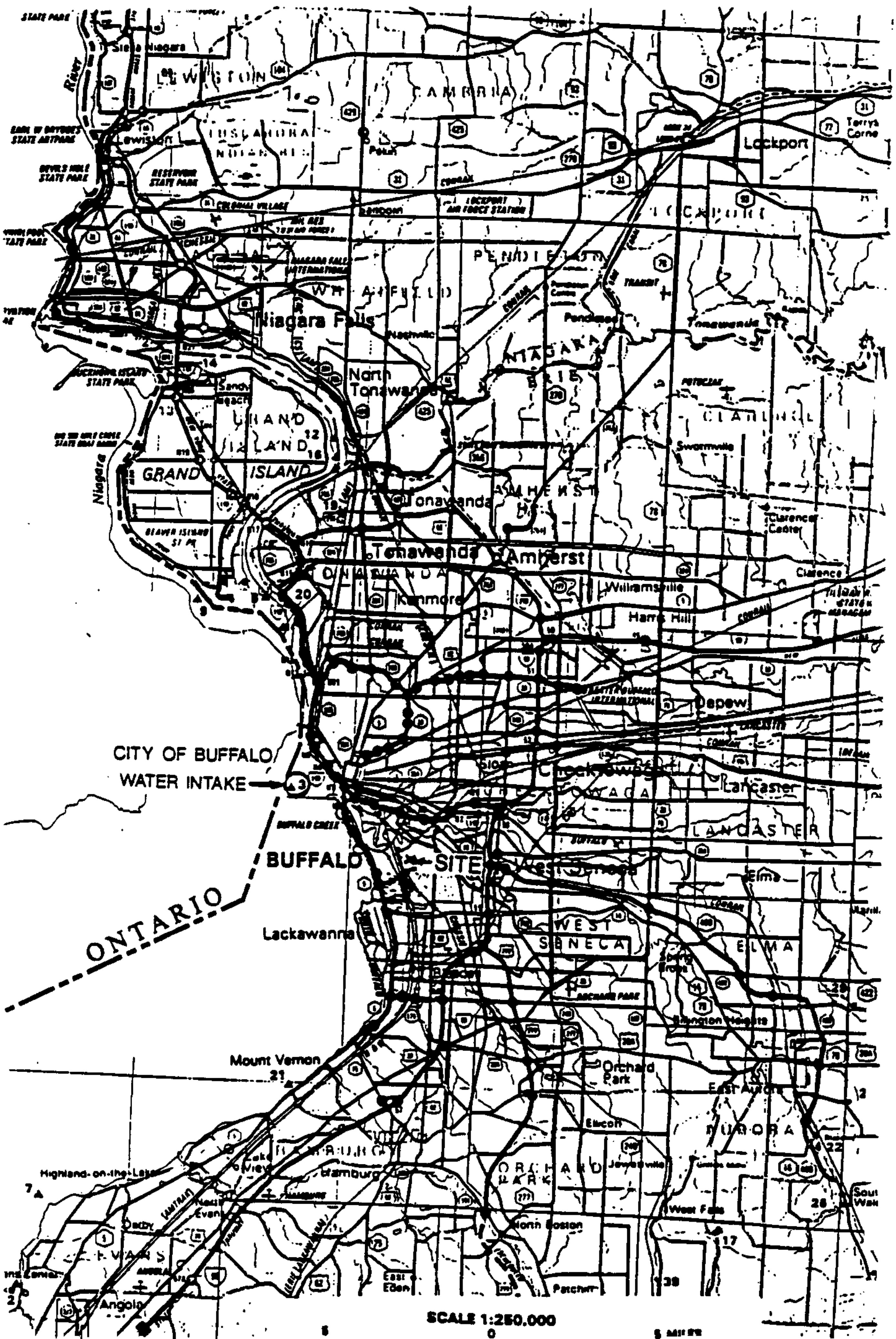
The designation of the wetland of INS is BW-8.

New York State Atlas of Community Water System Sources 1982

NEW YORK STATE DEPARTMENT OF HEALTH
DIVISION OF ENVIRONMENTAL PROTECTION
BUREAU OF PUBLIC WATER SUPPLY PROTECTION

RECEIVED
AUG 2 1
RECRA ENVIRONMENTAL

REF.13



CITY OF BUFFALO
WATER INTAKE
BUFFALO
SITE
ONTARIO
Niagara Falls
North Tonawanda
Tonawanda
Amherst
Kenmore
Williamsville
Lockport
Lewiston
GRAND ISLAND
Depew
Lancaster
Lackawanna
Mount Vernon
Orchard Park
East Aurora
Highland-on-the-Lake
Angola
Clarence
Swormville
Elma
Eden
Hamburg
North Boston
West Falls
Patchin
Sandy Beach
Clarence Center
Terrys Corners
Harris Hill
Orchard Park
Ellicott
Jewettville
Cheektowaga
West Seneca
SCALE 1:250,000

TABLE 12

INCOMPATIBLE MATERIALS

In the lists below, the mixing of a Group A material with a Group B material may have the potential consequence as noted.

Group 1-A

Acetylene sludge
Alkaline caustic liquids
Alkaline cleaner
Alkaline corrosive liquids
Alkaline corrosive battery fluid
Caustic wastewater
Lime sludge and other corrosive alkalies
Lime wastewater
Lime and water
Spent caustic

Group 1-B

Acid sludge
Acid and water
Battery acid
Chemical cleaners
Electrolyte acid
Etching acid liquid or solvent
Pickling liquor and other corrosive acids
Spent acid
Spent mixed acid
Spent sulfuric acid

Potential consequences: Heat generation; violent reaction.

Group 2-A

Aluminum
Beryllium
Calcium
Lithium
Potassium
Sodium
Zinc powder
Other reactive metals and metal hydrides

Group 2-B

Any waste in Group 1-A or 1-B

Potential consequences: Fire or explosion; generation of flammable hydrogen gas.

Group 3-A

Alcohols
Water

Group 3-B

Any concentrated waste in Groups 1-A or 1-B
Calcium
Lithium
Metal hydrides
Potassium
SO_2Cl_2, $SOCl_2$, PCl_3, CH_3SiCl_3
Other water-reactive waste

Potential consequences: Fire, explosion, or heat generation; generation of flammable or toxic gases.

Group 4-A

Alcohols
Aldehydes
Halogenated hydrocarbons
Nitrated hydrocarbons
Unsaturated hydrocarbons
Other reactive organic compounds and solvents

Group 4-B

Concentrated Group 1-A or 1-B wastes
Group 2-A wastes

Potential consequences: Fire, explosion, or violent reaction.

Group 5-A

Spent cyanide and sulfide solutions

Group 5-B

Group 1-B wastes

Potential consequences: Generation of toxic hydrogen cyanide or hydrogen sulfide gas.

Group 6-A

Chlorates
Chlorine
Chlorites
Chromic acid
Hyphochlorites
Nitrates
Nitric acid, fuming
Perchlorates
Permanganates
Peroxides
Other strong oxidizers

Group 6-B

Acetic acid and other organic acids
Concentrated mineral acids
Group 2-A wastes
Group 4-A wastes
Other flammable and combustible wastes

Potential consequences: Fire, explosion, or violent reaction.

Source: Hazardous Waste Management Law, Regulations, and Guidelines for the Handling of Hazardous Waste. California Department of Health, Sacramento, California, February 1975.

REF. 14

RE

Uncontrolled Hazardous Waste Site Ranking System

A Users Manual
(HW-10)

Originally Published in
the July 16, 1982, *Federal Register*

United States
Environmental Protection
Agency

1984

TABLE 4
WASTE CHARACTERISTICS VALUES FOR SOME COMMON CHEMICALS

CHEMICAL/COMPOUND	Toxicity[1]	Persistence[2]	Ignitability[3]	Reactivity[3]
Acetaldehyde	3	0	3	2
Acetic Acid	3	0	2	1
Acetone	2	0	3	0
Aldrin	3	3	1	0
Ammonia, Anhydrous	3	0	1	0
Aniline	3	1	2	0
Benzene	3	1	3	0
Carbon Tetrachloride	3	3	0	0
Chlordane	3	3	0*	0*
Chlorobenzene	2	2	3	0
Chloroform	3	3	0	0
Cresol-O	3	1	2	0
Cresol-MEP	3	1	1	0
Cyclohexane	2	2	3	0
Endrin	3	3	1	0
Ethyl Benzene	2	1	3	0
Formaldehyde	3	0	2	0
Formic Acid	3	0	2	0
Hydrochloric Acid	3	0	0	0
Isopropyl Ether	3	1	3	1
Lindane	3	3	1	0
Methane	1	1	3	0
Methyl Ethyl Ketone	2	0	3	0
Methyl Parathion in Xylene Solution	3	0Δ	3	2
Naphthalene	2	1	2	0
Nitric Acid	3	0	0	0
Parathion	3	0Δ	1	2
PCB	3	3	0Δ	0Δ
Petroleum, Kerosene (Fuel Oil No. 1)	3	1	2	0
Phenol	3	1	2	0
Sulfuric Acid	3	0	0	2
Toluene	2	1	3	0
Trichlorobenzene	2	3	1	0
α-Trichloroethane	2	2	1	0
Xylene	2	1	3	0

[1] Sax, N. I., *Dangerous Properties of Industrial Materials*, Van Nostrand Reinhold Co., New York, 4th ed., 1975. The highest rating listed under each chemical is used.

[2] JRB Associates, Inc., *Methodology for Rating the Hazard Potential of Waste Disposal Sites*, May 5, 1980.

[3] National Fire Protection Association, National Fire Codes, Vol. 13, No. 49, 1977.

*Professional judgment based on information contained in the U.S. Coast Guard CHRIS Hazardous Chemical Data, 1978.

Δ Professional judgment based on existing literature.

NEW YORK

Census Code	Name	G.U. Code	Population 100%-80	7-82	7-84	7-86	PCI 1979	1985	T	Sub	Rec	m
36027090	RHINEBECK TO	333001401600	7062	6937	7070	7120	7152	12470	3	0	2	3
360270903050	RHINEBECK	332001400000	2542	2492	2502	2710	8390	14522	4	0	0	0
36027095	STANFORD TOW	333001401700	3319	3443	3649	3840	7461	12067	3	0	0	0
36027100	UNION VALE T	333001401800	2650	2704	2835	2920	6952	11509	3	0	0	0
36027105	WAPPINGER TO	333001401900	26776	26422	27060	26950	8336	13477	3	0	2	3
36027110	WASHINGTON T	333001402000	4302	4335	4401	4640	9008	15030	3	0	2	3
360271102275	MILLBROOK	332001400300	1343	1341	1376	1350	8360	14036	4	0	0	0
36029	ERIE COUNTY	331001501400	1015472	997691	986013	964700	7094	10543	2	30	62	0
36029 0900	DEPEW	332091500600	19819	19361	19530	19340	6790	9934	0	0	0	0
36029 3995	WILLIAMSVILL	332001501800	6017	5886	5815	5620	9356	14090	0	0	0	0
36029005	ALDEN TOWN	333001500100	10093	10011	9939	9830	6106	9816	3	0	2	3
360290050040	ALDEN	332001500200	2400	2451	2504	2470	6912	10345	4	0	0	0
36029010	AMHERST TOWN	333001500200	108706	108493	108987	109500	9494	14381	3	0	2	3
36029015	AURORA TOWN	333001500300	13872	13695	13593	13540	8870	12413	3	0	2	3
360290150965	EAST AURORA	332001500700	6803	6743	6664	6500	7600	12206	4	0	0	0
36029020	BOSTON TOWN	333001500400	7607	7601	7866	7960	7926	11271	3	0	0	0
36029025	BRANT TOWN	333001500500	2437	2353	2334	2240	5933	8462	3	0	2	3
360290251100	FARNHAM	332001500800	404	363	360	370	5537	8113	4	0	0	0
360290300450	BUFFALO	332001500500	357870	340035	330902	324820	5929	8840	3	0	0	0
36029035	CHEEKTOWAGA	333001500600	109442	106982	106030	103350	7090	10271	3	0	4	3
360290353405	SLOAN	332001501500	4529	4342	4509	4640	6633	9970	4	0	0	0
36029040	CLARENCE TOW	333001500700	18146	18335	18397	18700	8632	13256	3	0	0	0
36029045	COLDEN TOWN	333001500800	3128	3124	3150	3140	6902	10169	3	0	0	0
36029050	COLLINS TOWN	333001500900	5037	4041	4000	5150	5657	8556	3	0	2	3
360290501395	GOWANDA (PT.	332000500700015	849	795	775	760	6026	10795	4	0	0	2
36029055	CONCORD TOWN	333001501000	8171	8199	8306	8330	6487	9546	3	0	2	3
360290553525	SPRINGVILLE	332001501600	4285	4286	4283	4240	6502	9927	4	0	0	0
36029060	EDEN TOWN	333001501100	7327	7293	7302	7290	7130	10234	3	0	0	0
36029065	ELMA TOWN	333001501200	10574	10345	10251	10210	8486	12657	3	0	0	0
36029070	EVANS TOWN	333001501300	17961	18220	18292	18230	6444	9260	3	0	2	3
360290700115	ANGOLA	332001500300	2292	2250	2243	2220	6105	9283	4	0	0	0
36029075	GRAND ISLAND	333001501400	16770	16700	16636	16510	8361	12320	3	0	0	0
36029080	HAMBURG TOWN	333001501500	53270	53370	53594	53240	7545	10804	3	0	3	3
360290800315	BLASDELL	332001500400	3288	3292	3263	3250	7264	10977	4	0	0	0
36029080014,0	HAMBURG	332001500900	10502	10401	10500	10500	8230	12256	4	0	0	0
36029085	HOLLAND TOWN	333001501600	3446	3458	3499	3480	5940	8873	3	0	0	0
360290901830	LACKAWANNA	332001501100	22701	22019	21743	21300	6723	9320	3	0	0	0
36029095	LANCASTER TO	333001501700	30144	29972	30217	29800	7005	10523	3	0	3	3
360290951910	LANCASTER	332001501200	13056	13091	13305	13410	6990	10693	4	0	0	0
36029100	MARILLA TOWN	333001501800	4061	4907	4955	4840	7000	10537	3	0	0	0
36029105	NEWSTEAD TOW	333001501900	7231	7242	7370	7390	6454	9270	3	0	2	3
360291050025	AKRON	332001500100	2971	2902	2901	2920	6422	9331	4	0	0	0
36029110	NORTH COLLIN	333001502000	3791	3740	3745	3750	5792	8209	3	0	2	3
360291102540	NORTH COLLIN	332001501300	1496	1489	1503	1530	5547	8146	4	0	0	0
36029115	ORCHARD PARK	333001502100	24359	24016	23709	23350	8922	13401	3	0	2	3
360291152710	ORCHARD PARK	332001501400	3671	3570	3544	3470	10026	15364	4	0	0	0
36029120	SARDINIA TOW	333001502200	2792	2790	2837	2700	6175	8996	3	0	0	0
360291253610	TONAWANDA	332001501700	10693	10470	10403	10240	6690	9922.	3	0	0	0
36029130	TONAWANDA TO	333001502300	91269	88800	86702	83000	7943	11595	3	0	2	3
360291301800	KENMORE	332001501000	18474	17962	17709	17290	7461	11071	4	0	0	0
36029135	WALES TOWN	333001502400	2844	2806	2956	2930	7264	10550	3	0	0	0
36029140	WEST SENECA	333001502500	51210	49966	49589	49160	7159	10463	3	0	0	0
360[illegible]	[illegible]EX C[illegible]	331[illegible]401500	36176	36357	36654	36300	5790	9055	2	10	32	0
[illegible] 3246	[illegible]ANAC [illegible]	33[illegible]0060	[illegible]462	147[illegible]	14[illegible]	14[illegible]	67[illegible]	10485	8	0	0	2
			[illegible]	[illegible]	[illegible]	[illegible]	57	8615		0	2	3

DONNER-HANNA COKE CORPORATION
BOX A - SOUTH PARK STATION BUFFALO, NEW YORK 14220
TELEPHONE 716/822-1600

REF. 17

January 9, 1979

Mr. John McMahon, P.E.
New York State Department of Environmental Conservation
Region 9
584 Delaware Avenue
Buffalo, New York 14202

SUBJECT: 6 NYCRR 360

Dear Mr. McMahon:

Donner-Hanna Coke Corporation has not been and will not be appropriately categorized as a Solid Waste Management Facility.

This plant has been operated by this corporation at this location since its construction (on reclaimed filled land) in 1918. To the extent that this production facility generated wastes which are candidates for a "Management" program, they have traditionally been the benefactors of recycling inherently practical for, and integral to, our production process and not lingering here or elsewhere to be "managed." We have always returned sludges to the production process (pyrolitic) for final disposition as saleable products.

In using large quantities of indirect cooling water over a period of many years, Donner-Hanna puts out fewer solids in its waste water than were present in its incoming water. From cooling water basins and from the natural ditch conveying our waste water, excavations of earthen sediment have been removed. At such times when lime was used to treat water, the insoluble portion of commercial lime added a few tons to the excavation load but was a small part of the overall picture. Wet, excavated solids are air dried and become the level surface of brick and debris filled land used for storage of as much as $20 million worth of raw materials and products.

Prior to the advent of open burning prohibitions, putrescible substances (garbage), paper packaging, crates, blocking and the like were burned at Donner-Hanna, not landfilled here or elsewhere. When this practice was discontinued, a container service organization was engaged, rather than committing this company to becoming waste managers.

Sizeable quantities of scrap are reclaimed at Donner-Hanna and sold. Other materials such as drums and pallets are either reclaimed for reuse as such or scrapped so as to be useful. In its day-to-day activity, Donner-Hanna replaces sizeable quantities of brick,

concrete, rubber belting, lumber, ties, cable and other unreclaimab
materials. These are in addition to the sizeable quantities of such
materials replaced in capital building programs such as Donner-Hann
executed in the 60's. Suitable fill materials are husbanded and us
pragmatically from our own activities for our own purposes.

Several decades ago, we purchased and continue to use a nearby tract of undeveloped property for the storage of our bulk products and raw materials. Construction and demolition materials, exclusively our own, have been used in a manner fitting Section 36((f) (i) to make this property useful for the bulk material storage purpose for which it was acquired. The present state of development of the property will require that we continue this developmental activity for at least another decade, so as to make it more suitab operationally.

Donner-Hanna is not a solid waste management facility, and declines the invitation to register as such. Whatever the mech 6 NYCRR 360 must be related to the realities of Donner-Hanna's sit in a manner acknowledging our consistent, long-term programming a from such categorization.

Cordially yours,

DONNER-HANNA COKE CORPORATION

Kevin D. Mahar

Kevin D. Mahar
Environmental Control Manager

REF. 18

General Chemistry with Qualitative Analysis

Ralph H. Petrucci
California State College, San Bernardino
Robert K. Wismer
Millersville State College, Millersville, Pa.

Macmillan Publishing Co., Inc.
New York
Collier Macmillan Publishers
London

strict environmental controls, it has become necessary to neutralize the HF, usually with lime. Large settling ponds are required for this reaction. Because two thirds of the phosphate rock is waste, enormous deposits of waste rock are accumulated in fertilizer manufacture. The handling of this waste adds to the cost and complexity of the total operation.

26-9 Raw Materials for the Organic Chemical Industry

The two primary sources of organic compounds are coal and petroleum, mostly the latter. A smaller but still significant source is biomass. In the middle decades of this century chemical industry turned from coal to petroleum as a source of chemical raw materials. However, because of the dramatic increase in petroleum prices over the past decade, industry is once again looking to coal as an important chemical resource. Needless to say, it is unwise to overexpend either coal or petroleum as fuels because of their unique role in supplying so many other essential commodities.

Coal. Coal is an organic, rocklike material with a high ratio of carbon to hydrogen and other elements. (One proposed formula for a "molecule" of bituminous coal is $C_{153}H_{115}N_3O_{13}S_2$.) To synthesize hydrocarbons or other desired organic compounds from coal requires decreasing the C/H ratio.

In the method of **pyrolysis**, coal (usually bituminous coal) is heated to a high temperature (350 to 1000°C) in the absence of air. Volatile products are formed and an impure carbon residue called **coke** remains. Condensation of the volatile products of this destructive distillation yields black viscous **coal tar**.

$$\text{coal} \xrightarrow[\text{(absence of air)}]{\text{heat}} \text{coke} + \text{coal tar} + \text{coal gas}$$

One ton of bituminous coal yields about 1500 lb of coke, 8 gal of coal tar, and 10,000 ft^3 of coal gas. Coal gas is a mixture of H_2, CH_4, CO, C_2H_6, NH_3, CO_2, H_2S, and other components. At one time coal gas was used as a fuel. Coal tar can be distilled to yield the fractions listed in Table 26-9. From these fractions, in turn, other organic chemicals can be produced.

Pyrolysis can be thought of as a carbon-removal process. Coke is removed and the remaining products are correspondingly enriched in hydrogen and other elements. Coal gasification or liquefaction schemes involve the addition of hydrogen (and usually also oxygen). In general these schemes are based on chemical reactions that have been known for 75 years of more, but they have been updated by new

TABLE 26-9
Coal tar fractions

Boiling range	Name	Tar, mass %	Primary constituents
below 200°C	light oil	5	benzene, toluene, xylenes
200–250	middle oil (carbolic oil)	17	naphthalene, phenol, pyridine
250–300	heavy oil (creosote oil)	7	naphthalenes and methylnaphthalenes, cresols, quinoline
300–350	green oil	9	anthracene, carbazole
residue	—	62	pitch or tar

Since 1930, the company has manufactured chain products. Processes used in the company plants are heat treating, pickling, painting, machining, welding, blackening, vibrating, degreasing, zinc phosphating, wire drawing, borax coating, cosmoline spray, granolube coating, tumbling and rotoblasting. A copper dip process was terminated in 1960.

The company has generated the following wastes:

Waste oils
Pickle liquor (sulphuric acid, potassium permanganate, "Kleanrite A" and caustic soda)
Degreaser sludge (grease, oil, dirt and perchlorethylone)
Zinc phosphate sludge
Rotary furnace sludge (dirt and steel scale)
Oil quench tank sludge (dirt and steel scale pines)
Sulphuric acid sludge
Vibrator slurry (steel fines, aluminum oxids, alkaline compounds, burnishing soaps and dirt)
Potassium permanganate sludge

Waste oils (270,000 gallons total from 1930 to 1965) were disposed of on plant property from 1930 to 1965 and since then have been hauled in amounts of 1,000 to 2,000 gallons per year to an unknown location by Ray Morningstar, Inc. of Young Street, Tonawanda.

Pickle liquor (3 million gallons total) was discharged to Ellicott Creek until 1969 and since then, in amounts of 75,000 gallons per year, have been hauled by Frontier Chemical to its Pendleton and Niagara Falls facilities.

Degreaser sludge (10 gallons/yr.), zinc phosphate sludge (550 gallons/yr.), rotary furnace sludge (165 gallons/yr.), oil quench tank sludge (10 gallons/yr.), sulphuric acid sludge (550 gallons per year) have been hauled by Ray Morningstar since 1976. Columbus McKinnon does not know what company hauled such wastes bfore 1976 and where the wastes were disposed of before or after 1976.

Metal scrap, in amounts of up to 500 tons per year (1977 to 1978), were hauled from the plant property to an unknown destination.

DONNER-HANNA COKE CORP.
Abby and Mystic Streets
Buffalo

Donner-Hanna Coke Corporation was incorporated in New York in 1924. Donner-Hanna's current Environmental Control Manager has described the company's waste generating activities as follows:

"Donner-Hanna employs no waste haulers or disposer ot... than Downing Container Service, which provides and exc: containers for garbage such as paper, wood, etc. whic previously burned. Products which Donner-Hanna make might be candidates for waste disposal operations are and have been recycled with raw material coal, so as reconstituted as saleable products. The sludge from waste water pathway is principally insoluable calcium carbonate. It is not hazardous and has not warranted analysis.

"Once each year, we have dug calcium carbonate and ear sediment from our waste water pathway to the Buffalo and deployed it on the surface (of filled property wh_ use for coke storage) as is appropriate for non-hazard material not requiring burial."

Erie County records indicate that ammonia still waste containing phenol was at one time discharged to the "black" stratum some 145 feet below ground level at the Donner-Han facility until, after four years of use, the wells plugged the project was abandoned. This discharge took place befor 1953.

II

DRESSER INDUSTRIES, INC.
Dresser Transportation Equipment Division
Two Main Street
Depew

Dresser Industries began operations in Erie County in The company has been known since 1930 under the names Gou: Coupler Company, Symington-Gould Corporation, Symington-Wa, Corporation and, since 1968, as the Dresser Transportation Equipment Division of Dresser Industries of Dallas, Texas

The company produces steel castings by the foundry prc It generates spent bentonite clay (since 1938), Manley sar (since 1938), slag (since 1930), lubricating oil and smal amounts of brick and phenolic binders (ammonia and cyanide) waste products.

In 1976, the company estimated that it was generating tons per year of the wastes identified above. Since 1976, cubic yards of such wastes have been generated each year.

From 1961 to 1976, all wastes were disposed of at Sto Pond at the southeast corner of Broadway and Transit Road Depew. Since 1976, all such wastes have been disposed of Lancaster Reclamation site by the Ferry Construction Compa Wastes are also dumped at a staging area on Dresser's own west of Transit Road.

REF. 20

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

RCRA GENERATOR INSPECTION CHECKLIST

Generator's Name: Donner-Hanna Coke Inc. NEW YORK, N.Y. 10007 EPA I.D. # NYDO 02110971

Generator's Address: Abby & Mystic Sts. Buffalo, N.Y. Contact: Kevin Maher

		YES	NO
1.	Does generator have an EPA I.D. number?	(✓)	( )
2.	Does generator store material on-site?	(✓)	( )
3.	Is waste accumulated for more than 90 days?	( )	( )
4.	Does generator manifest waste? No hazardous waste leaves site according to Mr. Maher.	( )	( )
5.	Does manifest show following information: Not applicable		
a.	Name, address, I.D. of generator	( )	( )
b.	Name, address, I.D. of transporter	( )	( )
c.	Name, address, I.D. of designated facility	( )	( )
d.	Name, of alternative facility	( )	( )
e.	DOT waste description	( )	( )
f.	Quantity of waste-volume, weight, number of containers	( )	( )
g.	Signed certification statement	( )	( )
6.	Does generator maintain manifest records? Not applicable	( )	( )

7. General Comments:

Hazardous wastes generated –

Decanter tank tar sludge (Waste # K087)

Wash oil "muck" (ignitable wash oil purification waste)

– These wastes may be mixed with wastewater treatment skimm

– Lime still sludge (Waste # K060) is not generated at the facility since lime is no longer used for ammonia recovery.

Inspected By: Jonathan Joseph

Date: 12/4/80

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

RCRA TSD FACILITY INSPECTION CHECKLIST

Company's Name: Donner-Hanna Coke EPA I.D. #: NYDO C...

Company's Address: Abby & Mystic Streets Contact: Kevin M...

		YES
1.	Does the facility have an EPA I.D. number?	(✓)
2.	In what capacity does the facility handle hazardous waste? Circle all appropriate	( )

Storer	Treater	Disposer
Pile	Filtration	Landfill
Drums	Incineration	Land Treatment
Surface Tanks	Thermal	Incineration
Subsurface Tanks	Chemical	Surface Impound...
Surface Impoundments	Biological	Other ______
Other ______	Other Recycle	

3.	Does the facility generate hazardous waste?	(✓)
4.	Does the facility transport hazardous waste?	( )
5.	Does the facility comply with the following	( )

a. Adequate Security (✓)

Comments: Plant gate-house staffed 24 hrs/day

b. Contingency Plan and Emergency Procedures ( )

Comments: No written plan available.

According to Mr. Maher, the wash oil "muck" ignitable is not accumulated for more than a ...

tar sludge is not "ignitable".

c. Inspection Plan ( )

Comments: No written plan available.

d. Personnel Training ( )

Comments: ~~[illegible]~~

On-the-job training. No classroom tr...

e. Waste Analysis Plan ( ) (X)
Comments: No written plan available.
Significant changes in composition which could affect the manner of handling are not likely.

f. Preparedness and Prevention Plans ( ) (X)
Comments: No written plan available.

Has the facility filed a part A permit application? (X) ( )

Does the facility maintain manifest records? Not applicable ( ) ( )

Does the facility have other environmental permits? (X) ( )

a. NPDES (X) ( )

b. Air (X) ( )

c. State --identify Air Petroleum handling license (X) ( )

d. Other --identify ( ) ( )

Identify hazardous wastes handled and method for handling
Tar decanter tank sludge and wash oil "muck" may be mixed with wastewater treatment skimmings. The waste mixture is then mixed with coal and (eventually) feed into the coking ovens as a raw material.

General Comments
Despite the fact that the hazardous wastes are not discarded but reused, they are subject to certain hazardous waste regulations. See 40 CFR 261.6 (b).

Inspected by: Jonathan Joseph

Date: 12/4/80

(continued)

NYDO 021109

Additional —

According to Mr. Mahar, the hazardous wastes were before RCRA took effect and were not consid- be wastes in the past. The hazardous waste handled by production workers like other proo materials. For example, a crane operator will coal to a tank containing the waste to form th coal/waste mixture which is fed as a raw to the coke ovens. This coal/waste mixture is in piles outdoors. The material was examined the inspection and found to be solid in consi

According to page 47834 of the 7/16/80 Fed Register, the tar decanter sludge is listed as h because of its phenol and napthalene content. possible that these materials can be leached fr coal/waste mixture by rain water. However, the is in compliance with its NPDES permit limit for and should not impact on the drinking water supply s (city) water rather than well water is used as Bu potable water supply.

New York State Department of Environmental Conservation **REF. 21**

MEMORANDUM

TO: File 5 7 K
FROM: D. McKenzie
SUBJECT: Donner-Hanna Co. Inspection 11/18/81

DATE: February 18, 1982

Mr. Kevin Mahar, Mr. Andy Blattacharyya and the writer toured the Donner Hanna plant and the coke storage area to the south. The solid waste issues raised in the D.E.C. files were also discussed.

Only one waste disposal site was observed. This was the landspreading of sludges removed from the cooling water taken from Lake Erie. The spread material is not presently visible but under the $40,000,000 worth of coke stored on site. Donner Hanna freely admits to the presence of this material because they say the solids removed were not added to the water by them and the water leaving the premises is cleaner than when received. It is estimated that 42 tons per year of the sediment is landspread. This is less than previously landspread since calcium in the form of lime is no longer used in water treatment - an alternate material performing the same function is now used that does not percipitate out. The resulting waste stream meets stream standards (verbal from Kevin Mahar but implied from incomplete attached lab report). The attached lab report does show that the landspread sludges pass the "IT toxicity" test.

The resolution of a previously noted concern (carbonaceous residues) was observed. A large concrete swimming pool like tank was being used to mix hydrocarbon sludges with incoming fine coal. Tar decanter sludge (coal, coke and tar) and wash oil sludge (sediment or filtrate of processed light absorbent oil) are processed by this procedure. The resulting mixture is charged with raw materials to the coke ovens and removed as product in the form of coke and by-product gases.

Mr. Mahar also elaborated on the ultimate disposal of several coke oven gas by-products (ammonia and phenol) whose disposal had been a concern in the past. One statement in particular from the Interagency Task Force on Hazardous Wastes mentioned an abandoned (used from 1927 to 1939) well disposal procedure and raised the question of present disposal.

Since 1959 a solvent extraction system has been used that first extracts phenol as sodium phenolate and then extracts ammonia as ammonium sulfate. Both of the materials leave the plant as saleable products although their purification cost exceeds their sale price. Other purification steps such as distillation, lime neutralization and additional solvent extraction steps are part of this process.

sk

Att.

Characterization of Samples for

EP Toxicity and EP Metals

Report Prepared For

DONNER-HANNA COKE

by

ADVANCED ENVIRONMENTAL SYSTEMS, INC.

Prepared by Robert C. Wojcik

Robert C. Wojcik
Operations Manager

November 7, 198[illegible]

LABORATORY REPORT

SCOPE OF WORK

Analysis for characteristics of "EP Toxicity" on two (2) sludge samples and analysis of three (3) liquid samples for EP metals.

METHODOLOGY

Extraction of the sludge samples was performed in accordance with Federal Register, Vol. 45, No. 98, May 19, 1980; Section 261.30, Appendix II.

Analysis of the two extracts and three liquid samples for arsenic, barium, cadmium, chromium, lead, mercury, silver, and selenium were performed in accordance with "Methods for the Analysis of Water and Wastes," Environmental Monitoring and Support Laboratory, Office of Research and Development, U.S. EPA, Cincinnati, Ohio; EPA 600/4-79-020, March 1979.

Analysis for endrin, lindane, methoxychlor, toxaphene, 2,4-D, and 2,4,5-TP Silvex was performed in accordance with "Methods for Benzidine, Chlorinated Organic Compounds, Pentachlorophenol, and Pesticides in Water and Wastewater," September, 1978, U.S. EPA, Monitoring and Support Laboratory, Cincinnati, Ohio.

Advanced Environmental Systems, Inc.

Monitoring and Support Laboratory

LABORATORY REPORT

RESULTS

Table 1. Characteristics of EP Toxicity
on Two Sludge Samples
Expressed in micrograms per liter or parts per billion

Contaminant	Sample 4TWS [illegible]	Sample 5RP [illegible]	Maximum Allowable
Arsenic	25.	30.	5,000.
Barium	<500.	<500.	100,000.
Cadmium	<30.	<30.	1,000.
Chromium	<100.	<100.	5,000.
Lead	<400.	<400.	5,000.
Mercury	<0.5	<0.5	200.
Selenium	<10.	<10.	1,000.
Silver	<100.	<100.	5,000.
Endrin	ND[1]	ND	20.
Lindane	ND	ND	400.
Methoxychlor	0.5	0.3	10,000.
Toxaphene	ND	ND	500.
2,4-D	0.2	1.7	10,000.
2,4,5-TP Silvex	ND	ND	1,000.

According to the extraction procedure employed, The material is non toxic.

[1] ND - Not Detected

DONNER-HANNA COKE CORPORATION
BOX A - SOUTH PARK STATION BUFFALO, NEW YORK 14220
TELEPHONE 716/822-1600

REF. 22

December 6, 1978

Mr. David A. Dooley
Interagency Task Force on Hazardous Wastes
Main Post Office Box 561
Niagara Falls, New York 14302

Dear Mr. Dooley:

This is in response to your letter of 11/15/78 and confirms our earlier correspondence, as well as the phone conversation which you refer to.

Donner-Hanna employs no waste haulers or disposers other than Downing Container Service, which provides and exchanges containers for garbage such as paper, wood and the like, which was previously burned. This is as stated in the fourth paragraph of our letter of 11/6/78.

Products which Donner-Hanna makes that might be candidates for waste disposal operations are now and have been recycled with raw material coal, so as to be reconstituted as saleable products. This is consistent with the fourth paragraph of our 11/6/78 letter.

The sludge from our waste water pathway is principally insoluble calcium carbonate. It is not hazardous, and has not warranted analysis other than to identify the dry weight of the solids for commercial quantification dealing with the Corps of Engineers on dredging charges.

Along with our previous letter, we would expect this to establish that we are not members of the waste-burying or burning community subject to your continued scrutiny.

Sincerely yours,

DONNER-HANNA COKE CORPORATION

Kevin D. Mahar

Kevin D. Mahar
Environmental Control Manager

DEC 08 1978

DONNER-HANNA COKE JOINT VENTU
BOX A – SOUTH PARK STATION BUFFALO, NEW YORK 14220
TELEPHONE 716/822-1600

November 19, 1981

Mr. Donald McKenzie, Senior Sanitary Engineer
NYS-Dept. of Environmental Control
600 Delaware Avenue
Buffalo, New York 14202

Dear Mr. McKenzie:

This follows your visit here yesterday, to confirm our status as regards 6NYCRR360 Regulations Relating to Solid Waste Management Facilities.

Donner-Hanna has filed a 3010 Notification and Part A Permit Application as a producer of coke and as a generator and recycler of one of two coke plant wastes that are listed under EPA's Hazardous Waste Regulations 40 CFR261. The listed waste that is not included in our registration is Lime Still Sludge, since this material is not generated at Donner-Hanna. In addition to the one listed waste (i.e. Decanter Tank Tar Sludge), Donner-Hanna also generates and recycles ignitable material that evolves from our purchase and recirculating use of absorbent oil. Copies of our hazardous waste registration with US-EPA were provided to you.

A misimpression created by a county investigator's report is correctly restated on the attached. As the foregoing indicates, Donner-Hanna has a long history of recycling carbonaceou materials that otherwise would be candidates for a waste management program. It is a major user of Buffalo River Improvement Corporat Unfiltered Lake Water which leaves some non-carbonaceous residues in indirect cooling systems and the single direct-discharge-permitted water outlet.

Since last fall, this non-carbonaceous sediment has been tested and a copy of our EP toxicity report is enclosed. This entit us to continue using mud (along with brick and the like) as a supp base for our coke stocking area that is not now a waste management facility.

We trust that we have provided you with what is necess to take us out of an unfortunate categorization of a $40 million bul product storage area as a waste disposal site.

Cordially yours,

DONNER-HANNA COKE JOINT VENTURE

Kevin Mahar

Kevin D. Mahar
Environmental Control Manager

Attachment

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION II

26 FEDERAL PLAZA

NEW YORK, NEW YORK 10007

REF. 24

JAN 12 1981

Mr. Kevin D. Mahar
Environmental Control Manager
Donner-Hanna Coke Joint Venture
Box A, South Park Station
Buffalo, New York 14220

Re: N/SPDES Permit No. NY0003310
Hazardous Waste Permit Application
(I.D. No. NYDO 02110971)
Inspection of December 4, 1980

Dear Mr. Mahar:

Enclosed are copies of two reports for my December 4 inspection at the Donner-Hanna facility. The first report deals with the N/SPDES portion of the inspection while the second deals with the hazardous waste aspects of the inspection.

Regarding the N/SPDES evaluation, I was pleased to find that you had found a solution to the suspended solids problem which had previously caused permit violations. No permit violations were noted during the inspection.

The hazardous waste inspection report has been forwarded to EPA hazardous waste program personnel for their review.

If you have any comments or questions concerning these reports, you may contact me at (212) 264-2936.

Sincerely yours,

Jonathan Josephs
Chemical Engineer
Water Facilities Branch
Enforcement Division

cc: John McMahon, Regional Engineer
NYSDEC

T-7/8

DEPARTMENT OF ENVIRONMENT & PLANNING
DIVISION OF ENVIRONMENTAL CONTROL

MEMORANDUM

FROM Don Campbell, P.E. DATE June 10, 19

TO Lawrence G. Clare, P.E.

SUBJECT Donner Hanna Coke Corp.

Inspection Date : June 9,

Site # 91507, page B-9-63, Hazardous Waste Report, Vol. 3.

Site inspection and a study of May 1981 aerial photographs # 21-10 indicated that the site has changed considerably from conditions observed in a December 12, 1979 observation report.

Mr. Kevin Mahar substantiated claims that the property in question is not owner by Donner Hanna. Mr. Mahar is contesting the classification of his property as a solid waste facility and maintains that only demo material lies beneath a record high stockpile of coke.

The size and height of the stockpiled coke precluded any conclusive inspection other than the observation that no Leachate or evidence of past Leachate was observed.

The property owned by Republic Steel contained sizeable quantities of slag. No Leachate was observed.

No visual basis for sampling is recommended.

A copy of Mr. Mahar's letter of January 9, 1979 is enclosed. No response from DEC is claimed. Coke pile outlines copy is also included along with aerial photos.

DC:rb

Encs:

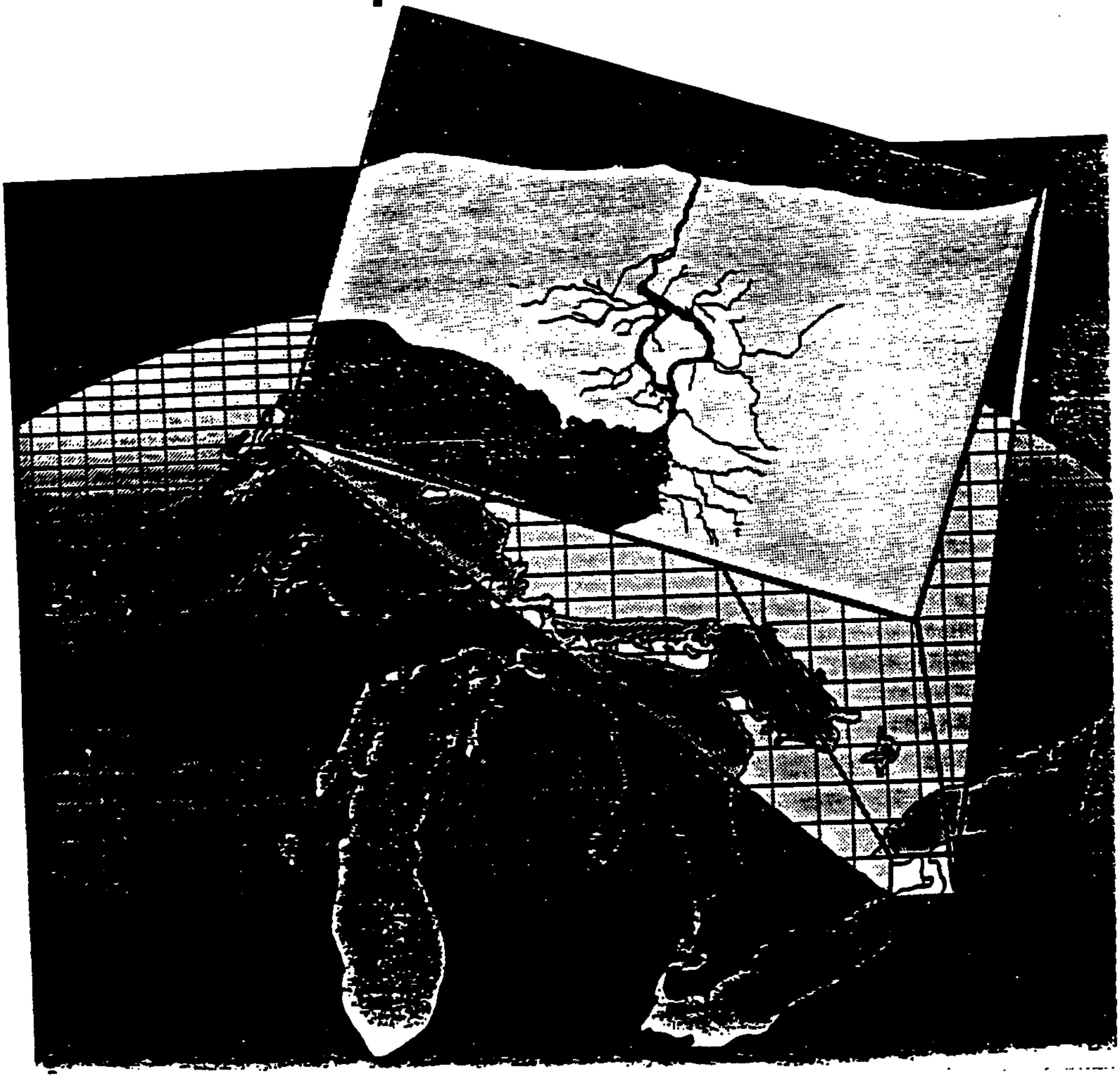
SAVE OUR ENVIRONMENT USE RECYCLED PAPER

Environmental Protection Agency
Program Office
536 South Clark Street
Chicago, Illinois 60605

REF. 26

EPA

Preliminary Evaluation Of Chemical Migration To Groundwater and The Niagara River from Selected Waste-Disposal Sites



206. TIFFT FARM (Literature review) NYSDE

General information and contaminant-migration potential.--The Tifft Farm in the southwestern part of the city of Buffalo, was a disposal site fo- material hauled from Squaw Island (site 203, pl. 2) during the mid-1970 site was designed with clay barrier walls and base and a leachate-collec system. The site was capped with a clay seal and has been incorporated nature preserve. Subsurface investigations were not included as a part site-assessment program.

216. ERIE BASIN MARINA (Literature review) NYSDEC

General information and contaminant-migration potential.--The Erie Basin Marina is on Lake Erie at the mouth of the Buffalo River in the city of Buffalo. Construction of the site began in 1972 and was completed in t mid-1970's. The fill is reported to consist of 90 percent slag from a corporation and 10 percent construction and demolition material from are buildings that were being torn down. The site is in direct hydraulic c with the Buffalo River and Lake Erie; thus contaminant migration would likely. No hazardous waste is reported to be deposited at the site. Th tial for contaminant migration from the site is indeterminable.

Geologic information.--The site is a manmade area built out into the wat It consists of a slag and hard fill base overlain by imported soil and underlain by lake deposits.

Hydrologic information.--The fill material is in direct contact with Lak Erie; thus any ground water at the site would mix directly with lake wa All surface runoff would also flow directly into the Buffalo River or L Erie.

Chemical information.--No evidence of hazardous waste was found; theref water or soil analyses were made.

217. DONNER HANNA COKE COMPANY (USGS field reconnaissance) NYSD

General information and contaminant-migration potential.--The Donner Han Company, in the southern part of the city of Buffalo, was a disposal ar ammonium sulfate and water-treatment-plant solids. The site is now use coke storage.

The potential for vertical migration of contaminants is probably m because an extensive clay unit underlies the site. The geologic cores a results of an electromagnetic survey indicate the area of fill to be lar visual inspection of the site would indicate. All samples were taken w disposal area; thus, more data would be needed to determine the potenti horizontal migration offsite. The potential is indeterminable at presen

MALCOLM PIRNIE

APPENDIX C

REMEDIAL REPORT FOR THE TRUSCON PROPERTY

Printed on Recycled Paper

MALCOLM PIRNIE

Inspector's Daily Report

CONTRACTOR:
ADDRESS:

TELEPHONE:
LOCATION LTV / Transcon Site FROM — TO —
WEATHER — TEMP A.M. P.M. DATE 10/11/96

CONTRACTOR'S WORK FORCE AND EQUIPMENT

DESCRIPTION	H	#	DESCRIPTION	H	#	DESCRIPTION	H	#	DESCRIPTION	H	#
Field Engineer						Equipment			Front Loader Ton		
Superintendent			Ironworker			Generators			Bulldozer		
						Welding Equip.					
Laborer-Foreman			Carpenter								
Laborer									Backhoe		
Operating Engineer			Concrete Finisher								
Carpenter						Paving Equip. & Roller					
						Air Compressor					

SEE REVERSE SIDE FOR SKETCH ☐YES ☐NO

WORK PERFORMED:

- Proposed area of excavation stripped of sufficient clean material, average depth of clean material stripped from proposed area 1-1½ feet
- Site to be excavated approx 52,344 ft²
- Approx 1538 yd³ cover material stripped, later to be used as backfill material
- Established site grid, surficial elevations before/after backfill material had been removed
- Site map and grid completed

PAY ITEMS:

CONTRACT NO.	CONTRACT ITEM	STA FROM	STA TO	DESCRIPTION	QUANTITY	REMARKS

TEST PERFORMED:
PICTURES TAKEN:

QA PERSONNEL
SIGNATURE P. Hilton

VISITORS: P. Werthman, T. Reid, R. Frappa

REPORT NO. 1
SHEET 1 of 1

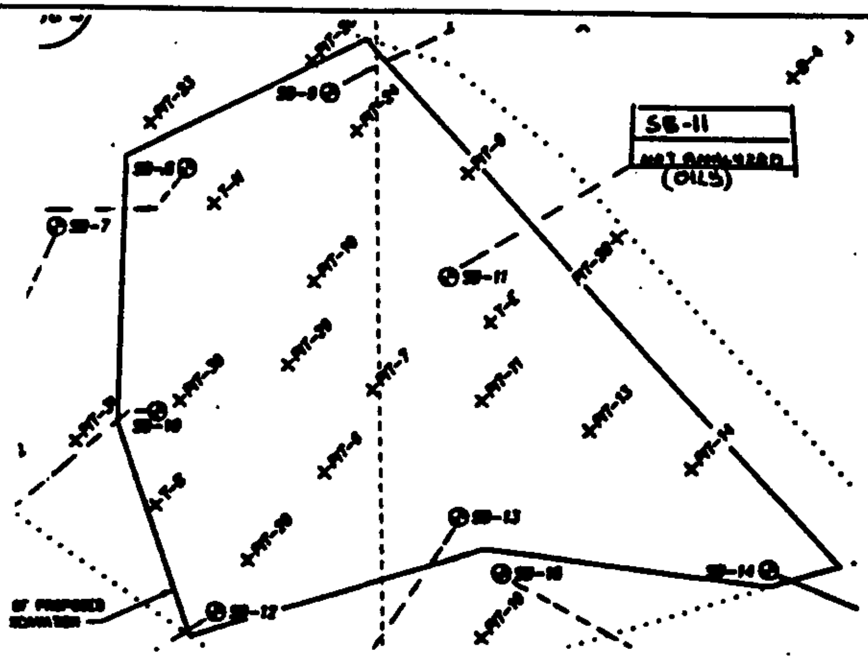
MEETINGS HELD & RESULTS: - Met w/ Tim of Tomato development, who requested that no asphalt or concrete greater than 8" diameter be backfilled into excavation.

Assured developer that backfill materials (asphalt) will be broken up into small pieces and used at depths > 4' bgs

REMARKS:

REFERENCES TO OTHER FORMS:

SKETCHES



SAMPLE LOG

SAMPLE NUMBER:

APPROXIMATE LOCATION OF STOCKPILE:

NUMBER OF STOCKPILE:

DATE OF COLLECTION:

CLIMATOLOGIC CONDITIONS:

FIELD OBSERVATION:

SHEETS ____ **OF** ____

MALCOLM PIRNIE

Inspector's Daily Report

CONTRACTOR:
ADDRESS:

TELEPHONE:
LOCATION LTV / Truscon FROM ____ TO ____
WEATHER ____ TEMP ____ A.M. ____ P.M. ____ DATE 10/14/96

CONTRACTOR'S WORK FORCE AND EQUIPMENT

DESCRIPTION	H	#	DESCRIPTION	H	#	DESCRIPTION	H	#	DESCRIPTION	H	#
Field Engineer						Equipment			Front Loader Ton		
Superintendent			Ironworker			Generators			Bulldozer		
						Welding Equip.					
Laborer-Foreman			Carpenter								
Laborer									Backhoe		
Operating Engineer			Concrete Finisher								
Carpenter						Paving Equip. & Roller					
						Air Compressor					

SEE REVERSE SIDE FOR SKETCH ☐ YES ☐ NO

WORK PERFORMED:

- Installed 1" PVC piezometer to approx 11.5' bgs @ location due south of excavation area
- Perched water condition @ base of slag backfill 2.5' bgs
- Dug test pits to investigate / confirm location of on-site fuel oil tanks
  - found (2) ½" dia copper lines adjacent to SW corner of Truscon office addition, tank presumably under existing sidewalk.
  - Unable to uncover (2) 4000 gal tank in central portion of site

PAY ITEMS:

CONTRACT NO.	CONTRACT ITEM	STA FROM	STA TO	DESCRIPTION	QUANTITY	REMARKS

TEST PERFORMED:
PICTURES TAKEN:

VISITORS:

QA PERSONNEL
SIGNATURE J.P. Hilton

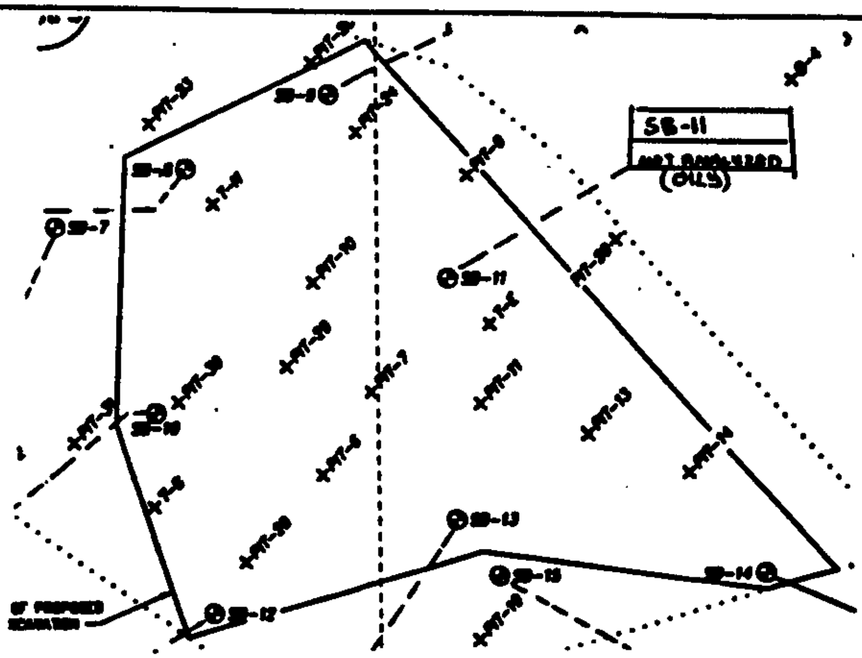
REPORT NO. 2
SHEET 1 of 1

MEETINGS HELD & RESULTS:

REMARKS:

REFERENCES TO OTHER FORMS:

SKETCHES



SAMPLE LOG

SAMPLE NUMBER:

APPROXIMATE LOCATION OF STOCKPILE:

NUMBER OF STOCKPILE:

DATE OF COLLECTION:

CLIMATOLOGIC CONDITIONS:

FIELD OBSERVATION:

SHEETS OF

MALCOLM PIRNIE

Inspector's Daily Report

CONTRACTOR:
ADDRESS:

TELEPHONE:
LOCATION LTV / TRUSCON FROM ____ TO ____
WEATHER ____ TEMP ____ A.M. ____ P.M. ____ DATE 10/15/96

CONTRACTOR'S WORK FORCE AND EQUIPMENT

DESCRIPTION	H	#	DESCRIPTION	H	#	DESCRIPTION	H	#	DESCRIPTION	H	#
Field Engineer						Equipment			Front Loader Ton		
Superintendent			Ironworker			Generators			Bulldozer		
						Welding Equip.					
Laborer-Foreman			Carpenter								
Laborer									Backhoe		
Operating Engineer			Concrete Finisher								
Carpenter						Paving Equip. & Roller					
						Air Compressor					

SEE REVERSE SIDE FOR SKETCH ☐YES ☐NO

WORK PERFORMED:

- Obtained elevation data to calculate stripped soil volume 1538 yd^3
- Notified Peter Buechi of site developments

PAY ITEMS:

CONTRACT NO.	CONTRACT ITEM	STA FROM	STA TO	DESCRIPTION	QUANTITY	REMARKS
	2			Uncontaminated Stockpile	1538 yd^3	w/in proposed site
	7			Stockpile liner construction	1	

TEST PERFORMED:
PICTURES TAKEN:

VISITORS:

QA PERSONNEL
SIGNATURE J. P. Hilton

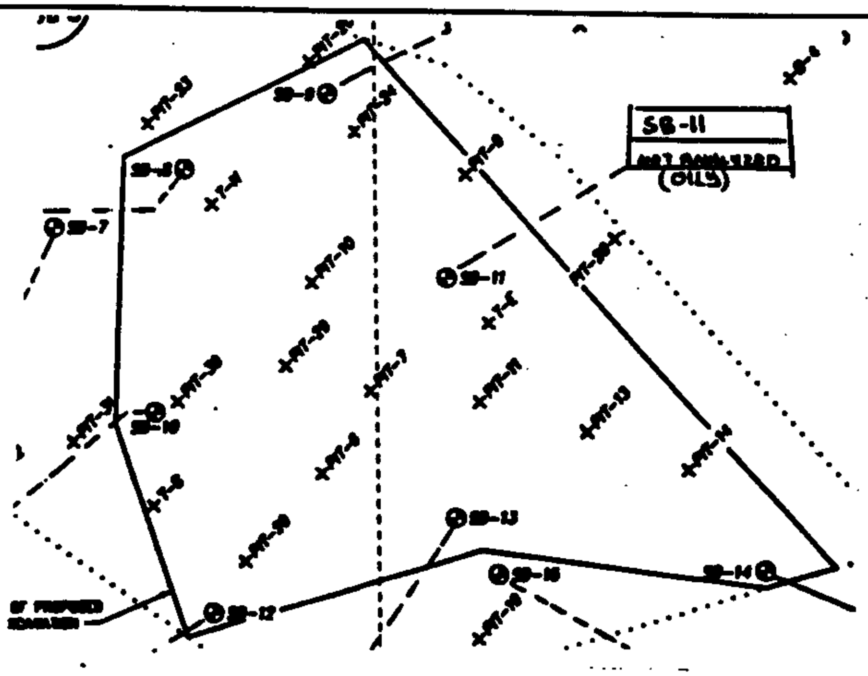
REPORT NO. 3
SHEET 1 of 1

MEETINGS HELD & RESULTS:

REMARKS:

REFERENCES TO OTHER FORMS:

SKETCHES



SAMPLE LOG

SAMPLE NUMBER:

APPROXIMATE LOCATION OF STOCKPILE:

NUMBER OF STOCKPILE:

DATE OF COLLECTION:

CLIMATOLOGIC CONDITIONS:

FIELD OBSERVATION:

SHEETS OF

MALCOLM PIRNIE

Inspector's Daily Report

CONTRACTOR:
ADDRESS:

TELEPHONE:
LOCATION LTV / Truscon FROM TO
WEATHER TEMP A.M. P.M. DATE 10/16/96

CONTRACTOR'S WORK FORCE AND EQUIPMENT

DESCRIPTION	H	#	DESCRIPTION	H	#	DESCRIPTION	H	#	DESCRIPTION	H	#
Field Engineer						Equipment			Front Loader Ton		
Superintendent			Ironworker			Generators			Bulldozer		
						Welding Equip.					
Laborer-Foreman			Carpenter								
Laborer									Backhoe		
Operating Engineer			Concrete Finisher								
Carpenter						Paving Equip. & Roller					
						Air Compressor					

SEE REVERSE SIDE FOR SKETCH ☐YES ☐NO

WORK PERFORMED:

• Contractor to define top of Clay pad / bottom of Stockpile material w/ Plastic tape / ribbon per DEC request

PAY ITEMS:

CONTRACT		STA		DESCRIPTION	QUANTITY	REMARKS
NO.	ITEM	FROM	TO			

TEST PERFORMED:
PICTURES TAKEN:

VISITORS:

QA PERSONNEL
SIGNATURE [signature]

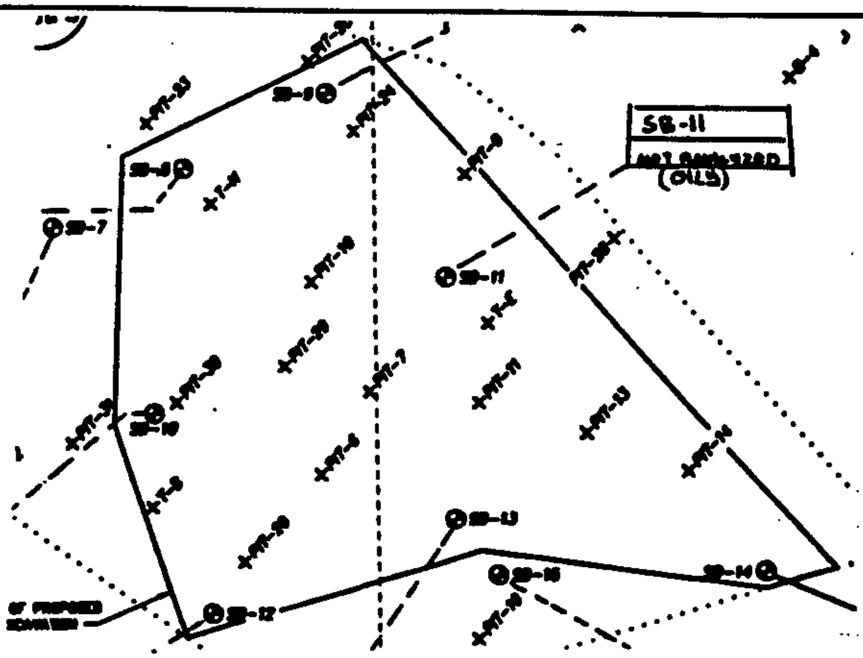
REPORT NO. 4
SHEET 1 of 1

MEETINGS HELD & RESULTS:

REMARKS:

REFERENCES TO OTHER FORMS:

SKETCHES



SAMPLE LOG

SAMPLE NUMBER:

APPROXIMATE LOCATION OF STOCKPILE:

NUMBER OF STOCKPILE:

DATE OF COLLECTION:

CLIMATOLOGIC CONDITIONS:

FIELD OBSERVATION:

SHEETS ______ OF ______

MALCOLM PIRNIE

Inspector's Daily Report

CONTRACTOR:
ADDRESS:

TELEPHONE:
LOCATION LTV / Transcon FROM ______ TO ______
WEATHER ______ TEMP ______ A.M. ______ P.M. ______ DATE 10/17/96

CONTRACTOR'S WORK FORCE AND EQUIPMENT

DESCRIPTION	H	#	DESCRIPTION	H	#	DESCRIPTION	H	#	DESCRIPTION	H	#
Field Engineer						Equipment			Front Loader Ton		
Superintendent			Ironworker			Generators			Bulldozer		
						Welding Equip.					
Laborer-Foreman			Carpenter								
Laborer									Backhoe		
Operating Engineer			Concrete Finisher								
Carpenter						Paving Equip. & Roller					
						Air Compressor					

SEE REVERSE SIDE FOR SKETCH ☐YES ☐NO

WORK PERFORMED:

- Excavated to approx depth 7.5' bgs max (574.' elev) along southern perimeter of excavation
- Obtained elevation data at bottom of excavation
- Sampled base of excavation for STARS parameters list Method 8021. Waste Stream Analytical lab on site to pickup sample(s) under COC
- Backfilled portion of open excavation

PAY ITEMS:

CONTRACT NO.	CONTRACT ITEM	STA FROM	STA TO	DESCRIPTION	QUANTITY	REMARKS

TEST PERFORMED:
PICTURES TAKEN: X along southern perimeter of excavation
VISITORS:

QA PERSONNEL
SIGNATURE K P Hilton
REPORT NO. 5
SHEET 1 of 1

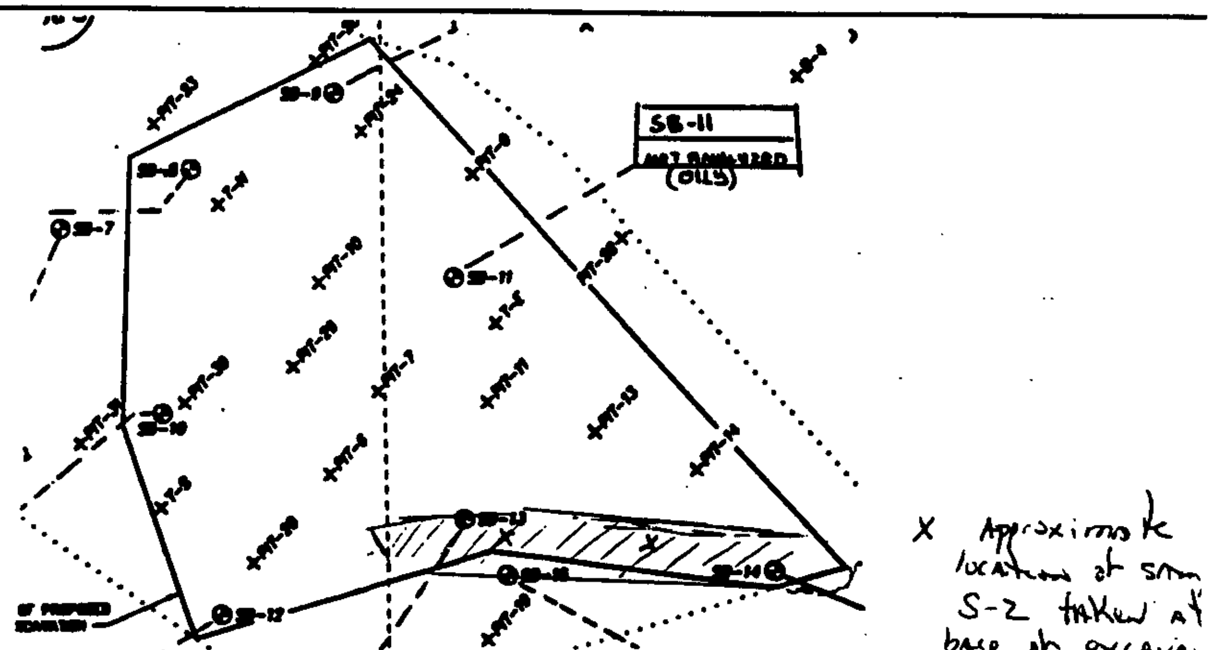
MEETINGS HELD & RESULTS:

REMARKS:

REFERENCES TO OTHER FORMS:

SKETCHES

Approx. only



SAMPLE LOG

SAMPLE NUMBER: S-2 (574' elevation) estimated elevation

APPROXIMATE LOCATION OF STOCKPILE:

NUMBER OF STOCKPILE:

DATE OF COLLECTION: 10/17/96

CLIMATOLOGIC CONDITIONS: Sunny Day 70°

FIELD OBSERVATION: base of excavation below contaminated overburden

SHEETS 1 OF 1

MALCOLM PIRNIE

Inspector's Daily Report

CONTRACTOR:
ADDRESS:

TELEPHONE:
LOCATION LTV / Truscon FROM TO
WEATHER TEMP A.M. P.M. DATE 10/18/96

CONTRACTOR'S WORK FORCE AND EQUIPMENT

DESCRIPTION	H	#	DESCRIPTION	H	#	DESCRIPTION	H	#	DESCRIPTION	H	#
Field Engineer						Equipment			Front Loader Ton		
Superintendent			Ironworker			Generators			Bulldozer		
						Welding Equip.					
Laborer-Foreman			Carpenter								
Laborer									Backhoe		
Operating Engineer			Concrete Finisher								
Carpenter						Paving Equip. & Roller					
						Air Compressor					

SEE REVERSE SIDE FOR SKETCH ☐ YES ☐ NO

WORK PERFORMED:

- Continued excavation toward SW corner of proposed Truscon site perimeter
  - Lithology became sandy w/ coarse gravel lenses, oil saturated. Stopped excavation advancement toward west and moved to eastern perimeter. Second swath/cut started
- Oil soaked silty-sand noted to depths greater than 9' bgs per work plan overburden material was removed to maximum depth of 7.5-8' bgs representative of water table conditions
- Surveyed bottom of new excavation

PAY ITEMS:

CONTRACT NO.	CONTRACT ITEM	STA FROM	STA TO	DESCRIPTION	QUANTITY	REMARKS
				3" pump		

TEST PERFORMED:
PICTURES TAKEN: X Photos of Sand/Gravel lithology
VISITORS: Tim Dittenbach, Bob Leary

QA PERSONNEL
SIGNATURE
REPORT NO. 6
SHEET 1 of 1

MEETINGS HELD & RESULTS: - Met w/ Tim Dittenbach & Bob Leary to Address progress and anticipated schedule of events

- Toured excavation and stockpile pad

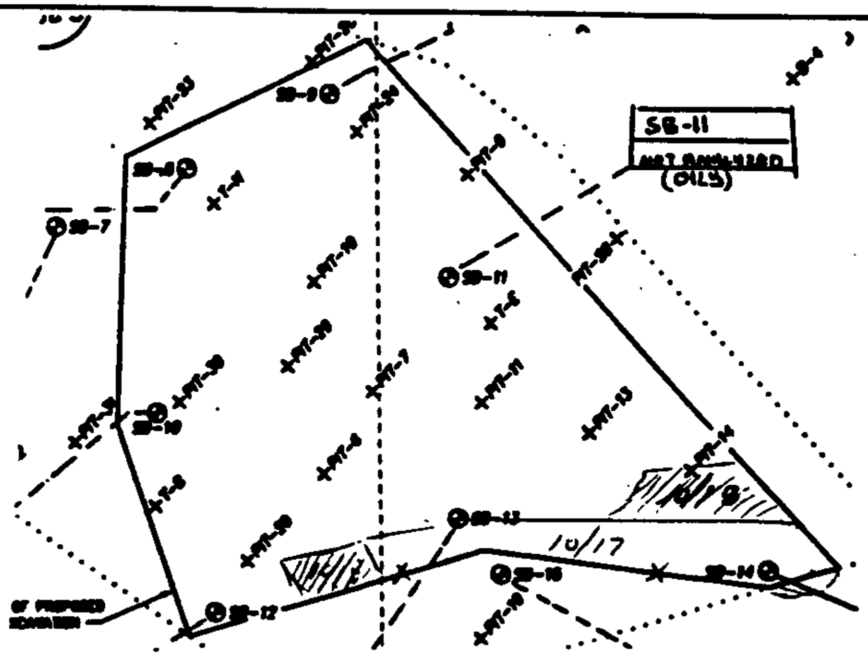
- Discussed sampling procedures and frequency

- DEC personnel request removal of soil contaminated with oil to depths greater than 9' bgs. Subject was not pursued when told that water table conditions approximate 7.5' as measured in adjacent piezometer.

REMARKS:

REFERENCES TO OTHER FORMS:

SKETCHES



X Composite sm taken from sidew on southern perimeter Approx 3' below to of excavation

SAMPLE LOG

SAMPLE NUMBER: SW-3 sidewall samples on Southern perimeter

APPROXIMATE LOCATION OF STOCKPILE:

NUMBER OF STOCKPILE:

DATE OF COLLECTION:

CLIMATOLOGIC CONDITIONS:

FIELD OBSERVATION:

SHEETS 1 OF 1

MALCOLM PIRNIE

Inspector's Daily Report

CONTRACTOR:
ADDRESS:

TELEPHONE:
LOCATION LTV / Truscon FROM ______ TO ______
WEATHER Cloudy, showers TEMP 40-50° A.M. ______ P.M. ______ DATE 10/21/96

CONTRACTOR'S WORK FORCE AND EQUIPMENT

DESCRIPTION	H	#	DESCRIPTION	H	#	DESCRIPTION	H	#	DESCRIPTION	H	#
Field Engineer						Equipment			Front Loader Ton		
Superintendent			Ironworker			Generators			Bulldozer		
						Welding Equip.					
Laborer-Foreman			Carpenter								
Laborer									Backhoe		
Operating Engineer			Concrete Finisher								
Carpenter						Paving Equip. & Roller					
						Air Compressor					

SEE REVERSE SIDE FOR SKETCH ☐ YES ☐ NO

WORK PERFORMED:

- BDR contractors to pump water from excavation
  - will not haul contaminated material today
- Contractors to prepare bio-pad and haul roads for inclement weather conditions

PAY ITEMS:

CONTRACT NO.	CONTRACT ITEM	STA FROM	STA TO	DESCRIPTION	QUANTITY	REMARKS
				3" pump	1	
				2" pump	1	

TEST PERFORMED:
PICTURES TAKEN: X Water w/in excavation on Southern perimeter
VISITORS:

QA PERSONNEL
SIGNATURE J.P. Hilton
REPORT NO. 7
SHEET 1 of 1

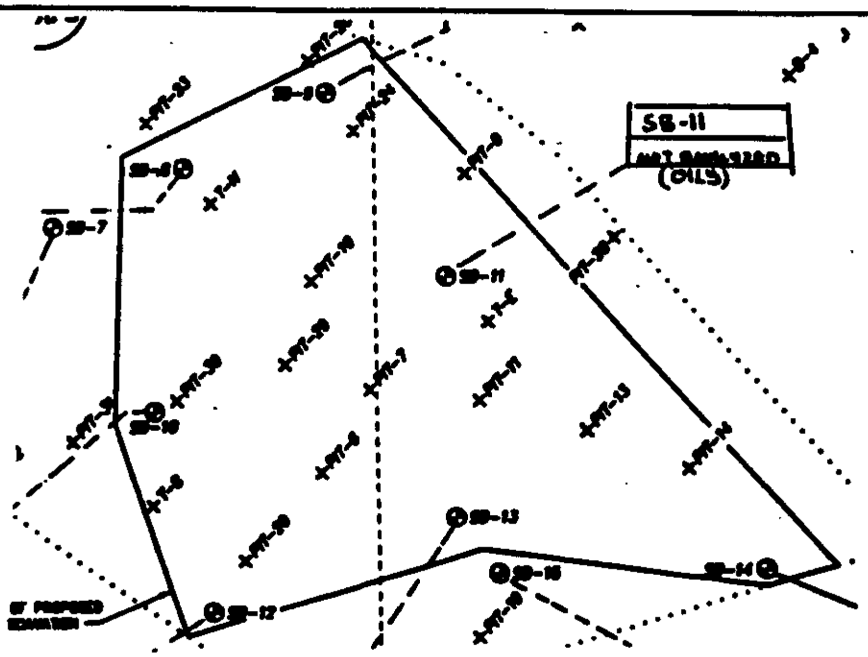
MEETINGS HELD & RESULTS: Met w/ Peter Buechi of NYSDEC

– Toured excavation site and bio-pad area
discussed progress to date, and findings as
seen in sidewalls of excavation

REMARKS:

REFERENCES TO OTHER FORMS:

SKETCHES



No add'l mat'l removed 10/10 due to ponded water w/in excavation sho on Rpt #6

SAMPLE LOG

SAMPLE NUMBER:

APPROXIMATE LOCATION OF STOCKPILE:

NUMBER OF STOCKPILE:

DATE OF COLLECTION:

CLIMATOLOGIC CONDITIONS:

FIELD OBSERVATION:

SHEETS 1 **OF** 1

MALCOLM PIRNIE

Inspector's Daily Report

CONTRACTOR:
ADDRESS:

TELEPHONE:
LOCATION LTV / Truscon FROM ______ TO ______
WEATHER Partly Sunny TEMP 50-60° A.M. X P.M. X DATE 10/22/96

CONTRACTOR'S WORK FORCE AND EQUIPMENT

DESCRIPTION	H	#	DESCRIPTION	H	#	DESCRIPTION	H	#	DESCRIPTION	H	#
Field Engineer						Equipment			Front Loader Ton		
Superintendent			Ironworker			Generators			Bulldozer		
						Welding Equip.					
Laborer-Foreman			Carpenter								
Laborer									Backhoe		
Operating Engineer			Concrete Finisher								
Carpenter						Paving Equip. & Roller					
						Air Compressor					

SEE REVERSE SIDE FOR SKETCH ☐ YES ☐ NO

WORK PERFORMED:

- Continued w/ excavation along Eastern perimeter of site - excavation hindered by excessive volume of perched water @ 3-4 bgs interval
- Site excavation backfilled to lessen volume of ponded water that recharges to open hole excavation
- Contractors dig lateral E-W trench to facilitate pumping of perched water

PAY ITEMS:

CONTRACT NO.	CONTRACT ITEM	STA FROM	STA TO	DESCRIPTION	QUANTITY	REMARKS
				3" pump	2	
				2" pump	1	

TEST PERFORMED:
PICTURES TAKEN: X perched H_2O flow to open excavation
VISITORS: D. Buechi, P. Werthmann, K. McNamara, T. Reid, Wayne Arnold, LTV counsel

QA PERSONNEL
SIGNATURE John P. Holton
REPORT NO.
SHEET 1 of 1

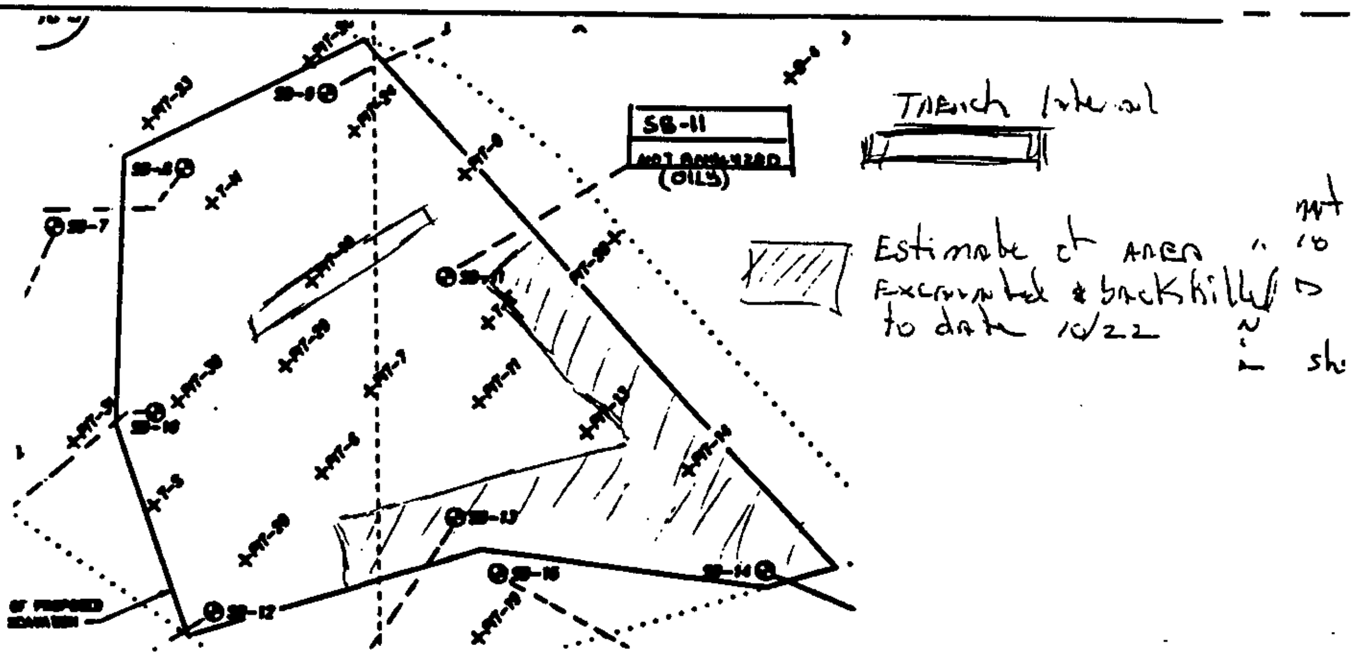
NGS HELD & RESULTS: • Met w/P. Buechi 10^{00} - 12^{00} (NYSDEC) insisted that excavation be taken to depths below water table conditions 7.6 - 8.0' bgs to remove oil contaminated soil

• Called MPI to define and resolve depth of excavation issue - P. Wertman, K. McManus & T. Reid resolve that excavation will not be taken to depths greater than Bflo River elevation currently 7.6' bgs 573.4'

KS:

ENCES TO OTHER FORMS:

HES



LOG

NUMBER:

IMATE LOCATION OF STOCKPILE:

R OF STOCKPILE:

F COLLECTION:

OLOGIC CONDITIONS:

BSERVATION:

SHEETS OF

Geologic information.--The U.S. Geological Survey drilled four test borings in August 1982. Locations are shown in fig. A-19; the geologic logs are as follows:

Boring no.	Depth (ft)	Description
1	0 - 4.0	Black coke, fill material.
	4.0 - 5.0	Clay, dark olive green, wet.
	5.0 - 10.0	Clay, tan to yellowish, dry, tight, getting wet at about 8 ft and sandy. SAMPLE: 5 ft.
2	0 - 3.5	Topsoil and rubble, debris.
	3.5 - 6.0	Clay, sandy, gray-green, "soupy", becomes drier and tighter at 4.0. SAMPLE: 3.5 ft.
3	0 - 2.5	Topsoil and coke debris, black.
	2.5 - 5.0	Asphaltic-looking, watery material with gravel. Volatile sensing meter reading of 20 (2.5 background) Meter setting of 9 - calibrated for benzene. smells less asphaltic than in first hole.
	5.0 - 6.0	Clay, gray, green. SAMPLE: 3.5 ft.
4	0 - 3.0	Coke bed material, bricks, wood, etc.
	3.0 - 5.0	Sand, black, very coarse, damp.
	5.0 - 6.0	Soupy, black material. Sample would not burn.
	6.0 - 6.5	Clay, greenish, wetter than in other holes. SAMPLE: 5.5 ft.

Hydrologic information.--The test borings indicate a zone of ground water at 4 to 6 ft below land surface. This ground-water zone may be perched, as suggested by the second well log.

Chemical information.--The U.S. Geological Survey collected a substrate sample from each test boring for cyanide, iron, and organic compound analyses; results are given in table A-21. The samples revealed no cyanide but contained 21 organic priority pollutants, 18 organic nonpriority pollutants, and some unknown hydrocarbons.

Electromagnetic survey information.--The U.S. Geological Survey conducted an electromagnetic survey in November 1982; results are shown in figure A-20. The line both begins and ends in a wetland. The conductivity values recorded within the wetland, as well as those outside the wetland, show high readings of conductivity that possibly indicate buried waste (fig. A-20). The pattern of readings around the 420-ft mark would normally be considered evidence of buried metal but here may reflect remnants of a large coke pile that once occupied the area (fig. A-20). (Coke, a form of carbon, has a conductivity similar to that of metal.)

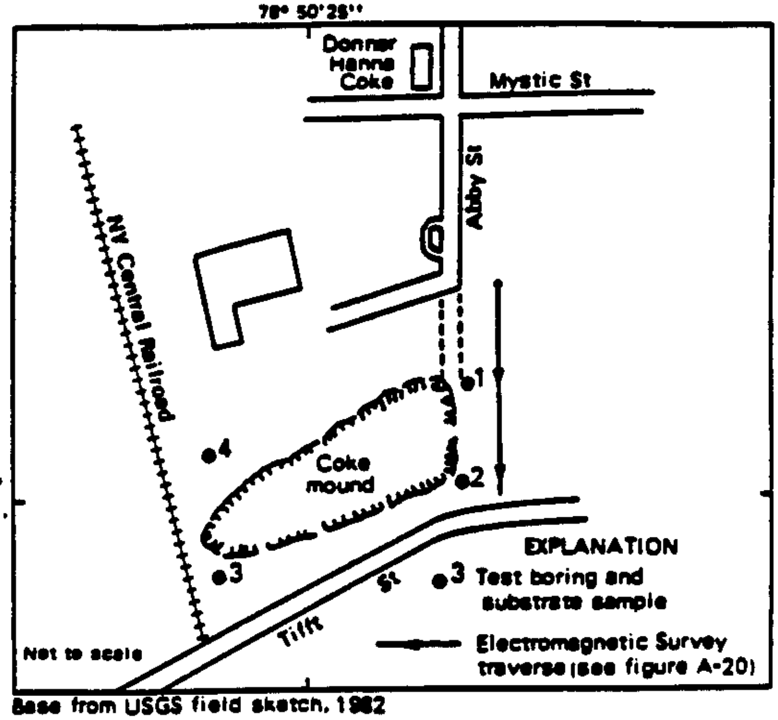


Figure A-19. Location of sampling holes and electromagnetic-conductivity survey lines at Donner Hanna Coke, site 217, Buffalo.

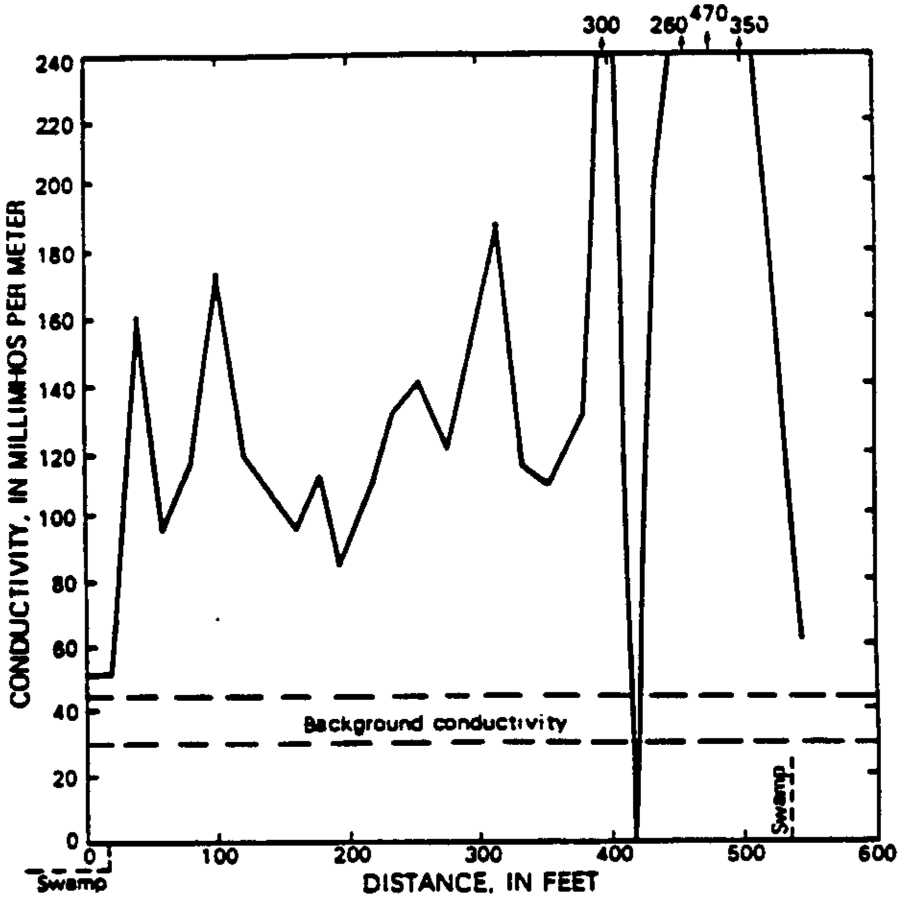


Figure A-20. Results of electromagnetic-conductivity survey at Donner Hanna Coke, site 217, Buffalo. (Location is shown in fig. A-19.)

Table A-21.--Analyses of substrate samples from Donner Hanna Coke, site 217, Buffalo, N.Y.

[Locations shown in fig. A-19. Concentrations are in μg/kg; dashes indicate that constituent or compound was not found, LT indicates it was found but below the quantifiable detection limit.]

	Sample number and depth below land surface (ft)			
	1	2	3	4
First sampling (08-05-82)	(5.0)	(3.5)	(3.5)	(5.5)
Inorganic constituents				
Cyanide	—	—	—	—
Iron	8,100,000	5,000,000	5,200,000	2,400,000

	Sample number (depths are same as in first sampling)			
Second sampling (05-18-83)	1A	2A	3A	4A
Inorganic constituents				
Molecular sulfur[1]	27,000	680	—	—
Organic compounds				
Priority pollutants				
Benzene	14.0	18.5	37.8	51.8
Ethylbenzene	—	—	3.8	—
Toluene	2.5	—	21.6	—
2,4-Dimethylphenol	—	*	—	—
Phenol	—	*	—	*
Acenaphthene	—	*	*	*
Fluoranthene	*	*	*	—
1,2-Dichlorobenzene	—	*	—	*
Naphthalene	*	*	*	*
Benzo(a)anthracene	—	*	*	*
Benzo(a)pyrene	—	*	*	*
Benzo(b)fluoranthene and benzo(k)fluoranthene	*	*	*	*

[1] Tentative identification based on comparison with the National Bureau of Standards (NBS) library. No external standard was available. Concentration reported is semiquantitative and is based only on an internal standard. GC/MS spectra were examined and interpreted by GC/MS analysts.

* Compounds detected but not quantified--Holding time exceeded before GC/MS acid- and base-neutral extractable compounds were extracted.

Table A-21.—Analyses of substrate samples from Donner Hanna Coke, site 217, Buffalo, N.Y. (continued)
[Locations shown in fig. A-19. Concentrations are in μg/kg; dashes indicate that constituent or compound was not found, LT indicates it was found but below the quantifiable detection limit.]

Second sampling (continued)	Sample number (depths are same as first sampling) 1A	2A	3A	4A
Organic Compounds (continued)				
Priority pollutants (continued)				
Chrysene	--	*	*	*
Acenaphthylene	--	*	*	--
Anthracene	--	*	--	*
Benzo(ghi)perylene	--	*	*	--
Fluorene	--	*	*	*
Phenanthrene	--	*	*	*
Dibenzo(a,h)anthracene	--	*	--	--
Indeno(1,2,3-cd)pyrene	--	*	*	--
Pyrene	*	*	*	*
Nonpriority pollutants				
Acetone	399	346	--	--
Carbon disulfide	--	--	83.7	--
2-Hexanone	--	--	41.5	--
O-xylene	3.7	5.7	69.8	4.7
2-Methylphenol	--	*	--	--
4-Methylphenol	--	*	--	--
Dibenzofuran	--	*	*	*
2-Methylnaphthalene	--	*	*	*
9H-Carbazole[1]	--	*	--	--
3-Methylphenanthrene[1]	--	*	--	--
Hexadecanoic acid[1]	--	*	--	--
1-Methylpyrene[1]	--	*	--	--
Trichlorofluoromethane[1]	--	--	*	--
Methylcyclohexane[1]	--	--	*	--
4-Methyl-2-pentanone[1]	--	--	*	--
2,6,6-Trimethyl-bicyclo(3.1.1)-hepten-2-ene[1]	--	--	*	--
1,3- and 1,4-Dimethyl-benzene[1]	--	--	*	--
1-Ethenyl-2-methylbenzene[1]	--	--	*	--
Unknown hydrocarbons[1]	--	*	*	--

REF. 27✓

(84)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION II

In the Matter of DONNER HANNA COKE JOINT VENTURE, NYD002110971 Respondent. Proceeding Under Section 3008 of the Solid Waste Disposal Act, as amended.	COMPLAINT, COMPLIANCE ORDER, AND NOTICE OF OPPORTUNITY FOR HEARING Docket No. II RCRA-81-0202

COMPLAINT

This administrative proceeding is instituted pursuant to Section 3008 of the Solid Waste Disposal Act, as amended, 42 U.S.C. §6901 et seq. ("the Act"). [Note: Among the statutes amending the Act is the Resource Conservation and Recovery Act, 90 Stat. 2795, P.L. 94-580 (1976).]

The Director of the Enforcement Division of the U.S. Environmental Protection Agency ("EPA"), Region II, Complainant in this proceeding, has determined that Respondent, Donner Hanna Coke Joint Venture, has violated Section 3004 of the Act, 42 U.S.C. §6924, and the regulations promulgated thereunder, as hereinafter specified:

1. Respondent owns and operates a facility located at Abby and Mystic Streets, Buffalo, New York ("the facility").

2. By notification dated August 18, 1980, Respondent informed EPA that it conducts activities at the facility involving "hazardous waste," as that term is defined in Section 1004(5) of the Act, 42 U.S.C. §6904(5) and in 40 CFR §261.3. By application dated November 13, 1980, Respondent requested a permit to conduct its hazardous waste activities.

3. On or about December 4, 1980, an inspection of the facility was conducted by duly-designated employees of EPA pursuant to Section 3007 of the Act, 42 U.S.C. §6927. Said inspection was conducted for the purpose of enforcing the EPA regulations for hazardous waste management, 40 CFR Parts 260 through 265 (published in 45 Fed. Reg. 33063 et seq., May 19, 1980), promulgated pursuant to Subtitle C of the Act, 42 U.S.C. §6921 et seq.

4. The above-referenced inspection revealed that Respondent's facility was being used for the generation and storage of hazardous waste.

5. 40 CFR Part 265 sets interim status standards for treatment, storage and disposal facilities for hazardous wastes. These interim status standards apply until final administrative disposition of permit applications submitted by the owners of these facilities has been made. No such final disposition has been made with respect to Respondent's facility, and thus the standards of Part 265 apply to that facility.

6. 40 CFR §265.13 requires that the owner or operator of any treatment, storage or disposal facility for hazardous waste must develop and follow a written waste analysis plan which describes the procedures he will carry out to obtain detailed chemical and physical analysis of representative waste samples. No such written waste analysis plan was available on the date of the above-referenced inspection. Therefore, Respondent is in violation of 40 CFR §265.13(b).

7. 40 CFR §265.15 requires that the owner or operator of any treatment, storage or disposal facility for hazardous waste must develop and follow a written schedule for inspections of certain specified portions of its facility. No written inspection schedule had been developed by Respondent by the date of the above-referenced inspection. Therefore, Respondent is in violation of 40 CFR §265.15(b).

8. 40 CFR §265.50 requires that the owner or operator of any treatment, storage or disposal facility for hazardous waste must have a contingency plan for his facility that is designed to minimize hazards to human health or the environment. Respondent had no such contingency plan at the time of the above-referenced inspection, thus violating 40 CFR §265.50.

PROPOSED CIVIL PENALTY

In view of the above-cited violations, and pursuant to the authority of Section 3008 of the Act, Complainant herewith proposes the assessment of a civil penalty in the amount of six-thousand dollars ($6,000.00) against the Donner Hanna Coke Joint Venture for the violations specified hereinabove.

COMPLIANCE ORDER

Based upon the foregoing, and pursuant to the authority of Section 3008 of the Act, Complainant herewith issues the following Compliance Order against Respondent herein:

1. By no later than April 1, 1981, Respondent shall formulate waste analysis, inspection, and contingency plans, as are required by the provisions of 40 CFR Part 265. Copies of said plans shall be submitted to Richard A. Baker, Chief, Permits Administration Branch, Planning and Management Division, EPA, Region II, 26 Federal Plaza, New York, New York 10278 within five days (5) days of their completion.

2. By no later than April 1, 1981, Respondent shall come into compliance with all other provisions of 40 CFR Parts 261 and 265. Special attention shall be paid to the provisions covering ignitable wastes, since such wastes have been identified at Respondent's facility.

NOTICE OF LIABILITY FOR ADDITIONAL CIVIL PENALTIES

Pursuant to the terms of Section 3008(a)(3) of the Act, a violator failing to take corrective action within the time specified in a Final Compliance Order is liable for a civil penalty of up to $25,000 for each day of continued noncompliance. Such continued noncompliance may also result in suspension or revocation of any permits issued to the violator pursuant to the authority of the Act.

NOTICE OF OPPORTUNITY TO REQUEST A HEARING

As provided in Section 3008(b) of the Act, and in accordance with EPA's Consolidated Rules of Practices Governing the Administrative Assessment of Civil Penalties and the Revocation or Suspension of Permits, 40 CFR Part 22, 45 Fed. Reg. 24360 (April 9, 1980) (a copy of which accompanies this Complaint, Compliance Order, and Notice of Opportunity for Hearing), you have the right to request a hearing to contest any material fact set out in the Complaint, or to contest the appropriateness of the proposed penalty, or the terms of the Compliance Order. (Consistent with the provisions of Section 3008(b) of the Act, the hearing provided will be noticed and open to the general public, should you specifically request such a public hearing. In the absence of such a specific request, however, public notice of a schedule hearing will not be published.)

To avoid being found in default, and having the proposed civil penalty assessed and the Compliance Order confirmed without further proceedings, you must file a written answer to the Complaint, which must include a request for a hearing. Your answer (if any) must be addressed to the Regional Hearing Clerk, U.S. Environmental Protection Agency, Region II, 26 Federal Plaza, New York, New York 10278, and must be filed within thirty (30) days of your receipt of this Complaint, Compliance Order, and Notice of Opportunity for Hearing. Your answer must clearly and directly admit, deny or explain each of the factual allegations contained in the Complaint, and should contain (1) a clear statement of the facts which constitute the grounds of your defense, and (2) a concise statement of the contentions which you intend to place in issue at the hearing.

The denial of any material fact, or the raising of any affirmative defense, will be construed as a request for a hearing. Failure to deny any of the factual allegations in the Complaint will be deemed to constitute an admission of the undenied allegations. Your failure to file a written answer within thirty (30) days of receipt of this instrument will be deemed to represent your admission of all facts alleged in the Complaint, and a waiver of your right to a formal hearing to contest any of the facts alleged by the Complainant. Your default will result in the final issuance of the Compliance Order, and assessment of the proposed civil penalty, without further proceedings.

INFORMAL SETTLEMENT CONFERENCE

Whether or not you request a hearing, the EPA encourages settlement of this proceeding consistent with the provisions of the Act. At an informal conference with a representative of the Complainant you may comment on the charges and provide whatever additional information you feel is relevant to the disposition of this matter, including any actions you have taken to correct the violation, and any other special circumstances you care to raise.

The Complainant has the authority to modify the amount of the proposed penalty, where appropriate, to reflect any settlement agreement reached with you in such conference, or to recommend that any or all of the charges be dismissed, if the circumstances so warrant. Your request for an informal conference and other questions that you may have regarding this Complaint, Compliance Order, and Notice of Opportunity for Hearing should be directed to William J. Friedman, Esq., General Enforcement Branch, U.S. Environmental Protection Agency, Region II, 26 Federal Plaza, New York, New York 10278, telephone (212) 264-4940.

Please note that a request for an informal settlement conference does not extend the thirty (30) day period during which a written answer and request for a hearing must be submitted. The informal conference procedure may be pursued as an alternative to or simultaneously with the adjudicatory hearing procedure. However, no penalty reduction will be made simply because such a conference is held. Any settlement which may be reached as a result of such conference will be embodied in a written Consent Agreement and Final Compliance Order to be issued by the Regional Administrator of EPA, Region II, and signed by you or your representative. Your signing of such Consent Agreement would constitute a waiver of your right to request a hearing on any matter stipulated to therein.

RESOLUTION OF THIS PROCEEDING WITHOUT HEARING OR CONFERENCE

Instead of filing an answer requesting a hearing or requesting an informal settlement conference, you may choose to comply with the terms of the Compliance Order, and to pay the proposed penalty. In that case, payment should be made by sending to the Regional Hearing Clerk, EPA, Region II, a cashier's or certified check in the amount of the penalty specified in the "Proposed Civil Penalty" section of this instrument. Your check must be made payable to the United States of America.

DATED: New York, New York

February 10, 1981

COMPLAINANT:

/s/ JMS

Julio Morales-Sanchez
Director
Enforcement Division
U.S. Environmental Protection Agency
Region II
26 Federal Plaza
New York, New York 10278

TO: Mr. Ray Cardone
Mearl Corporation
1057 Lower South Street
Peekskill, New York 10566

cc: Laurens M. Vernon
Compliance Counsel
New York State Department of
Environmental Conservation

bcc: Edward A. Kurent, (EN-338)
John Josephs, (2 ENF-WF)
Richard A. Baker, (2 PM-PA)
Lorraine Azzinaro, (2 RC)

CERTIFICATE OF SERVICE

This is to certify that on the 11th day of February, 1981 I served a true and correct copy of the foregoing Complaint by certified mail to J. J. Repko, General Manager, Donner Hanna Coke Joint Venture, Abby and Mystic Streets, Buffalo, New York. I handcarried the original foregoing Complaint to the Regional Hearing Clerk.

Antoinette M. Tedesco

ANTOINETTE M. TEDESCO
Clerk-Stenographer

NYD002110971 REF. 28

file

March 25, 1983

Chief, Solid Waste Branch
Air and Waste Management Division
U. S. Environmental Protection Agency,
Region II
26 Federal Plaza
New York, New York 10278

Attention: John Josephs

Subject: Action per Consent Order and Agreement

Re: Donner-Hanna Coke Joint Venture
Docket No. II RCRA-81-0202

GH
HWDMS
4/11/83

Gentlemen:

In response to the consent order signed by Donner-Hanna Coke Joint Venture February 3, 1983, Donner-Hanna has begun to eliminate the pile of Coal/Tar Sludge Mixture by an alternate means than that specified in the order. Mr. John Josephs was consulted by phone March 11, 1983 prior to the initial shipment of material offsite.

The result of this project will be the elimination of the pile. The expected cost of the alternate means of removing the pile will not exceed $50,000.

The following information describes the offsite recycling solution for the pile located at Donner-Hanna Coke Joint Venture:

1. The 4,000 ton mixture of tar sludge and coal will be recycled to the coke oven process in the same manner that would be used at Donner-Hanna; i.e., mixing with coal, crushing and charging to the coke oven as a raw material.

2. The mixture will be held in bins during mixing with the raw coal and Tonawanda Coke Corporation will make every effort to minimize contact of the mixture with the ground.

3. The mixture will be transported with a Hazardous Waste Manifest, which will be properly signed, receipted for and returned to the generator. Copies of all completed manifests will be sent to New York State DEC.

4. A. Receiving Facility:

Tonawanda Coke Corporation
River Road
Tonawanda, New York 14150
Contact: J. D. Crane 716-876-6222

B. Transporter:

Contractors Trucking Service
213 Gates Street
Buffalo, New York 14212
Phone Number: 716-668-5789

C. Generator:

Donner-Hanna Coke Joint Venture
Mystic and Abbey Streets
Buffalo, New York 14220
Contact: E. J. Hartman 716-822-1600

5. The recycling of the Coal/Tar Sludge Mixture in the manner described will not negatively affect the deadline of January 1, 1985 for elimination of the pile.

Thank you for your assistance. Please direct any questions to this office (216-622-5916).

David M. Gubanc

D. M. Gubanc

for Donner-Hanna Coke Joint Venture
c/o Republic Steel Corporation
Post Office Box 6778, Room 820R
Cleveland, Ohio 44101

DMG/fh

cc: J. D. Crane, Tonawanda Coke Corp.
E. J. Hartman, Donner-Hanna
D. A. Calland, Thorp, Reed & Armstrong, Washington, DC
P. Radigan, National Steel Corp., Pittsburgh, PA

APPENDIX G

REFERENCES

DONNER-HANNA COKE

#915017

REFERENCES (continued)

18. General Chemistry with Qualitative Analysis; MacMillan Publishing Co., Inc. 1983.

19. USEPA Overview of Environmental Pollution in the Niagara Frontier, New York; March 1982.

20. Jonathan Josephs, USEPA, RCRA Generator Inspection Checklist; December 4, 1980.

21. D. McKenzie, NYSDEC; Memorandum to File; February 18, 1982.

22. Kevin D. Mahar, Environmental Control Manager, Donner-Hanna Coke Corporation; letter to David A. Dooley, Interagency Task Force on Hazardous Wastes; December 6, 1978.

23. Kevin D. Mahar, Environmental Control Manager, Donner-Hanna Coke Corporation; letter to Donald McKenzie, Senior Sanitary Engineer, NYSDEC; November 19, 1981.

24. Jonathan Josephs, Chemical Engineer, USEPA; letter to Kevin D. Mahar, Environmental Control Manager, Donner-Hanna Coke Joint Venture; January 12, 1981.

25. Don Campbell, P.E., County of Erie Department of Environment and Planning Division of Environmental Control; memorandum to Lawrence G. Clare, P.E.; June 10, 1981.

26. USEPA, Preliminary Evaluation of Chemical Migration to Groundwater and the Niagara River From Selected Waste - Disposal Sites; March 1985.

27. USEPA; Compliant, Compliance Order, and Notice of Opportunity for Hearing, Docket No. II RCRA-81-0202, February 10, 1981.

28. David M. Gubanc, Donner-Hanna Coke Joint Venture c/o Republic Steel Corporation, letter to John Josephs, USPEA Region II, March 25, 1983.

REFERENCES

1. Alltift Realty Phase II Investigation, Prepared for New York State Department of Environmental Conservation; By Engineering-Science in association with Dames and Moore, September 1986. 1990 Inactive Hazardous Waste Disposal Report.

2. U.S. Department of Commerce; Weather Atlas of the United States; 1975.

3. New York State Department of Environmental Conservation; Industrial Chemical Survey; December 1976.

4. Dangerous Properties of Industrial Materials; Sax, N., Irving; Sixth Edition.

5. Ronald D. Koczaja, County of Erie Department of Environment and Planning Division of Environmental Control; Memorandum to Donald Tamol; August 25, 1978.

6. Ed Gillipan, Dames and Moore; telephone conversation with Ron Koczaja, Erie County Department of Health; September 20, 1985.

7. The New York State Water Resources Commission; Erie-Niagara Basin Ground-Water Resources; 1968.

8. Robert E. Steiner, Recra Environmental, Inc.; letter to Michael Martin, Buffalo Director of Water; May 4, 1989.

9. USGS 7.5 minute Topographic Map of the Buffalo SE Quadrangle, 1965.

10. U.S. Department of Commerce; Rainfall Frequency Atlas of the United States, Technical Paper No. 40; 1963.

11. New York State Department of Transportation; Freshwater Wetlands Map for Buffalo Se Quadrangle; 1975.

12. Dames and Moore; telephone conversation with Jim Sneider, NYSDEC Region 9, Fish and Wildlife; September 18, 1985.

13. New York State Department of Health, Division of Environmental Protection, Bureau of Public Water Supply Protection; New York State Atlas of Community Water System Sources; 1982.

14. California Department of Health; Hazardous Waste Management Law Regulations and Guidelines for the Handling of Hazardous Waste; February 1975.

15. United States Environmental Protection Agency; Uncontrolled Hazardous Waste Site Ranking System; Table 4, Waste Characteristics Values for Some Common Chemicals; 1984.

16. US Census Data, 1980.

17. Kevin D. Mahar, Environmental Control Manager, Donner-Hanna Coke Corporation; letter to John McMahon, P.E., NYSDEC; January 9, 1979.

MALCOLM PIRNIE

Inspector's Daily Report

CONTRACTOR:
ADDRESS:

TELEPHONE:
LOCATION ITV / Truscon FROM TO
WEATHER Cloudy w/ Showers TEMP 40-45° A.M. X P.M. X DATE 10/23/96

CONTRACTOR'S WORK FORCE AND EQUIPMENT

DESCRIPTION	H	#	DESCRIPTION	H	#	DESCRIPTION	H	#	DESCRIPTION	H	#
Field Engineer						Equipment			Front Loader Ton		
Superintendent			Ironworker			Generators			Bulldozer		
						Welding Equip.					
Laborer-Foreman			Carpenter								
Laborer									Backhoe		
Operating Engineer			Concrete Finisher								
Carpenter						Paving Equip. & Roller					
						Air Compressor					

SEE REVERSE SIDE FOR SKETCH ☐YES ☐NO

WORK PERFORMED:

- Excavated second swath in East → West direction along southern perimeter
- Used pneumatic hammer to break dense slag material to facilitate the excavation of shallow trench laterals
- Base of excavation held in "clean" material @ approx 573.2 - 573.7
- Sampled sidewalls @ SW-4a/4b shown on reverse side
  Sampled base of excavation S-5a/5b on reverse side

PAY ITEMS:

CONTRACT NO.	CONTRACT ITEM	STA FROM	STA TO	DESCRIPTION	QUANTITY	REMARKS
				3" pumps	2	
				2" pump	1	

TEST PERFORMED:
PICTURES TAKEN:

VISITORS: Nelson Rauch (developer), Peter Buechi (DEC)

QA PERSONNEL
SIGNATURE John P. Hilton

REPORT NO.
SHEET 1 of 1

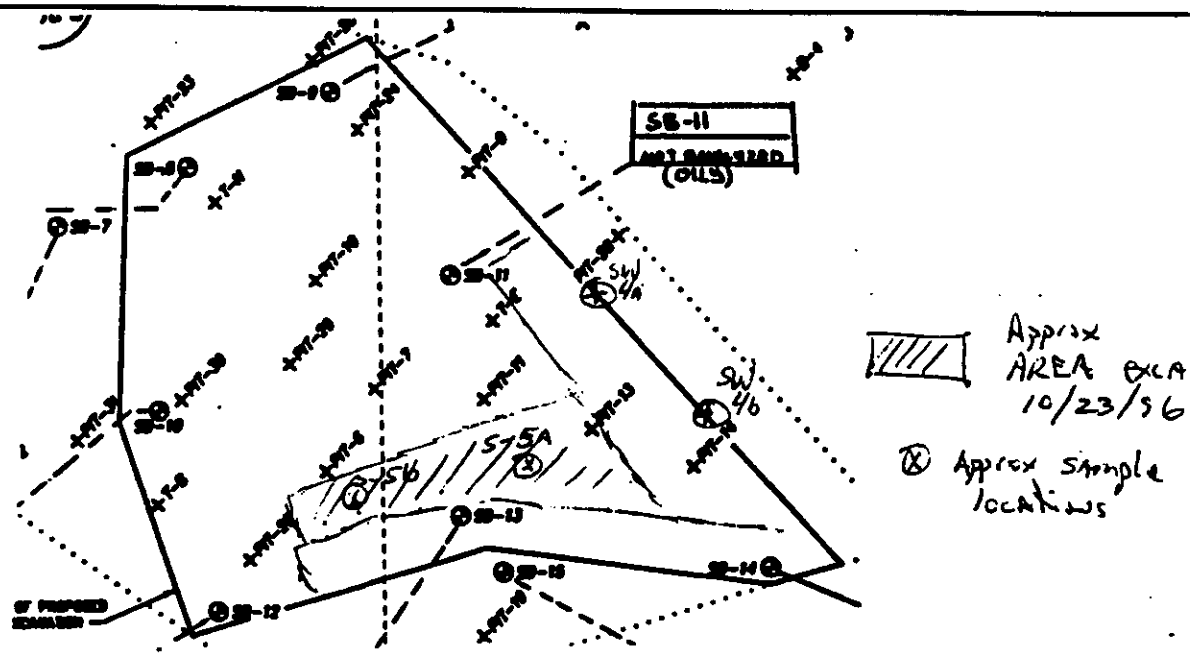
MEETINGS HELD & RESULTS: • Nelson Ranch (developer for Tomato factory) out for site visit & observation
– no developments

• Peter Buechi (DEC) here for site visit, discussed progress and approach to contain perched water conditions

REMARKS:

REFERENCES TO OTHER FORMS:

SKETCHES



SAMPLE LOG

SAMPLE NUMBER: SW-4A/4B, S-5A/5B   Sampled sidewall and base

APPROXIMATE LOCATION OF STOCKPILE:

NUMBER OF STOCKPILE:

DATE OF COLLECTION:

CLIMATOLOGIC CONDITIONS:

FIELD OBSERVATION:

SHEETS **OF**

MALCOLM PIRNIE

Inspector's Daily Report

CONTRACTOR:
ADDRESS:

TELEPHONE:
LOCATION LTV / TRUSCON FROM ____ TO ____
WEATHER Rain TEMP 40-45 A.M. x P.M. x DATE 10/24/96

CONTRACTOR'S WORK FORCE AND EQUIPMENT

DESCRIPTION	H	#	DESCRIPTION	H	#	DESCRIPTION	H	#	DESCRIPTION	H	#
Field Engineer						Equipment			Front Loader Ton		
Superintendent			Ironworker			Generators			Bulldozer		
						Welding Equip.					
Laborer-Foreman			Carpenter								
Laborer									Backhoe		
Operating Engineer			Concrete Finisher								
Carpenter						Paving Equip. & Roller					
						Air Compressor					

SEE REVERSE SIDE FOR SKETCH ☐YES ☐NO

WORK PERFORMED:

- Continued w/excavation along approximate grid baseline 1+75N in westerly direction, excavated to clean soil (sand) material @ approx Elevation of 573.5 - 574.5'
- Sampled base of excavation @ S-6A/6B
- Pumped from trench laterals to reduce perched water flow into trench

PAY ITEMS:

CONTRACT NO.	CONTRACT ITEM	STA FROM	STA TO	DESCRIPTION	QUANTITY	REMARKS
				3" pumps	2	
				2" pump		

TEST PERFORMED:
PICTURES TAKEN:
VISITORS:

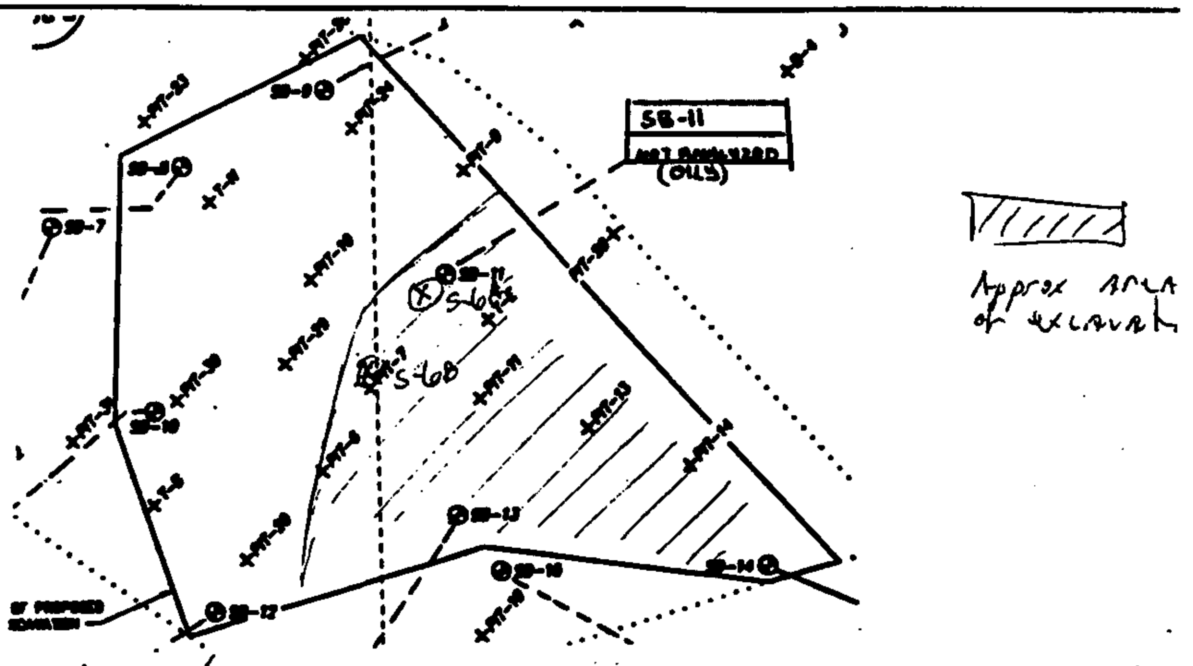
QA PERSONNEL
SIGNATURE John P. Hilton
REPORT NO.
SHEET 1 of 1

MEETINGS HELD & RESULTS:

REMARKS: Buffalo Sewer Authority asked if material from city excavation could be stockpiled, when checked the overburden material appeared to be a sandy silt w/ no contamination 0.2 HNu reading — OK'd material as stockpile & backfill

REFERENCES TO OTHER FORMS:

SKETCHES



SAMPLE LOG

SAMPLE NUMBER: S-6A/6B

APPROXIMATE LOCATION OF STOCKPILE:

NUMBER OF STOCKPILE:

DATE OF COLLECTION:

CLIMATOLOGIC CONDITIONS:

FIELD OBSERVATION:

SHEETS ______ **OF** ______

MALCOLM PIRNIE

Inspector's Daily Report

CONTRACTOR:
ADDRESS:

TELEPHONE:
LOCATION LTV / TRUSCON FROM ____ TO ____
WEATHER Partly Sunny Light wind <10mph TEMP 40-50 A.M. ✓ P.M. ✓ DATE 10/25/96

CONTRACTOR'S WORK FORCE AND EQUIPMENT

DESCRIPTION	H	#	DESCRIPTION	H	#	DESCRIPTION	H	#	DESCRIPTION	H	#
Field Engineer						Equipment			Front Loader Ton		
Superintendent			Ironworker			Generators			Bulldozer		
						Welding Equip.					
Laborer-Foreman			Carpenter								
Laborer									Backhoe		
Operating Engineer			Concrete Finisher								
Carpenter						Paving Equip. & Roller					
						Air Compressor					

SEE REVERSE SIDE FOR SKETCH ☐ YES ☐ NO

WORK PERFORMED:

- Digging ops initiated @ Eastern perimeter at approx 200 N grid line - excavated westward to approx 50' West grid line
- base of excavation @ approx 574.-574.8' in clean dark gray silty overburden, little black organic plant debris

PAY ITEMS:

CONTRACT NO.	CONTRACT ITEM	STA FROM	STA TO	DESCRIPTION	QUANTITY	REMARKS
				3" pump	1	
				2" pump	1	

TEST PERFORMED:
PICTURES TAKEN:

VISITORS: T. Reid, P. Buechi, T. Diffenbach

QA PERSONNEL SIGNATURE [signature]
REPORT NO.
SHEET 1 of 1

MEETINGS HELD & RESULTS:

• Met w/ T. Rein, P Buechi & T Dittenbach here on site inspection visit

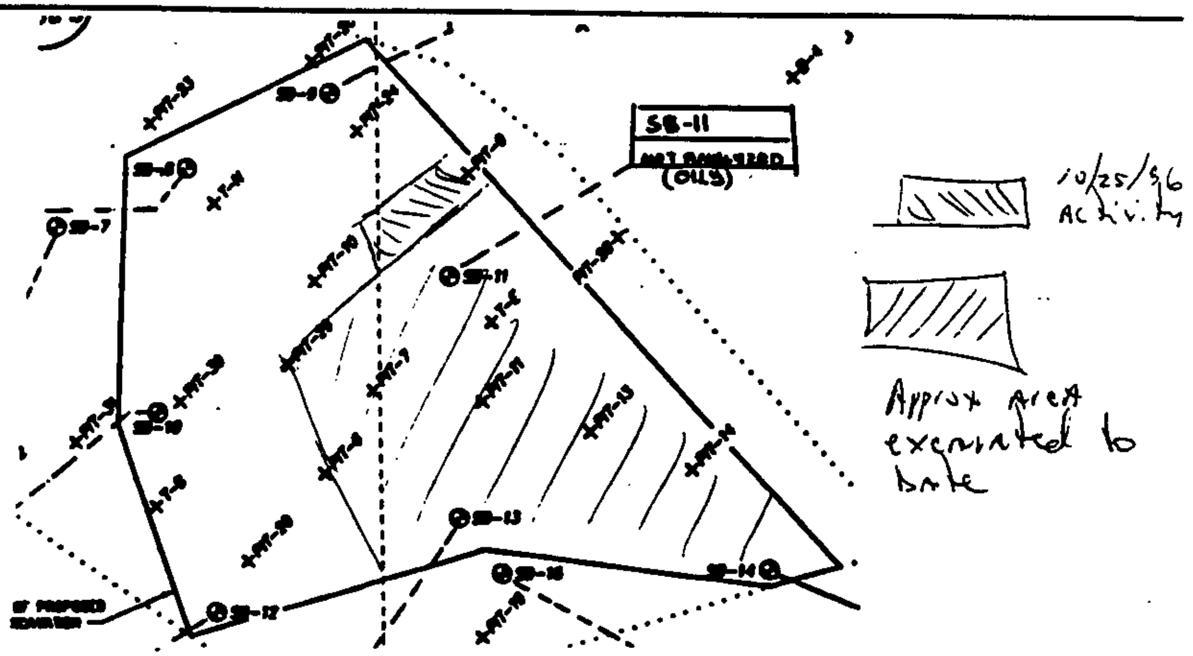
– DEC requests notification of scheduled work along Northern perimeter

REMARKS:

– Oil stained/soaked sand & gravel lens developing on eastern perimeter @ approx 175'N grid base line will require excavation toward Easterly direction (towards River)

REFERENCES TO OTHER FORMS:

SKETCHES



SAMPLE LOG

SAMPLE NUMBER:

APPROXIMATE LOCATION OF STOCKPILE:

NUMBER OF STOCKPILE:

DATE OF COLLECTION:

CLIMATOLOGIC CONDITIONS:

FIELD OBSERVATION:

MALCOLM PIRNIE

Inspector's Daily Report

CONTRACTOR:
ADDRESS:

TELEPHONE:
LOCATION LTV/Truscon FROM ______ TO ______
WEATHER Sunny/Clear TEMP 45° A.M. 55° P.M. ______ DATE 10/26/96

CONTRACTOR'S WORK FORCE AND EQUIPMENT

DESCRIPTION	H	#	DESCRIPTION	H	#	DESCRIPTION	H	#	DESCRIPTION	H	#
Field Engineer						Equipment			Front Loader Ton		
Superintendent			Ironworker			Generators			Bulldozer		
						Welding Equip.					
Laborer-Foreman			Carpenter								
Laborer									Backhoe		
Operating Engineer			Concrete Finisher								
Carpenter						Paving Equip. & Roller					
						Air Compressor					

SEE REVERSE SIDE FOR SKETCH ☐YES ☐NO

WORK PERFORMED:

- Continued w/digging ops in westerly direction along East-West grid line at approx 200 N
- backfilled to working face of excavation w/ on-site material
- off-site backfill material brought on site for temporary stockpile via J. Antmyer

PAY ITEMS:

CONTRACT NO.	CONTRACT ITEM	STA FROM	STA TO	DESCRIPTION	QUANTITY	REMARKS
				3" pump	1	Not used
				2" pump	1	Not used

TEST PERFORMED:
PICTURES TAKEN: X site view/Central w/ oil phase separation w/ depth
VISITORS:

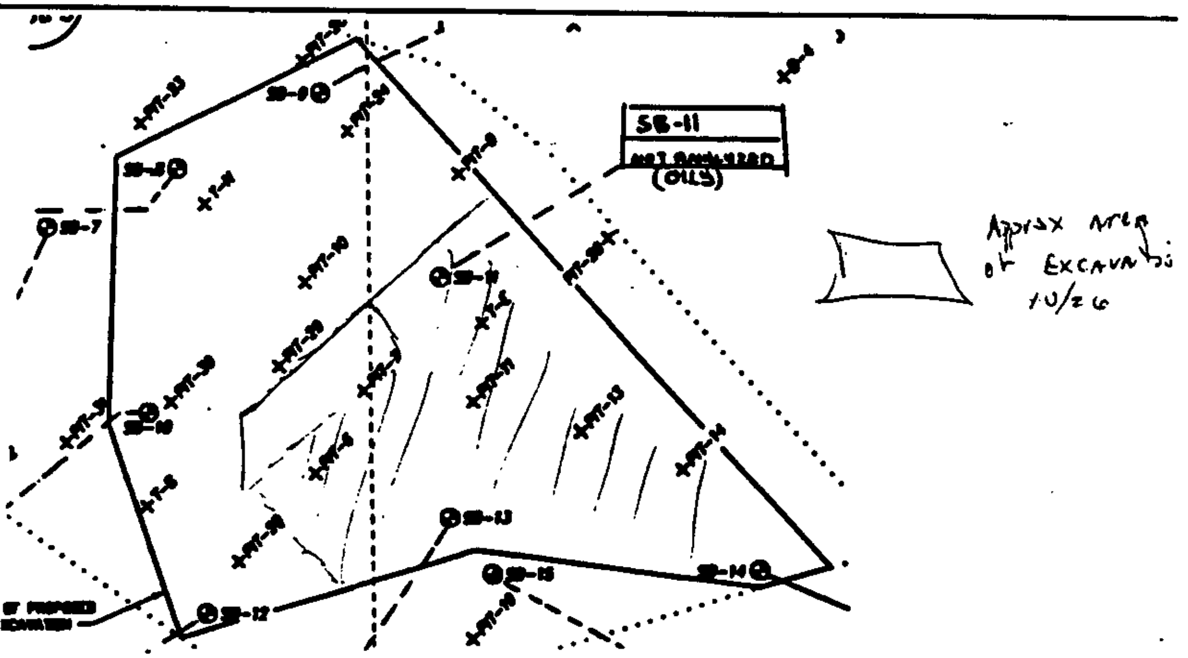
QA PERSONNEL SIGNATURE John P. Hilton
REPORT NO.
SHEET 1 of 1

MEETINGS HELD & RESULTS: R. Frappa on site to observe progress and discuss anticipated schedule / developments

REMARKS: Excavation will be extended in easterly direction @ or between grid points 200 — 225 N @ base line

REFERENCES TO OTHER FORMS:

SKETCHES



SAMPLE LOG

SAMPLE NUMBER: None

APPROXIMATE LOCATION OF STOCKPILE:

NUMBER OF STOCKPILE:

DATE OF COLLECTION:

CLIMATOLOGIC CONDITIONS:

FIELD OBSERVATION:

SHEETS OF

MALCOLM PIRNIE

Inspector's Daily Report

CONTRACTOR:
ADDRESS:

TELEPHONE:
LOCATION LTV / Truscon FROM TO
WEATHER Partly Cloudy, showers TEMP 45-55 A.M. P.M. DATE 10/29/96

CONTRACTOR'S WORK FORCE AND EQUIPMENT											
DESCRIPTION	H	#	DESCRIPTION	H	#	DESCRIPTION	H	#	DESCRIPTION	H	#
Field Engineer						Equipment			Front Loader Ton		
Superintendent			Ironworker			Generators			Bulldozer		
						Welding Equip.					
Laborer-Foreman			Carpenter								
Laborer									Backhoe		
Operating Engineer			Concrete Finisher								
Carpenter						Paving Equip. & Roller					
						Air Compressor					

SEE REVERSE SIDE FOR SKETCH ☐ YES ☐ NO

WORK PERFORMED:

- Excavated swath between grid points 200 – 225 N moved in westerly direction @ elevation of 575 – 576 Overburden material becomes increasingly more sandy with/as excavation moves toward west ie depth of contamination increases
- Started excavation 25' east of original base line
- Dug new drainage lateral along northern perimeter
- Sampled sidewalls @ SW-7A/7B, base @ S-8A/8B

PAY ITEMS:

CONTRACT		STA		DESCRIPTION	QUANTITY	REMARKS
NO.	ITEM	FROM	TO			
				3" pump	1	
				2" pump	1	

TEST PERFORMED:
PICTURES TAKEN:

VISITORS: P. Battaglia

QA PERSONNEL SIGNATURE John P. Hilton

REPORT NO.
SHEET 1 of 1

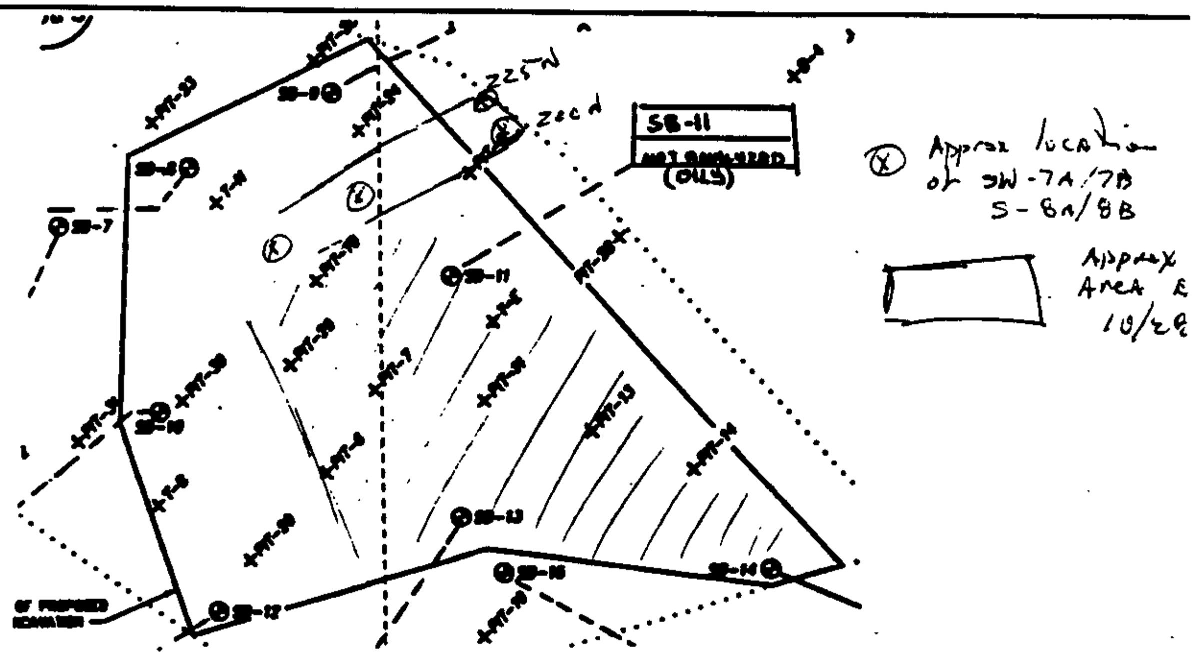
MEETINGS HELD & RESULTS:

- Met w/ Peter Battaglia of Battaglia concrete, asked if he could dump 200-300 yds of overburden excavated from concrete construction job. Stated that he should bring representative load so that I could inspect material for approval or denial

REMARKS: Slag & ballast pinches out as does oil contamination on eastern perimeter

REFERENCES TO OTHER FORMS:

SKETCHES



SAMPLE LOG

SAMPLE NUMBER: Sampled SW-7A/7B, S-8A/8B

APPROXIMATE LOCATION OF STOCKPILE:

NUMBER OF STOCKPILE:

DATE OF COLLECTION:

CLIMATOLOGIC CONDITIONS:

FIELD OBSERVATION:

SHEETS OF

MALCOLM PIRNIE

Inspector's Daily Report

CONTRACTOR:
ADDRESS:

TELEPHONE:
LOCATION LTV / Truscon Site FROM ______ TO ______
WEATHER Clear TEMP 35-50° A.M. ______ P.M. ______ DATE 10/29/96

CONTRACTOR'S WORK FORCE AND EQUIPMENT

DESCRIPTION	H	#	DESCRIPTION	H	#	DESCRIPTION	H	#	DESCRIPTION	H	#
Field Engineer						Equipment			Front Loader Ton		
Superintendent			Ironworker			Generators			Bulldozer		
						Welding Equip.					
Laborer-Foreman			Carpenter								
Laborer									Backhoe		
Operating Engineer			Concrete Finisher								
Carpenter						Paving Equip. & Roller					
						Air Compressor					

SEE REVERSE SIDE FOR SKETCH ☐ YES ☐ NO

WORK PERFORMED:

- Started NE corner excavation, moved westward along northern perimeter
  - Overburden material silty grading to sandy silt in proximity of boring SB-9 depth of excavation increased as swath moved toward west
  - Initial depth @ approx 576' deepened to 573' (water table) conditions @ SB-9 maintained deeper elevation along northern perimeter to accomodate approx H_2O table conditions and minimal contamination

PAY ITEMS:

CONTRACT NO.	CONTRACT ITEM	STA FROM	STA TO	DESCRIPTION	QUANTITY	REMARKS

TEST PERFORMED:
PICTURES TAKEN:

VISITORS: Dave Sengbush, Bflo Commissioner, LTV personnel (Wayne Gerald et al), Nelson Rauch P. Bucchi, T. Diffenbach (NYSDEC)

QA PERSONNEL SIGNATURE John P. Hilton
REPORT NO.
SHEET 1 of 1

MEETINGS HELD & RESULTS: 9^{15}-10^{00} Nelson Rauch here for site visit expressed concern on compaction of backfill material and subsequent testing. Assured that contractors are compacting backfill material however testing is not within scope of workplan

10^{50} - 11^{30} Wayne Gould, John Eicheson and other LTV personnel here for site visit. Gave the group a brief overview of progress to date and anticipated schedule of work developments

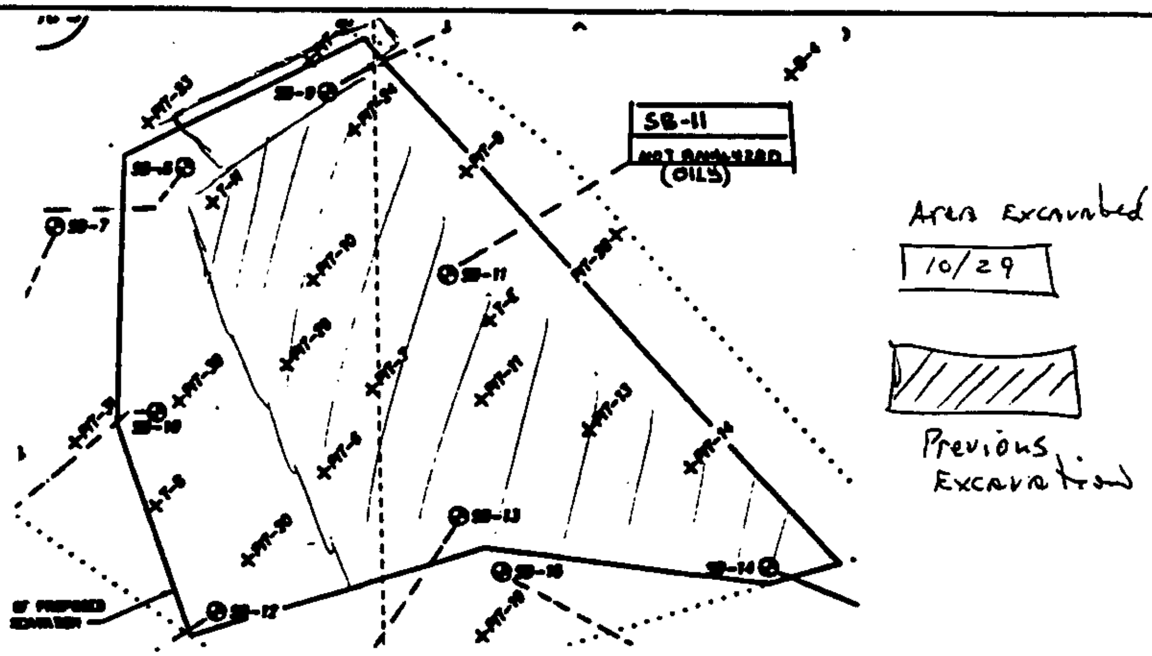
11^{45} - 12^{00} Dave Sawglash and BP&O Commissioner here for site visit gave superficial progress update. Councilman & Commissioner indicate that the City Mayor will come for site visit & press conference within 2 weeks

REMARKS: 13:00 - 14:00 (NYSDEC) P. Buecht and T. Dittenbach on site to observe NE corner and Northern perimeter sidewall exposure(s) esp in vicinity of SB-9

Overburden increasingly more sandy w/ movement of excavation toward the west. Contamination observed to water table

REFERENCES TO OTHER FORMS:

SKETCHES



SAMPLE LOG

SAMPLE NUMBER:

APPROXIMATE LOCATION OF STOCKPILE:

NUMBER OF STOCKPILE:

DATE OF COLLECTION:

CLIMATOLOGIC CONDITIONS:

FIELD OBSERVATION:

SHEETS ____ **OF** ____

MALCOLM PIRNIE

Inspector's Daily Report

CONTRACTOR:
ADDRESS:

TELEPHONE:
LOCATION LTV / Truscon FROM ______ TO ______
WEATHER Cloudy, showers Wind to 50 mph TEMP 50-40 A.M. ______ P.M. ______ DATE ______

CONTRACTOR'S WORK FORCE AND EQUIPMENT											
DESCRIPTION	H	#	DESCRIPTION	H	#	DESCRIPTION	H	#	DESCRIPTION	H	#
Field Engineer						Equipment			Front Loader Ton		
Superintendent			Ironworker			Generators			Bulldozer		
						Welding Equip.					
Laborer-Foreman			Carpenter								
Laborer									Backhoe		
Operating Engineer			Concrete Finisher								
Carpenter						Paving Equip. & Roller					
						Air Compressor					

SEE REVERSE SIDE FOR SKETCH ☐ YES ☐ NO

WORK PERFORMED: - Excavation moved westward along northwest/west perimeter, advanced to SB-10 location

- Squared off excavation to intercept end points of excavation cells → working face to depth/elevation of 573-573.5

- Pumps not used as excavation was held above/at water table. then backfilled

- Sampled sidewalls @ SW-9 A/B
- Sampled base @ S-10 A/B

PAY ITEMS:

CONTRACT		STA		DESCRIPTION	QUANTITY	REMARKS
NO.	ITEM	FROM	TO			

TEST PERFORMED:
PICTURES TAKEN: X Oil @ depth along NW perimeter
4 pipelines w/in NW face
VISITORS:

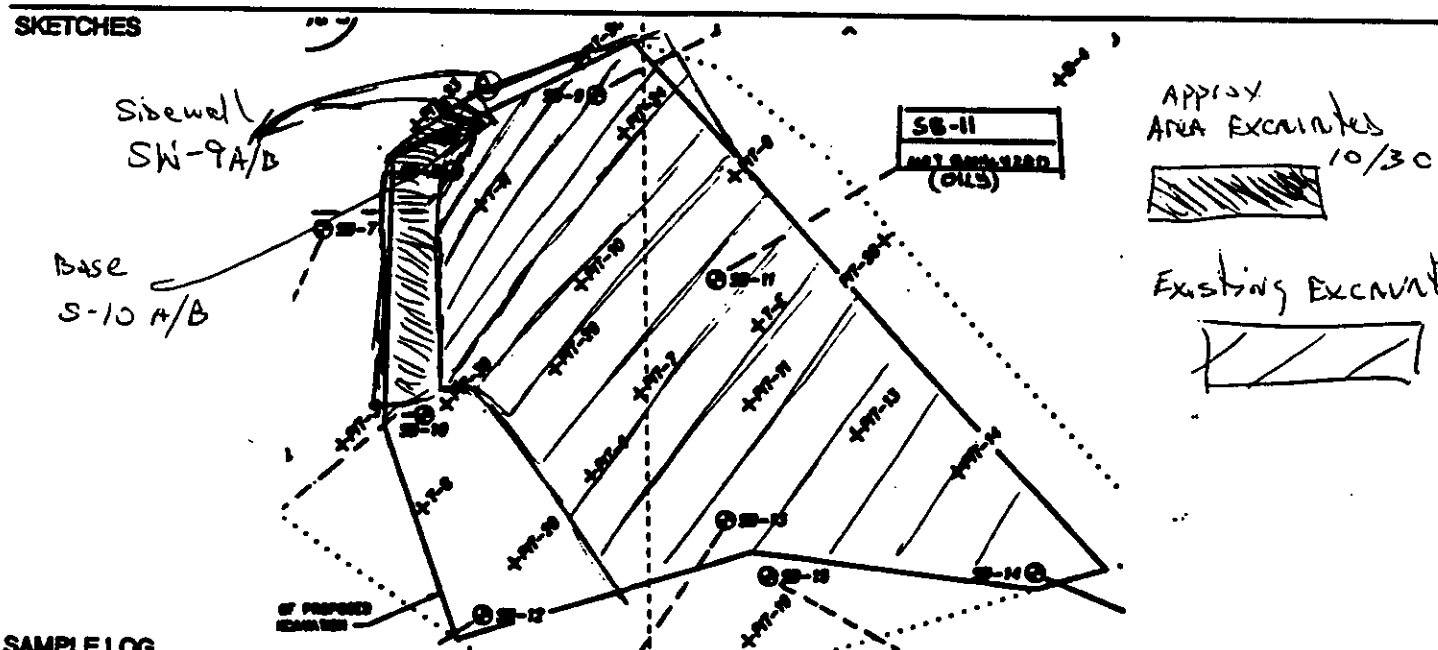
QA PERSONNEL
SIGNATURE John P. Hilton
REPORT NO.
SHEET 1 of 1

MEETINGS HELD & RESULTS: T. Reis on site to discuss results of Base sample S-8 A/B, Per P. Werthman & K. Milligan excavation will be taken to elevation of river i.e. water tab

REMARKS:

REFERENCES TO OTHER FORMS:

SKETCHES



SAMPLE LOG

SAMPLE NUMBER: Sidewall sample SW-9 A/B Base S-10 A/B

APPROXIMATE LOCATION OF STOCKPILE:

NUMBER OF STOCKPILE:

DATE OF COLLECTION:

CLIMATOLOGIC CONDITIONS:

FIELD OBSERVATION:

SHEETS ___ OF ___

MALCOLM PIRNIE

Inspector's Daily Report

CONTRACTOR:
ADDRESS:

TELEPHONE:
LOCATION LTV / Truscon FROM ____ TO ____
WEATHER Partly Sunny TEMP 30-40° A.M. ____ P.M. ____ DATE ____

CONTRACTOR'S WORK FORCE AND EQUIPMENT

DESCRIPTION	H	#	DESCRIPTION	H	#	DESCRIPTION	H	#	DESCRIPTION	H	#
Field Engineer						Equipment			Front Loader Ton		
Superintendent			Ironworker			Generators			Bulldozer		
						Welding Equip.					
Laborer-Foreman			Carpenter								
Laborer									Backhoe		
Operating Engineer			Concrete Finisher								
Carpenter						Paving Equip. & Roller					
						Air Compressor					

SEE REVERSE SIDE FOR SKETCH ☒ YES ☐ NO

WORK PERFORMED: – Advanced excavation southward from SB-10 east flank toward SB-12 east flank. Intercepted into terminus of cells excavated in central portion of site

– Backfilled to working face

– Excavation terminated at approx SB-12

PAY ITEMS:

CONTRACT NO.	CONTRACT ITEM	STA FROM	STA TO	DESCRIPTION	QUANTITY	REMARKS

TEST PERFORMED:
PICTURES TAKEN: X Oil pipelines @ pump station, perched oil
VISITORS: Peter Buechi, Marty Doster (NYSDEC

QA PERSONNEL
SIGNATURE [signature]
REPORT NO.
SHEET 1 of 1

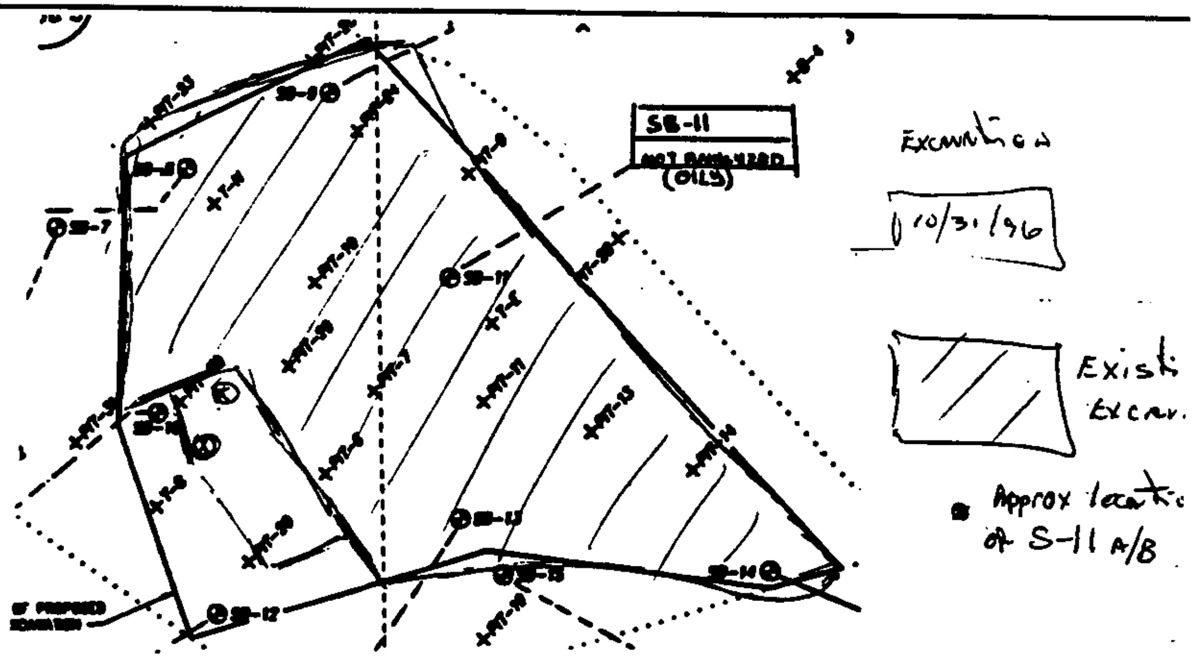
13:45 - 14:00

MEETINGS HELD & RESULTS: - Peter Buechi & Marty Doster of NYSDEC out for site visit. Outlined progress for today, discussed perimeter in SW corner and along western border

REMARKS: Spoke w/ Paul Morrow of WasteStream Analytical labs regarding sample 8 A/B analyses, lab equipment down until Mon or Tue of next week. Samples S-10 A/B, S-11 A/B @ base excavation of 573 - 573.5' elevation

REFERENCES TO OTHER FORMS:

SKETCHES



SAMPLE LOG

SAMPLE NUMBER: S-11 A/B base of excavation @ 573.0 - 573.6

APPROXIMATE LOCATION OF STOCKPILE:

NUMBER OF STOCKPILE:

DATE OF COLLECTION:

CLIMATOLOGIC CONDITIONS:

FIELD OBSERVATION:

SHEETS OF

MALCOLM PIRNIE

Inspector's Daily Report

CONTRACTOR:
ADDRESS:

TELEPHONE:
LOCATION: LTV Truscon site FROM ______ TO ______
WEATHER: Partly Cloudy TEMP 30-40° A.M.______ P.M.______ DATE 11/1/96

CONTRACTOR'S WORK FORCE AND EQUIPMENT

DESCRIPTION	H	#	DESCRIPTION	H	#	DESCRIPTION	H	#	DESCRIPTION	H	#
Field Engineer						Equipment			Front Loader Ton		
Superintendent			Ironworker			Generators			Bulldozer		
						Welding Equip.					
Laborer-Foreman			Carpenter								
Laborer									Backhoe		
Operating Engineer			Concrete Finisher								
Carpenter						Paving Equip. & Roller					
						Air Compressor					

SEE REVERSE SIDE FOR SKETCH ☐ YES ☐ NO

WORK PERFORMED:

- Completed N-S swath to southern perimeter east of SB-12
- Moved equipment & working face of excavation to western most perimeter swath between SB-11 & SB-12

PAY ITEMS:

CONTRACT NO.	CONTRACT ITEM	STA FROM	STA TO	DESCRIPTION	QUANTITY	REMARKS
				2" pump	1	
				3" pump	1	

TEST PERFORMED:
PICTURES TAKEN: X "Action Photos" SW corner slag filled trench
VISITORS:

QA PERSONNEL SIGNATURE: John P. Hilton
REPORT NO.
SHEET 1 of 1

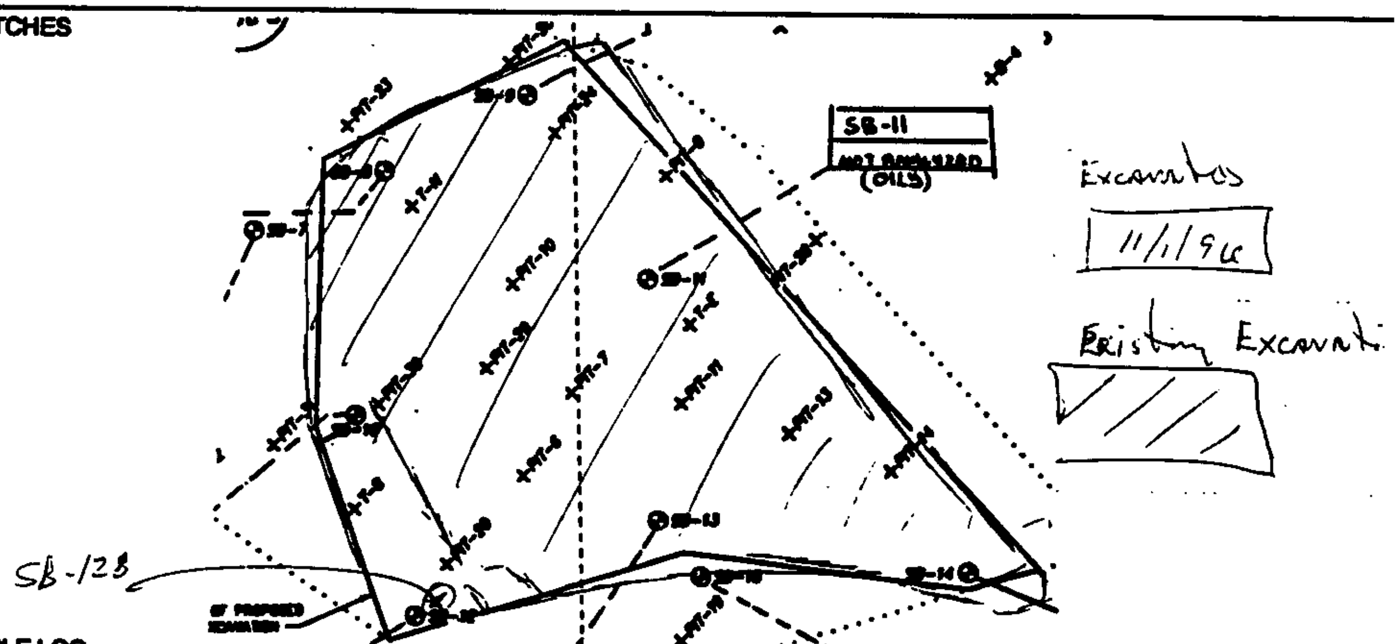
MEETINGS HELD & RESULTS:

- Called P. Buechi of NJSDEC to inform of site progress discussed extending excavation south of SB-12 and slightly west of SB-10

REMARKS:

REFERENCES TO OTHER FORMS:

SKETCHES



SAMPLE LOG

SAMPLE NUMBER: S-126 sampled @ base of excavation 573.2'

APPROXIMATE LOCATION OF STOCKPILE:

NUMBER OF STOCKPILE:

DATE OF COLLECTION:

CLIMATOLOGIC CONDITIONS:

FIELD OBSERVATION:

SHEETS OF

MALCOLM PIRNIE

Inspector's Daily Report

CONTRACTOR:
ADDRESS:

TELEPHONE:
LOCATION LTV / Truscon FROM ______ TO ______
WEATHER Partly Sunny TEMP 35-45 A.M. ______ P.M. ______ DATE Mon 11/9/56

CONTRACTOR'S WORK FORCE AND EQUIPMENT

DESCRIPTION	H	#	DESCRIPTION	H	#	DESCRIPTION	H	#	DESCRIPTION	H	#
Field Engineer						Equipment			Front Loader Ton		
Superintendent			Ironworker			Generators			Bulldozer		
						Welding Equip.					
Laborer-Foreman			Carpenter								
Laborer									Backhoe		
Operating Engineer			Concrete Finisher								
Carpenter						Paving Equip. & Roller					
						Air Compressor					

SEE REVERSE SIDE FOR SKETCH ☐YES ☐NO

WORK PERFORMED: - Continued excavation along western perimeter in SW corner moved working face eastward to start 25' south of trench A.

- Following 8" oil filled pipeline w/ adjacent slag/oil filled trench

PAY ITEMS:

CONTRACT		STA		DESCRIPTION	QUANTITY	REMARKS
NO.	ITEM	FROM	TO			

TEST PERFORMED:
PICTURES TAKEN: X Pipeline
VISITORS:

QA PERSONNEL SIGNATURE [signature]
REPORT NO.
SHEET 1 of 2

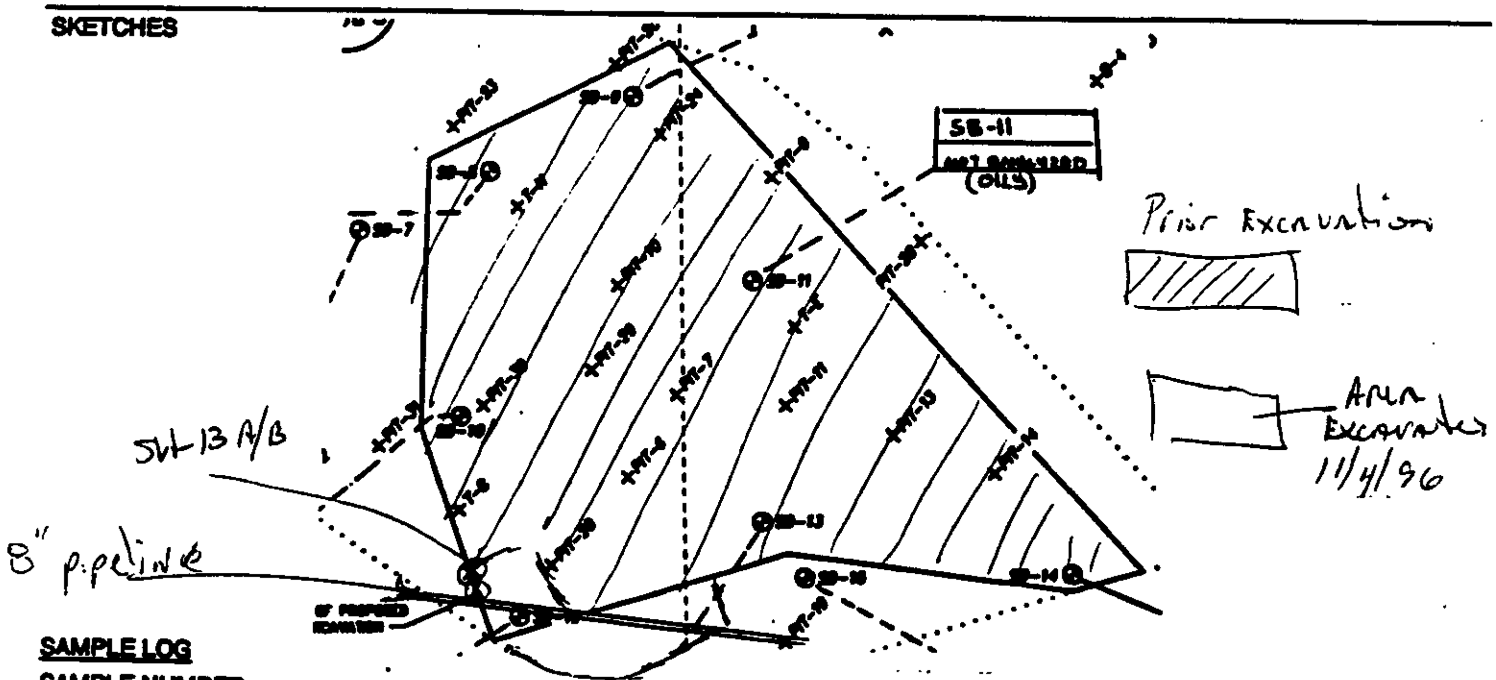
MEETINGS HELD & RESULTS: 15:00 P. Buechi (NYSDEC) on site to observe pipeline and saturated oil material.

– When asked of DEC position on pipeline, stated that UST guideline would apply

REMARKS:

REFERENCES TO OTHER FORMS:

SKETCHES



SAMPLE LOG

SAMPLE NUMBER:

APPROXIMATE LOCATION OF STOCKPILE:

NUMBER OF STOCKPILE:

DATE OF COLLECTION:

CLIMATOLOGIC CONDITIONS:

FIELD OBSERVATION:

SHEETS 1 **OF** 1

MALCOLM PIRNIE

Inspector's Daily Report

CONTRACTOR:
ADDRESS:

TELEPHONE:
LOCATION LTV / Truscon FROM TO
WEATHER Cloudy TEMP 40-50° A.M. P.M. DATE 11/5/96

CONTRACTOR'S WORK FORCE AND EQUIPMENT

DESCRIPTION	H	#	DESCRIPTION	H	#	DESCRIPTION	H	#	DESCRIPTION	H	#
Field Engineer						Equipment			Front Loader Ton		
Superintendent			Ironworker			Generators			Bulldozer		
						Welding Equip.					
Laborer-Foreman			Carpenter								
Laborer									Backhoe		
Operating Engineer			Concrete Finisher								
Carpenter						Paving Equip. & Roller					
						Air Compressor					

SEE REVERSE SIDE FOR SKETCH ☐ YES ☐ NO

WORK PERFORMED:

- Stopped work along southern perimeter (100' east of SB-12) until LTV is advised of 8" oil filled pipeline situation

- Moved to western perimeter to remove soil in area between SB-8/SB-7 toward SB-12

PAY ITEMS:

CONTRACT NO.	CONTRACT ITEM	STA FROM	STA TO	DESCRIPTION	QUANTITY	REMARKS
				2" pump	1	
				3" pum	1	

TEST PERFORMED:
PICTURES TAKEN: x piping w/trench
VISITORS:

QA PERSONNEL SIGNATURE John P. Hilton
REPORT NO.
SHEET 1 of 1

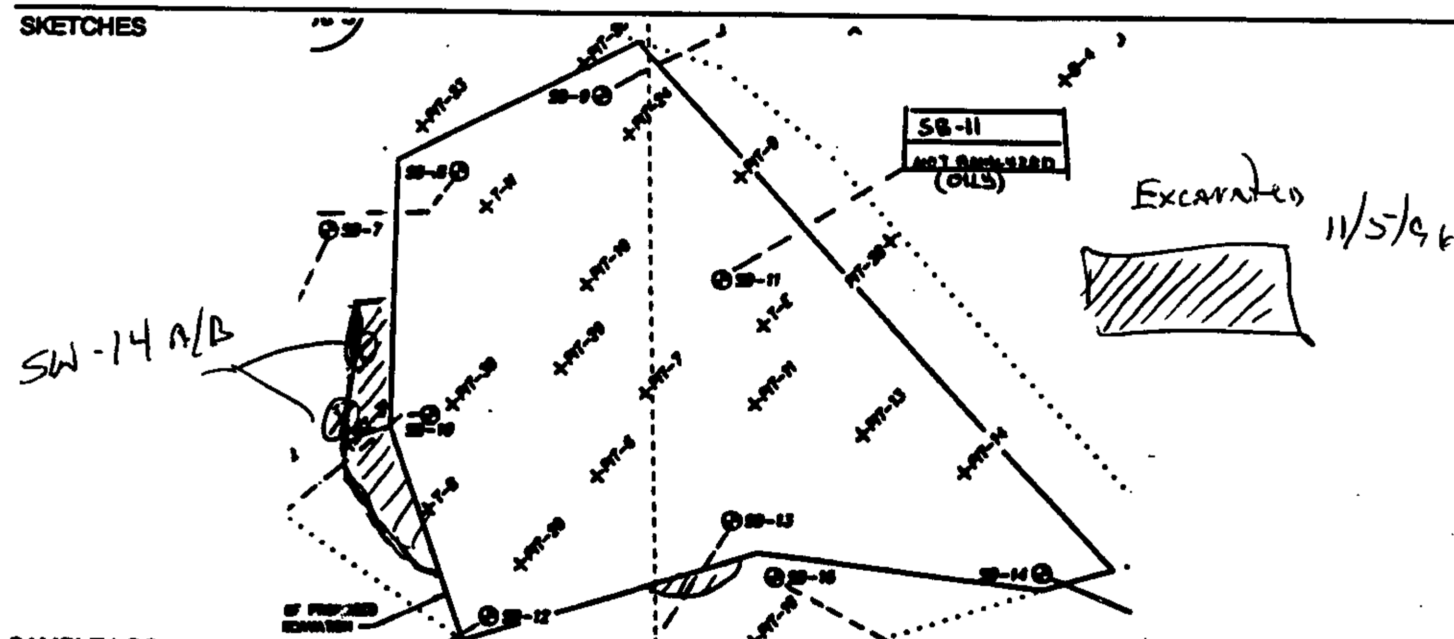
MEETINGS HELD & RESULTS: Met w/ Elmwood Tank rep (Peter Hitchcock) to discuss pumping and removal of 8" oil pipeline

– Met w/ Paul Morrow of Waste Stream Technology to transfer SW-14 A/B

REMARKS:

REFERENCES TO OTHER FORMS:

SKETCHES



SAMPLE LOG

SAMPLE NUMBER: Sampled sidewall SW-14 A/B

APPROXIMATE LOCATION OF STOCKPILE:

NUMBER OF STOCKPILE:

DATE OF COLLECTION:

CLIMATOLOGIC CONDITIONS:

FIELD OBSERVATION:

SHEETS OF

MALCOLM PIRNIE

Inspector's Daily Report

CONTRACTOR:
ADDRESS:

TELEPHONE:
LOCATION LTV / Truscon FROM ____ TO ____
WEATHER Cloudy 45-55° TEMP ____ A.M. ____ P.M. ____ DATE 11/6/96

CONTRACTOR'S WORK FORCE AND EQUIPMENT

DESCRIPTION	H	#	DESCRIPTION	H	#	DESCRIPTION	H	#	DESCRIPTION	H	#
Field Engineer						Equipment			Front Loader Ton		
Superintendent			Ironworker			Generators			Bulldozer		
						Welding Equip.					
Laborer-Foreman			Carpenter								
Laborer									Backhoe		
Operating Engineer			Concrete Finisher								
Carpenter						Paving Equip. & Roller					
						Air Compressor					

SEE REVERSE SIDE FOR SKETCH ☐ YES ☐ NO

WORK PERFORMED:

- Started excavation @ SB-3 location, adjacent to Buffalo River
- Established elevation data for on site material backfilled into tank excavation area
- Dug / Removed oil saturated material from river bank to approx 85' south of River
- Established Eastern and Southern perimeter for oil saturated material

PAY ITEMS:

CONTRACT NO.	CONTRACT ITEM	STA FROM	STA TO	DESCRIPTION	QUANTITY	REMARKS
				3" pump		

TEST PERFORMED:
PICTURES TAKEN: X SB-3 excavation

VISITORS: Tim Diffenbach, Jack Krajewski (NYSDEC)

QA PERSONNEL SIGNATURE John P. Hilton
REPORT NO.
SHEET 1 of 1

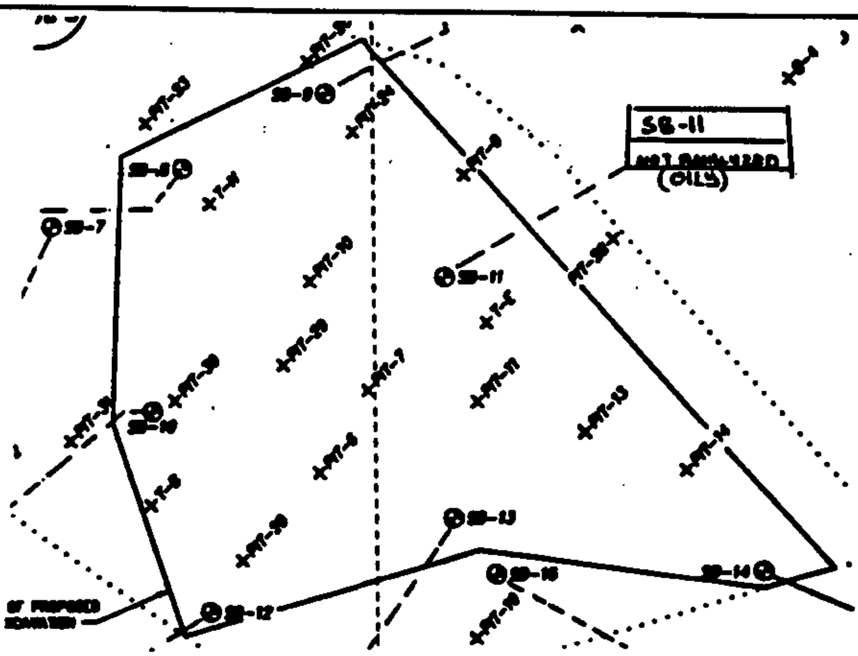
MEETINGS HELD & RESULTS: Met w/ T. Diffenbach who was on site to observe excavation from 10^{30} - 3^{30} pm

- Defined criteria to establish Eastern and southern perimeters in vicinity of SB-3

REMARKS:

REFERENCES TO OTHER FORMS:

SKETCHES



SAMPLE LOG

SAMPLE NUMBER: S

APPROXIMATE LOCATION OF STOCKPILE:

NUMBER OF STOCKPILE:

DATE OF COLLECTION:

CLIMATOLOGIC CONDITIONS:

FIELD OBSERVATION:

SHEETS OF

MALCOLM PIRNIE

Inspector's Daily Report

CONTRACTOR:
ADDRESS:

TELEPHONE:
LOCATION: LTV / Transcon FROM ______ TO ______
WEATHER: Partly Cloudy 60-70° TEMP ____ A.M. ____ P.M. ____ DATE 11/7/96

CONTRACTOR'S WORK FORCE AND EQUIPMENT

DESCRIPTION	H	#	DESCRIPTION	H	#	DESCRIPTION	H	#	DESCRIPTION	H	#
Field Engineer						Equipment			Front Loader Ton		
Superintendent			Ironworker			Generators			Bulldozer		
						Welding Equip.					
Laborer-Foreman			Carpenter								
Laborer									Backhoe		
Operating Engineer			Concrete Finisher								
Carpenter						Paving Equip. & Roller					
						Air Compressor					

SEE REVERSE SIDE FOR SKETCH ☐ YES ☐ NO

WORK PERFORMED:

- Continued excavation in SB-17 / SB-3 AREA to delineate limits of shallow (6-7') bgs perched oil condition
- Attempted to pump water from excavations adjacent to Bflo River, Sand and backfilled crushed stone allow high flow to excavation. Timed water flow to 2½ yd³ hole @ river elevation. Water filled hole in 1.5 min
- Ceased pumping ops, instructed operator to dig to water table conditions then backfill excavation.
- Sampled sidewalls and base @ SW-15 A/B, S-16 A/B, SW-17 A/B, S-18 A/B

PAY ITEMS:

CONTRACT NO.	CONTRACT ITEM	STA FROM	STA TO	DESCRIPTION	QUANTITY	REMARKS

TEST PERFORMED:
PICTURES TAKEN: X River excavations @ SB-17, SB-1
VISITORS:

QA PERSONNEL SIGNATURE: John P. Hilton
REPORT NO.
SHEET 1 of 1

MEETINGS HELD & RESULTS: Met w/ T Reid re: water conditions w/in excavations @ SB-1, SB-17

- Determined that slope adjacent to Bflo River will Remain since it is fill material "clean". Contamination at water table and below >6'.
  - slope failure
  - unable to pump water from hole

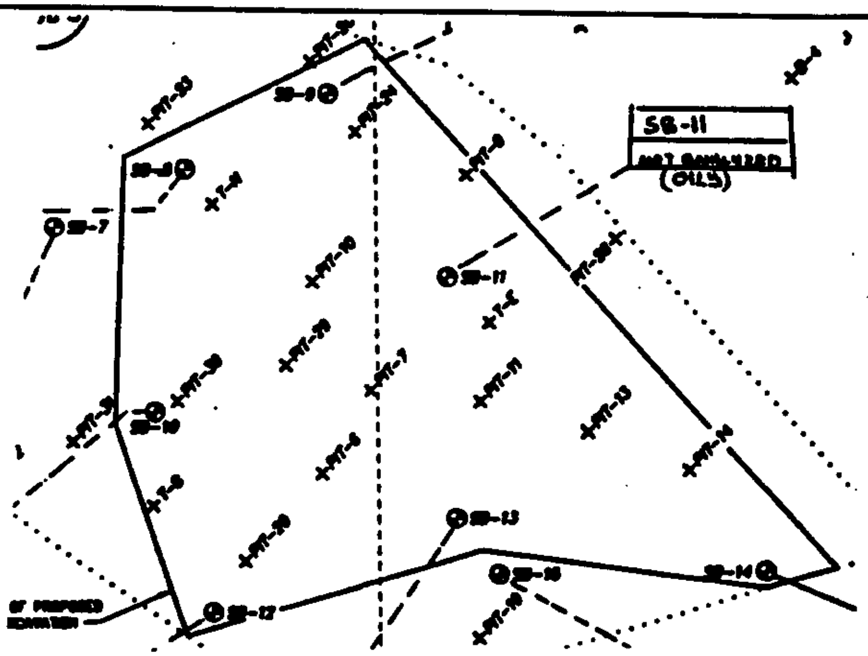
Met w/ T. Diffenbach (NYSDEC) given update of progress along river embankment

REMARKS:

Maximum depth attained as measured @ SB-17 location (570.8) excavation slope continued to fail thereby filling pit

REFERENCES TO OTHER FORMS:

SKETCHES



SAMPLE LOG

SAMPLE NUMBER: Samples S-(SW) -15, 16, 17, 18 @ River proximity

APPROXIMATE LOCATION OF STOCKPILE:

NUMBER OF STOCKPILE:

DATE OF COLLECTION:

CLIMATOLOGIC CONDITIONS:

FIELD OBSERVATION:

SHEETS OF

MALCOLM PIRNIE

Inspector's Daily Report

CONTRACTOR:
ADDRESS:

TELEPHONE:
LOCATION LTV / Truscon FROM ______ TO ______
WEATHER Partly Cloudy, Snow TEMP 30-25° A.M. ______ P.M. ______ DATE 11/11/96

CONTRACTOR'S WORK FORCE AND EQUIPMENT

DESCRIPTION	H	#	DESCRIPTION	H	#	DESCRIPTION	H	#	DESCRIPTION	H	#
Field Engineer						Equipment			Front Loader Ton		
Superintendent			Ironworker			Generators			Bulldozer		
						Welding Equip.					
Laborer-Foreman			Carpenter								
Laborer									Backhoe		
Operating Engineer			Concrete Finisher								
Carpenter						Paving Equip. & Roller					
						Air Compressor					

SEE REVERSE SIDE FOR SKETCH ☐ YES ☐ NO

WORK PERFORMED:

- Completed excavation & backfilling at Bflo River boreholes SB-1 & SB-18
- Stripped material to approx 8-9' bgs, removed material 9-12' bgs, hindered by water infiltration from River
- Sampled SW-19 A/B and S-20 A/B
- Opened excavation over 8" oil pipeline
- Dug sump in vicinity ~~of~~ 4000 gal tanks

PAY ITEMS:

CONTRACT		STA		DESCRIPTION	QUANTITY	REMARKS
NO.	ITEM	FROM	TO			

TEST PERFORMED:
PICTURES TAKEN: XX River excavation

VISITORS:

QA PERSONNEL
SIGNATURE John P. Hilton
REPORT NO.
SHEET ______ of ______

MEETINGS HELD & RESULTS:

Met w/ Peter Hitchcock at Elmwood tank, delineated 8" pipeline from West TANK to East.

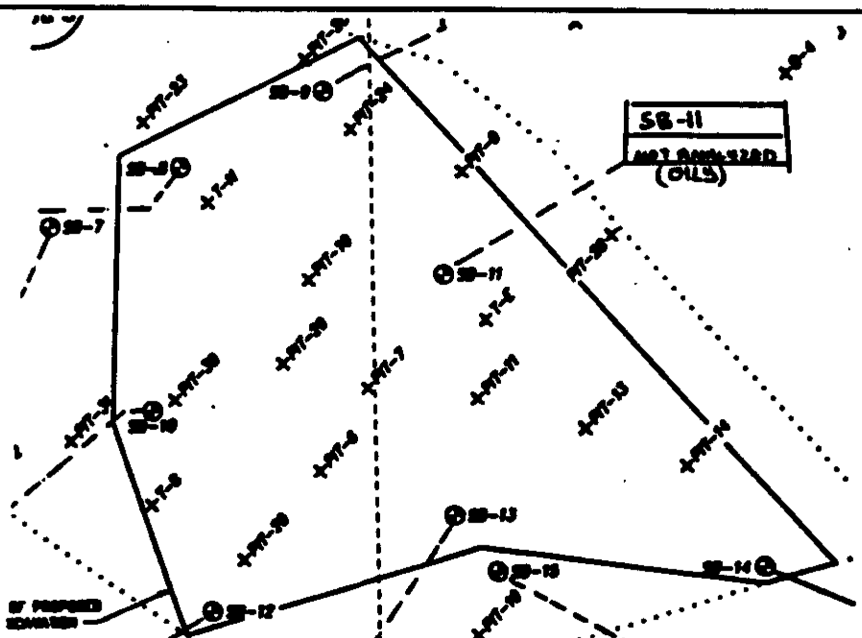
Scope of work to be completed will require pigging out oil (250') in western section of pipeline, Eastern portion will be drained.

Western portion of pipeline will be removed w/soil and placed back into excavation

REMARKS:

REFERENCES TO OTHER FORMS:

SKETCHES



SAMPLE LOG

SAMPLE NUMBER: S-19 A/B, S-20 A/B along river edge

APPROXIMATE LOCATION OF STOCKPILE:

NUMBER OF STOCKPILE:

DATE OF COLLECTION:

CLIMATOLOGIC CONDITIONS:

FIELD OBSERVATION:

MALCOLM PIRNIE

Inspector's Daily Report

CONTRACTOR:
ADDRESS:

TELEPHONE:
LOCATION LTV / Truscon FROM ______ TO ______
WEATHER Partly Cloudy, Snow 25-35° TEMP ______ A.M. ______ P.M. ______ DATE 11/12/96

CONTRACTOR'S WORK FORCE AND EQUIPMENT

DESCRIPTION	H	#	DESCRIPTION	H	#	DESCRIPTION	H	#	DESCRIPTION	H	#
Field Engineer						Equipment			Front Loader Ton		
Superintendent			Ironworker			Generators			Bulldozer		
						Welding Equip.					
Laborer-Foreman			Carpenter								
Laborer									Backhoe		
Operating Engineer			Concrete Finisher								
Carpenter						Paving Equip. & Roller					
						Air Compressor					

SEE REVERSE SIDE FOR SKETCH ☐YES ☐NO

WORK PERFORMED:

- Begin excavations in AREA(S) reported to contain (1) 1,000 gal, (2) 4000 UST's.
- 1000 gal tank in SW corner of Truscon bldg previously excavated sand backfill material and straps found as evidence
- (2) 4000 gal tanks not found after excavating 50'x50' area
- West (250') section of 8" pipeline pigged out approx 1300 gal of water and oil collected
- Sampled S-21 A/B, SW-22 A/B

PAY ITEMS:

CONTRACT		STA		DESCRIPTION	QUANTITY	REMARKS
NO.	ITEM	FROM	TO			

TEST PERFORMED:
PICTURES TAKEN: XX pipeline, pigging oil
VISITORS: Elmwood tank personnell

QA PERSONNEL SIGNATURE John P. Halton
REPORT NO.
SHEET 1 of 1

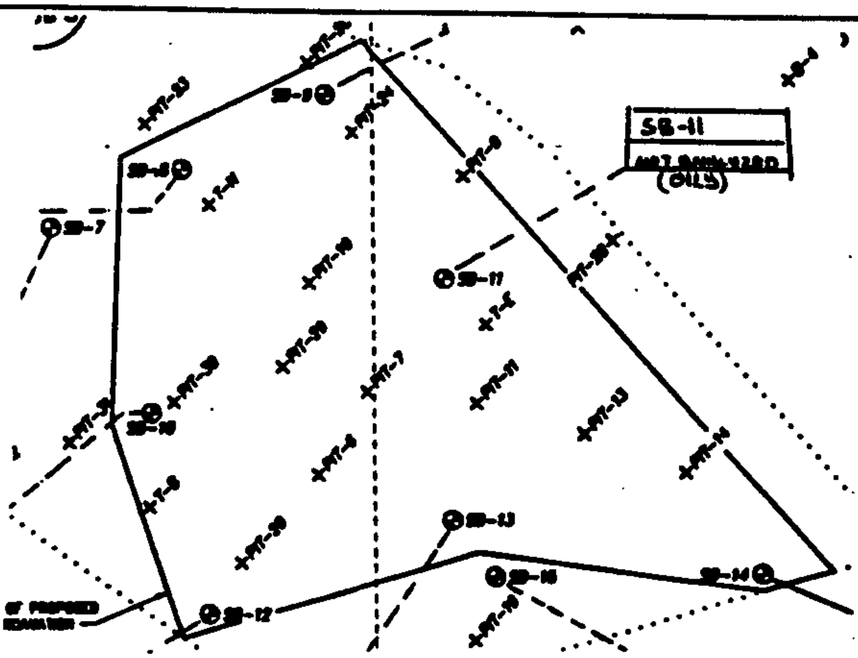
MEETINGS HELD & RESULTS:

- Called P. Brechi of NYSDEC to advise on site/work progress

REMARKS:

REFERENCES TO OTHER FORMS:

SKETCHES



SAMPLE LOG

SAMPLE NUMBER: S-21 A/B, SW-22 A/B @ 4000 gal tank area

APPROXIMATE LOCATION OF STOCKPILE:

NUMBER OF STOCKPILE:

DATE OF COLLECTION:

CLIMATOLOGIC CONDITIONS:

FIELD OBSERVATION:

SHEETS 1 OF 1

MALCOLM PIRNIE

Inspector's Daily Report

CONTRACTOR:
ADDRESS:

TELEPHONE:
LOCATION LTV/Truscon FROM ______ TO ______
WEATHER Partly Sunny 30-40° TEMP ______ A.M. ______ P.M. ______ DATE 11/13/96

CONTRACTOR'S WORK FORCE AND EQUIPMENT

DESCRIPTION	H	#	DESCRIPTION	H	#	DESCRIPTION	H	#	DESCRIPTION	H	#
Field Engineer						Equipment			Front Loader Ton		
Superintendent			Ironworker			Generators			Bulldozer		
						Welding Equip.					
Laborer-Foreman			Carpenter								
Laborer									Backhoe		
Operating Engineer			Concrete Finisher								
Carpenter						Paving Equip. & Roller					
						Air Compressor					

SEE REVERSE SIDE FOR SKETCH ☐ YES ☐ NO

WORK PERFORMED:

- Completed excavation @ 4000 gal tank Area
  Approx area excavated 80' x 80' benched @ approx 5' & 12' bgs
- Sampled sidewalls of dug pit @ SW-23 A/B
  SW-24 A/B
- Backfilled excavation

PAY ITEMS:

CONTRACT NO.	CONTRACT ITEM	STA FROM	STA TO	DESCRIPTION	QUANTITY	REMARKS

TEST PERFORMED:
PICTURES TAKEN: X 4000 gal pit area

VISITORS:

QA PERSONNEL SIGNATURE John P. Hilton

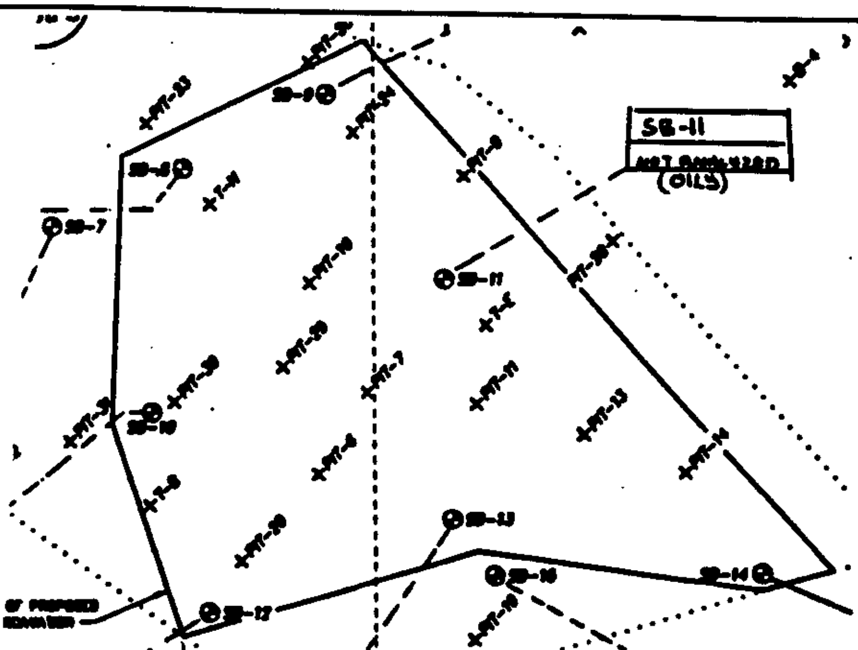
REPORT NO.
SHEET 1 of 1

MEETINGS HELD & RESULTS:

REMARKS:

REFERENCES TO OTHER FORMS:

SKETCHES



SAMPLE LOG

SAMPLE NUMBER: Sampled SW-23 A/B SW-24 A/B

APPROXIMATE LOCATION OF STOCKPILE:

NUMBER OF STOCKPILE:

DATE OF COLLECTION:

CLIMATOLOGIC CONDITIONS:

FIELD OBSERVATION:

SHEETS OF

MALCOLM PIRNIE

Inspector's Daily Report

CONTRACTOR:
ADDRESS:

TELEPHONE:
LOCATION LTY / TRUSCON FROM ______ TO ______
WEATHER Partly Cloudy 25-35° TEMP ______ A.M. ______ P.M. ______ DATE 11/14/96

CONTRACTOR'S WORK FORCE AND EQUIPMENT

DESCRIPTION	H	#	DESCRIPTION	H	#	DESCRIPTION	H	#	DESCRIPTION	H	#
Field Engineer						Equipment			Front Loader Ton		
Superintendent			Ironworker			Generators			Bulldozer		
						Welding Equip.					
Laborer-Foreman			Carpenter								
Laborer									Backhoe		
Operating Engineer			Concrete Finisher								
Carpenter						Paving Equip. & Roller					
						Air Compressor					

SEE REVERSE SIDE FOR SKETCH ☐ YES ☐ NO

WORK PERFORMED:

- Excavated 8" pipeline (225') from Tank location east to Tank location west.

Approx trench 12' x 6' x 225', dimensions of trench increase as width expanded to 50', depth held at 6' adjacent to pipeline, benched to approx 3-4' on sides

PAY ITEMS:

CONTRACT NO.	CONTRACT ITEM	STA FROM	STA TO	DESCRIPTION	QUANTITY	REMARKS

TEST PERFORMED:
PICTURES TAKEN: XX Slag filled trench
VISITORS:

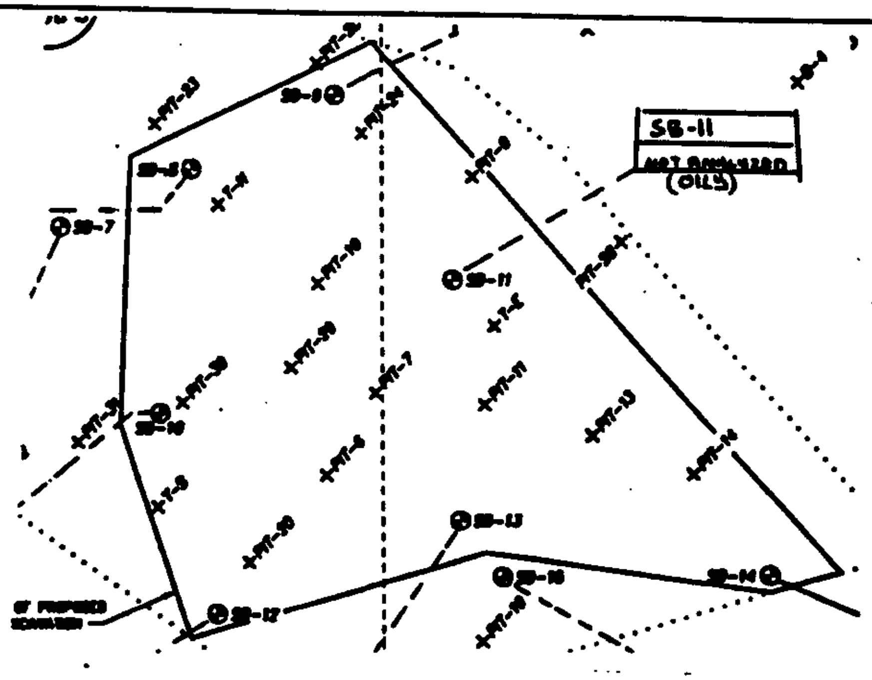
QA PERSONNEL SIGNATURE John P. Hilton
REPORT NO.
SHEET 1 of 1

MEETINGS HELD & RESULTS:

REMARKS:

REFERENCES TO OTHER FORMS:

SKETCHES



SAMPLE LOG

SAMPLE NUMBER:

APPROXIMATE LOCATION OF STOCKPILE:

NUMBER OF STOCKPILE:

DATE OF COLLECTION:

CLIMATOLOGIC CONDITIONS:

FIELD OBSERVATION:

SHEETS ______ OF ______

MALCOLM PIRNIE

Inspector's Daily Report

CONTRACTOR:
ADDRESS:

TELEPHONE:
LOCATION LTV / TRUSCON FROM ______ TO ______
WEATHER Sunny 25-35° TEMP ______ A.M. ______ P.M. ______ DATE 11/15

CONTRACTOR'S WORK FORCE AND EQUIPMENT

DESCRIPTION	H	#	DESCRIPTION	H	#	DESCRIPTION	H	#	DESCRIPTION	H	#
Field Engineer						Equipment			Front Loader Ton		
Superintendent			Ironworker			Generators			Bulldozer		
						Welding Equip.					
Laborer-Foreman			Carpenter								
Laborer									Backhoe		
Operating Engineer			Concrete Finisher								
Carpenter						Paving Equip. & Roller					
						Air Compressor					

SEE REVERSE SIDE FOR SKETCH ☐ YES ☐ NO

WORK PERFORMED:

- Continued excavation of 8" dia pipeline
  - Excavation completed & backfilled
  - Excavated Sump Area

PAY ITEMS:

CONTRACT		STA		DESCRIPTION	QUANTITY	REMARKS
NO.	ITEM	FROM	TO			

TEST PERFORMED:
PICTURES TAKEN: XX Trench & pipeline proximity
VISITORS: City of Buffalo, MPI personnel

QA PERSONNEL
SIGNATURE
REPORT NO.
SHEET 1 of 1

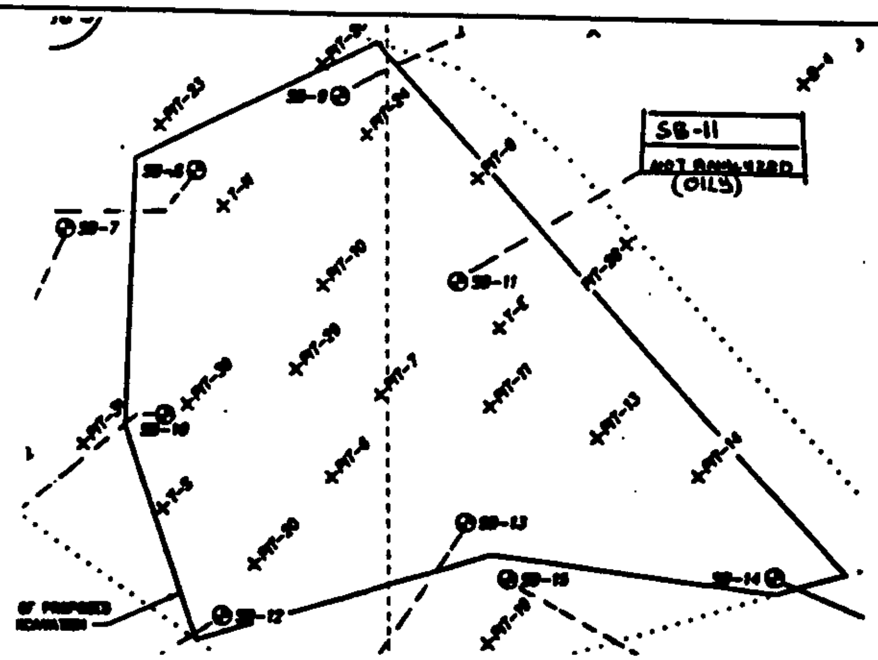
MEETINGS HELD & RESULTS:

Mayor's T.V. spotlight

REMARKS:

REFERENCES TO OTHER FORMS:

SKETCHES



SAMPLE LOG

SAMPLE NUMBER:

APPROXIMATE LOCATION OF STOCKPILE:

NUMBER OF STOCKPILE:

DATE OF COLLECTION:

CLIMATOLOGIC CONDITIONS:

FIELD OBSERVATION:

MALCOLM PIRNIE

APPENDIX D

BIOREMEDIATION PLAN FOR THE TRUSCON PROPERTY SOILS

BIOREMEDIATION PLAN
FOR THE TRUSCON PROPERTY SOILS

LTV STEEL COMPANY

MAY 1997

MALCOLM PIRNIE, INC.

P. O. Box 1938
Buffalo, New York 14219

0848-264-101

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MALCOLM PIRNIE

BIOREMEDIATION PLAN FOR THE TRUSCON PROPERTY SOILS

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MALCOLM PIRNIE

1.0 INTRODUCTION

1.1 SITE DESCRIPTION AND BACKGROUND

The City of Buffalo purchased an approximately 50-acre parcel of land, located at 1176-1184 South Park Avenue, from LTV Steel Company in 1991 (see Figure 1-1). Prior to the purchase, the City contracted for a Phase I Assessment of the site which uncovered NYSDEC-documented evidence of an approximately 20-year old spill of No. 6 fuel oil on the site. Subsequently, the City, as part of the it's "brownfields" redevelopment efforts, has worked closely with a developer to put together a $22 million development package for purchase and use of the site for hydroponics tomato production. During the development discussions, the spill history led to a site investigation by the City and discussions with NYSDEC regarding site remedial requirements.

A remedial plan was submitted to NYSDEC by Foit-Albert on behalf of the City of Buffalo in July 1996. At the request of the City of Buffalo and LTV Steel, Malcolm Pirnie reviewed the 1996 Foit-Albert Remedial Plan, and other relevant documents. Malcolm Pirnie completed a supplemental soil sampling program in August 1996 to better define the vertical and horizontal limits of soil contamination, and developed a revised remedial plan which included: excavation of the contaminated soil; removal of three underground storage tanks; backfill and compaction of excavation areas; transportation of the contaminated soil to an off-site bioremediation cell on nearby LTV Steel property; and bioremediation of the petroleum-contaminated soil.

Approximately 17,000 cubic yards of petroleum-contaminated soil were excavated and stockpiled on a 3-acre bioremediation pad (biopad) on LTV Steel's Abby Street property in October and November, 1996. A 6-inch low-permeability soil liner (with warning tape placed on top) was constructed prior to stockpiling the soil to contain runoff or leaching of petroleum contaminants from the stockpiled soil. A sprayed, synthetic cover system (Posi-Shell) was placed on top of the stockpiled soil to minimize infiltration and erosion over the winter months. The remediation plan calls for the stockpiled petroleum-contaminated soil to be bioremediated on the biopad liner.

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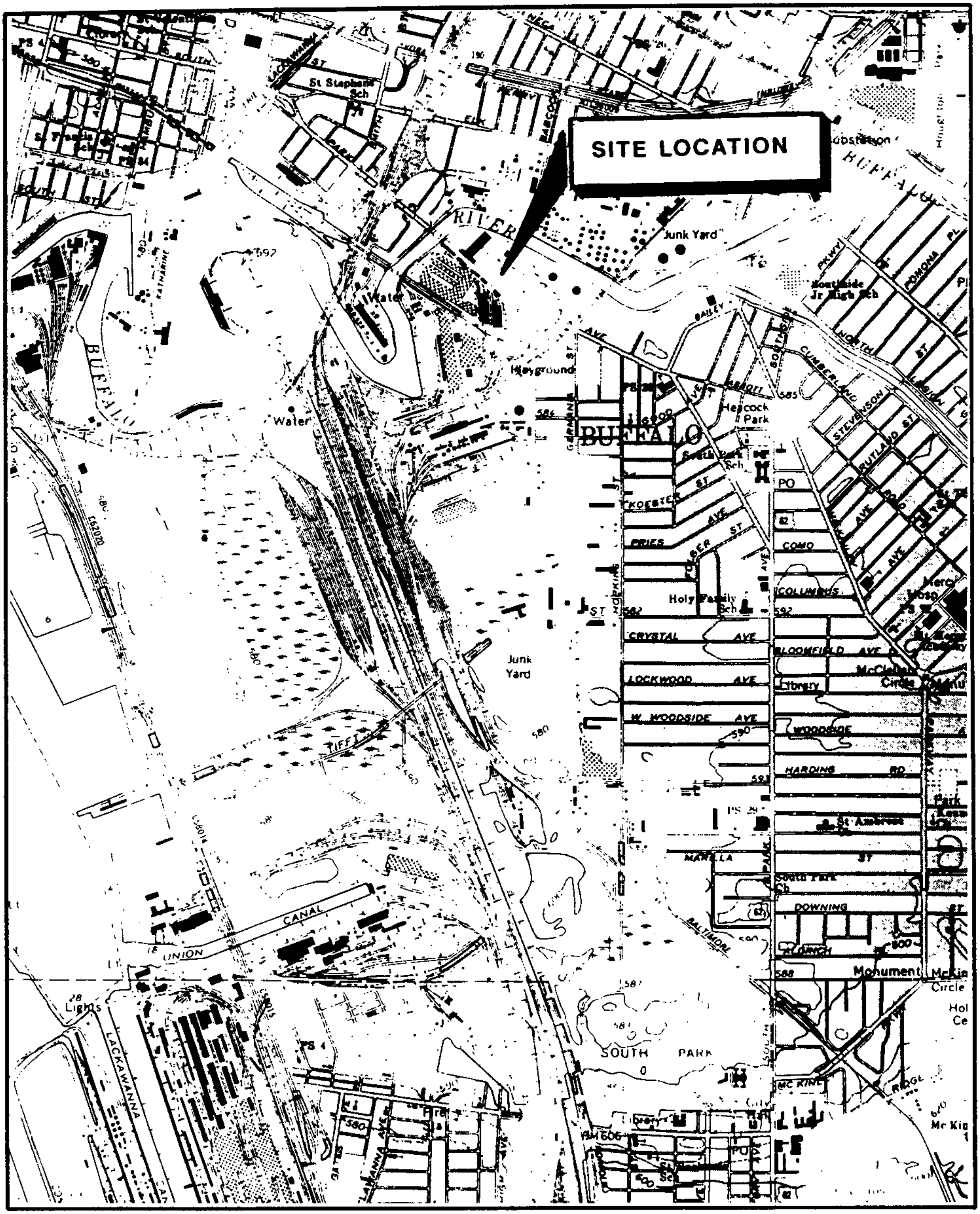

MALCOLM PIRNIE

FIG1-1

LTV STEEL PROPERTY
SITE LOCATION MAP

LTV STEEL COMPANY
BUFFALO, NEW YORK

MAY 1997

1.2 PURPOSE AND SCOPE OF STUDY

In preparation for full-scale bioremediation, Malcolm Pirnie conducted a bench-scale soil biotreatability study in its Buffalo, New York Soils Testing Laboratory from January through April 1997. The overall objectives of the bench-scale study were to:

- Determine if target cleanup concentrations (viz., New York State STARS Guidance Values) can be achieved via bioremediation for the site contaminants of interest.
- Establish the rate and extent of biodegradation of the petroleum hydrocarbon contaminants.
- Establish key operating parameters (i.e., frequency of aeration, moisture content, and nutrient addition).

Section 2.0 of this report presents the bench-scale study procedures, Section 3.0 discusses the results and conclusions, and Section 4.0 provides recommendations for the full-scale bioremediation program.

1.3 TARGET CLEANUP OBJECTIVES

In New York State, petroleum-contaminated soils are addressed through guidance provided by the Spill Technology and Remediation Series (STARS). Under the STARS guidance there are four essential guidelines that must be satisfied in order for soil to be considered acceptably remediated:

(1) Protection of the groundwater.

(2) Protection of human health.

(3) Protection of fish and wildlife and the environment in which they live.

(4) Protection against objectionable nuisance characteristics.

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Compliance with these guidelines is satisfied by analysis of soil samples for contaminant concentrations and leachability, as determined by using the Toxicity Characteristic Leaching Procedure (TCLP), and comparison of the results to guidance values that have been established by NYSDEC. The TCLP Extraction Method was designed to simulate the leaching potential of the contaminants. Satisfactory protection of groundwater is established by comparison with TCLP Extraction Guidance Values or by TCLP Alternative Guidance Values. Satisfactory protection of human health is indicated by Human Health Guidance Values. Satisfactory protection against nuisance characteristics is indicated by the lack of objectionable odor and by each contaminant concentration being less than 10,000 ppb. Table 1-1 lists the site-specific contaminants of interest and their corresponding guidance values.

Sediment Guidance Values are not relevant cleanup criteria at this site since contaminated sediment is not an issue. Nuisance characteristics were no longer evident after approximately one to two months into the biotreatability study and, thus, are not anticipated to be a controlling factor in achieving cleanup. The NYSDEC (Region 9) does not typically use Human Health Guidance Values as cleanup criteria since these values are significantly higher than the guidance values set for the protection of groundwater.

For the VOCs and non-carcinogenic SVOCs of interest for this study, the TCLP Alternative Guidance Values are considered to be the most applicable for demonstrating groundwater quality protection during and after bioremediation. This alternative approach, designed as an analytical cost-saving approach, establishes the concentration of the contaminant in the soil and mathematically determines if it will satisfy the leachate criteria. If the contaminant concentration exceeds this Alternative Guidance Value, then no conclusion can be drawn and groundwater quality protection must be confirmed by actually performing the TCLP extraction for that contaminant. Achieving the TCLP Alternative Guidance Values will also provide protection of human health.

In the event that carcinogenic SVOCs (i.e., benzo(a)anthracene, benzo(b)fluoranthene, benzo(a)pyrene, and chrysene) are present in the soil, the liquid extract from the soil is analyzed to determine the concentration of the SVOCs of interest. The TCLP Alternative Guidance Values are not a sufficient demonstration of groundwater protection for the carcinogenic SVOCs of interest since the detection limits for a solid matrix

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Table 1-1

LTV Truscon Bioremediation
Bench-Scale Treatability Study

Guidance Values for Site-Specific Contaminants

Parameter	Practical Quantitation Limit		TCLP Extraction Guidance Value	TCLP Alternative Guidance Value	Human Health Guidance Value	Sediment Guidance Value	
	Liquid	Solid				Fresh	Marine
Volatile Organic Compounds (ppb)							
Benzene	1	2	0.7	14	2.4E+04	---	---
Ethylbenzene	1	2	5	100	8.0E+06	---	---
Toluene	1	2	5	100	2.0E+07	---	---
Sec-Butylbenzene	1	1	5	100	NA	---	---
Tert-Butylbenzene	1	1	5	100	NA	---	---
N-Butylbenzene	**1**	**1**	**5**	**100**	**NA**	---	---
Isopropylbenzene	1	1	5	100	NA	---	---
N-Propylbenzene	1	1	5	100	NA	---	---
1,2,4-Trimethylbenzene	1	1	5	100	NA	---	---
1,3,5-Trimethylbenzene	**1**	**1**	**5**	**100**	**NA**	---	---
O-Xylene[2]	2	2	5	100	2.0E+08	---	---
Semivolatile Organic Compounds (ppb)							
Phenanthrene	**22**	**330**	**50**	**1,000**	**NA**	---	---
Pyrene	**8**	**330**	**50**	**1,000**	**2.0E+06**	---	---
Fluorene	**8**	**330**	**50**	**1,000**	**3.0E+06**	---	---
Anthracene	**8**	**330**	**50**	**1,000**	**2.0E+07**	---	---
Acenaphthene	**8**	**330**	**20**	**400**	**5.0E+06**	---	---
Fluoranthene	**9**	**330**	**50**	**1000**	**3.0E+06**	---	---
Benzo(a)anthracene	**31**	**330**	**0.002**	**0.04**	**220**	**33**	**18**
Benzo(b)fluoranthene	**19**	**330**	**0.002**	**0.04**	**220**	**33**	**18**
Chrysene	**10**	**330**	**0.002**	**0.04**	**NA**	**33**	**18**
Benzo(a)pyrene	**10**	**330**	**0.002**	**0.04**	**61**	**33**	**18**

Notes:
NYSDEC STARS (1992) Guidance Values.
NA = No Guidance Value identified in EPA HEAST Report.
Shaded areas indicate compounds of interest.

are typically greater than the guidance values. The NYSDEC recognizes that the practical quantitation limits (PQLs) for these carcinogenic compounds are typically orders of magnitude higher than the guidance values and, thus, the PQLs for the liquid extract are typically accepted as cleanup objectives.

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MALCOLM PIRNIE

2.0 BENCH-SCALE SOIL BIOREMEDIATION PROCEDURES

2.1 BACKGROUND SOIL CHARACTERIZATION

A representative three cubic yard composite soil sample was obtained from the bioremediation stockpile for use in the bench-scale biotreatability study. To ensure that the sample was representative, soil was collected from a variety of locations and at different depths. The grab samples were combined and thoroughly mixed to break apart the larger clods of soil. Once the composite sample from the bioremediation stockpile was sufficiently mixed, an aliquot was collected for initial physical and chemical characterization. The sample was analyzed for the parameters identified in Table 2-1.

Table 2-2 presents the results of the soil characterization for nutrient content and physical characteristics. These analyses determined that the stockpiled soil has limited nutrient content but an active indigenous microbial population in the range of 4×10^{-6} colony forming units (cfu) per gram. The soil is characterized as a silty sand with gravel with an as-received moisture content of approximately 19 percent (see Appendix A). The soil was also characterized for inorganic constituents to determine if any could be present in concentrations potentially toxic to microorganisms. The results, when compared to the typical range of inorganics in soil, indicate that no inorganics present exist at concentrations that should inhibit microbial growth.

2.2 CONTAMINANTS OF INTEREST

Table 2-3 presents the initial chemical characterization of the soil for site-related contaminants and compares these results to the maximum and average concentrations previously detected in on-site soils.

The VOC concentrations detected in the study characterization were substantially less than the average VOC concentrations detected in on-site soils. However, the average concentration of the soil samples collected to-date on-site were likely skewed high since many of the samples were collected from areas of obvious visual contamination. The lower

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Table 2-1

LTV Truscon Bioremediation
Bench-Scale Treatability Study

Analytical Methods

Chemical Parameters	
VOC	USEPA 8021
SVOC	USEPA 8270
TPH	USEPA 418.1
TOC	USEPA 9060
TAL Metals	CLP Procedures
Physical Parameters	
Atterburg Limit	ASTM D4318
Gradation	ASTM D421, 422
Moisture Content	ASTM D2216
USCS Classification	ASTM D2487
Microbe Count	Total Viable Heterotrophs SM9215
Nutrient Parameters	
Ortho-Phosphate	USEPA 365.2
Total Alkalinity	USEPA 310.1
Ammonia-Nitrogen	USEPA 350.2
Total Kjeldahl Nitrogen	USEPA 351.3
Total Calcium	USEPA 6010

Table 2-2

LTV Truscon Bioremediation
Bench-Scale Treatability Study

Background Soil Characteristics

Parameter	Background Soil Concentration[1]	Study Soil Concentration (mg/kg)
Inorganic Chemical Characteristics		
Aluminum	10,000 - 300,000	11,700
Arsenic	3 - 12	5.17
Barium	15 - 600	212
Beryllium	0 - 1.75	1.01
Cadmium	0.01-0.88	0.882
Calcium	0.01 - 3.5%	44,400
Chromium	1.5 - 40	29.6
Copper	5 - 38	55.7
Iron	0.2 - 55%	24,900
Lead	10 - 37	63.5
Magnesium	0.01 - 0.5%	7,920
Manganese	50 - 5,000	1,080
Mercury	0.001 - 0.2	0.211
Nickel	0.5 - 25	22.6
Potassium	NA	1,160
Selenium	0.1 - 2	12.7
Sodium	NA	367
Vanadium	20 - 500	21
Zinc	10 - 300	138
Nutrient Content		
Ortho-Phosphorus	NA	<1.2
Total Alkalinity	NA	5,300
Ammonia-Nitrogen	NA	51
Total Kjeldahl Nitrogen	NA	570
Total Calcium	NA	40,000
Physical Characteristics		
Atterberg Limit	NA	Non-Plastic
Gradation	NA	22.2% Gravel 42.7% Sand 35.1% Silt & Clay
Moisture Content	NA	19.24%
USCS Classification	NA	Silty sand with gravel
Microbe Count	NA	4.30E+06

Notes:
1. Schacklette and Boerngen. 1984. "Elemental Concentrations in Soils and Other Surficial Materials of the Conterminous United States". US Geological Survey Professional Paper 1270.

NA = Not Available

Table 2-3

LTV Truscon Bioremediation
Bench-Scale Treatability Study

Initial Contaminant Characterization

Parameter	Maximum Concentration Detected in Soil on Site	Average Concentration Detected in Soil on Site	Initial Treatability Study Concentration			STARS Guidance Value[1]
			S1	S1 Duplicate	Average Conc.	
Volatile Organic Compounds (µg/kg)						
Benzene	391	391	ND	ND	---	14
Ethylbenzene	3,150	2,092	ND	ND	---	100
Toluene	2,330	1,507	ND	ND	---	100
Sec-Butylbenzene	ND	---	50	41	45.5	100
Tert-Butylbenzene	ND	---	ND	ND	---	100
N-Butylbenzene	**10,600**	**5,489**	**4.2**	**470**	**237.1**	**100**
Isopropylbenzene	1,140	665	4.2	3.2	3.7	100
N-Propylbenzene	4,990	2,799	ND	ND	---	100
1,2,4-Trimethylbenzene	13,300	7,929	100	76	88	100
1,3,5-Trimethylbenzene	**5,110**	**2,854**	**110**	**92**	**101**	**100**
O-Xylene[2]	10,830	6,113	7.4	ND	7.4	100
Semivolatile Organic Compounds (µg/kg)						
Phenanthrene	**NA**	**NA**	**10,000**	**8,500**	**9,250**	**1,000**
Pyrene	**NA**	**NA**	**7,800**	**7,300**	**7,550**	**1,000**
Fluorene	**NA**	**NA**	**4,200**	**3,900 J**	**4,050 J**	**1,000**
Anthracene	**NA**	**NA**	**4,100**	**3,400 J**	**3,750 J**	**1,000**
Acenaphthene	**NA**	**NA**	**4,200**	**ND**	**4,200**	**400**
Fluoranthene	**NA**	**NA**	**1,600 J**	**1,800 J**	**1,700 J**	**1000**
Benzo(a)anthracene	**NA**	**NA**	**2,500 J**	**2,200 J**	**2,350 J**	**330[3]**
Benzo(b)fluoranthene	**NA**	**NA**	**1,500 J**	**1,300 J**	**1,400 J**	**330[3]**
Chrysene	**NA**	**NA**	**3,400 J**	**3,300 J**	**3,350 J**	**330[3]**
Benzo(a)pyrene	**NA**	**NA**	**2,000 J**	**1,800 J**	**1,900 J**	**330[3]**
TPH (mg/kg)	**NA**	**NA**	**9,130**	**12,400**	**10,765**	-
TOC	-	---	78,700	27,100	52,900	-

Notes:
[1]NYSDEC STARS (1992) Alternative Guidance Values.
[2]Total Xylenes were analyzed for on site soil.
[3]Compound Practical Quantitation Limit
NA = Not Analyzed
ND = Not Detected
Shaded areas indicate compounds of interest.
J = Concentration is an estimated value, detected below the PQL.

VOC concentrations could also have resulted from sample collection and handling. For demonstration of biodegradation, we believe the contaminant concentrations are representative. The VOC contaminants of interest established for this study (i.e., n-butylbenzene and 1,3,5-trimethylbenzene) were identified based on either their previous detection in site groundwater, or soil concentrations exceeding NYSDEC STARS Guidance Values (SGVs).

The semivolatile organic compounds (SVOCs) detected in the initial soil sample are also presented in Table 2-3. The SVOC concentrations represent estimated concentrations by the laboratory since the compound detection limits significantly exceeded the SGVs. The estimations were necessary to determine if the compounds were present below this elevated detection limit, but above SGVs, or if they were not present in the soil sample. The elevated detection limits were a result of other hydrocarbons present in the sample that interfered with the actual identification and quantification of the hydrocarbon contaminants of interest. To estimate these concentrations, the samples were diluted to minimize the effects of these interfering hydrocarbons. Although no SVOCs were detected in TCLP extract from on-site soils, all estimated concentrations of the study soils exceeded TCLP Alternative Guidance Values and, thus, were considered contaminants of interest for the purpose of this study.

In addition, the concentration of total petroleum hydrocarbons (TPHs) was determined for the initial soil characterization. These concentrations are conservatively high as compared to the total concentration of petroleum-related constituents in the soil since the analytical method used for the TPH analyses overestimates actual petroleum contamination in soil with elevated organic content. However, TPH can be useful as a surrogate parameter to track remediation progress.

2.3 BENCH-SCALE STUDY APPROACH AND PREPARATION

Since successful bioremediation of petroleum hydrocarbons has been well-documented, microcosm or flask studies to establish feasibility of bioremediation were not considered necessary. Instead, open pan reactors were selected to mimic, as closely as

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possible, planned full-scale field conditions and to optimize environmental conditions for bioremediation.

The study soil was placed 15 inches deep in 10 uncovered 15-inch by 20-inch by 18-inch deep plastic pans inside the Malcolm Pirnie Soils Laboratory, thus, each pan contained approximately 0.1 yd^3 (2.6 ft^3) of soil. The sample depth was selected to represent the anticipated depth of penetration of conventional tilling equipment. Room temperature and relative humidity were recorded periodically throughout the 4-month testing period. Water was added to the soil during mixing periods (i.e., weekly or monthly) to maintain the soil as close to its natural field capacity as possible (approximately 19 percent).

2.4 STUDY CONDITIONS

There exists two differing philosophical approaches to bioremediation: microbial enhancement and bioaugmentation. Microbial enhancement optimizes the environmental conditions that will cultivate existing indigenous microbial organisms, while bioaugmentation consists of adding prepackaged contaminant-degrading microbes. This study was designed to evaluate the potential efficacy of both approaches. Figure 2-1 illustrates the bench-scale evaluations performed in the Soils Laboratory. Seven of the ten soil pans were maintained at room temperature (~70°F/21°C). Three of the seven pans were replicated and maintained in a separate room at approximately 10 degrees cooler. Four separate test conditions were modeled:

(1) Controlled conditions - where only water was added to the soil during manual turning periods.

(2) Nutrient addition.

(3) Nutrient addition with bioaugmentation using prepackaged microbes.

(4) Nutrient addition with bioaugmentation using mixed liquor suspended solids (MLSS) from a municipal wastewater treatment plant.

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Figure 2-1

Schematic of Bench-Scale Evaluations

<u>Controlled Conditions</u>

Turned Weekly ~ 70 F	Turned Monthly ~ 70 F	Turned Weekly ~ 60 F

<u>Nutrient Addition</u>

Turned Weekly ~ 70 F	Turned Monthly ~ 70 F	Turned Weekly ~ 60 F

<u>Nutrient Addition with Bioaugmentation</u>

Turned Weekly ~ 70 F	Turned Monthly ~ 70 F	Turned Weekly ~ 60 F

<u>Nutrient Addition with Bioaugmentation (MLSS)</u>

Turned Weekly ~ 70 F

For each condition, the impact of varying soil turning frequencies, weekly vs. monthly, was also evaluated. Thus, three pans were maintained as controls; two samples at room temperature and one at 10 degrees cooler. The two pans maintained at room temperature were manually turned with a spade; one at once per week and the other at once per month. The pan maintained at 10 degrees cooler than room temperature was manually turned once per week.

The second test condition involved nutrient addition with a commercial fertilizer (Laing-Gro) to three soil pans to achieve a carbon to nitrogen to phosphorus ratio of 100:10:1. This material ratio is considered optimal for enhancing biodegradation. As with the control samples, two pans were maintained at room temperature, one undergoing weekly turning, the other undergoing monthly turning, while the third pan was maintained 10 degrees cooler and turned weekly.

The third test condition involved nutrient addition and bioaugmentation using a commercially-available microbial product cultivated for petroleum hydrocarbon degradation. As with the control samples, two pans were maintained at room temperature and underwent weekly vs. monthly turning, while the third pan was maintained 10 degrees cooler and turned weekly.

The fourth test condition also involved nutrient addition and bioaugmentation, however, a wastewater treatment plant MLSS was added to two soil pans. The MLSS was added to compare the results of bioaugmentation with specially cultured contaminant-degrading microbes versus general population wastewater treatment plant microbes. Both pans were turned weekly but were maintained at the different temperatures. MLSS continued to be added to the samples to maintain moisture content.

2.5 BIOREMEDIATION MONITORING

Over the 4-month study period, soil samples were collected weekly and analyzed for the following parameters:

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- Moisture content to allow adjustments to maintain a moisture content reflective of natural field capacity (approximately 18 percent).
- Headspace screening analysis using an HNu photoionization detector (PID).
- Nitrogen and phosphorus concentrations to allow for addition of nutrients, as necessary, to maintain the concentration above the target residual.

A single soil sample was collected from each pan monthly and analyzed for VOCs and SVOCs of interest, and TPH. Grab samples were collected for VOCs and a composite sample collected from six locations within the pan for all other analytes. While a STARS Guidance Value does not exist for TPH, its relationship to the contaminants of interest was tracked so that it could be used as a surrogate monitoring parameter, if appropriate.

The pans of soil were sampled February 24, March 20, and April 16, 1997, each approximately 30 days apart. Soil samples collected for characterization and analyses were sampled mid-depth from several locations and layered in the sample container. The soil samples were analyzed for TPH, VOCs and SVOCs during the first two sampling events. Since VOC concentrations dropped below the SGVs following the second month of the study, the soil samples were not analyzed for VOCs during the third sampling event.

A fourth sampling event was conducted on May 15, 1997. Since optimized conditions had already been established, soil samples were collected from only four of the ten pans of soil and analyzed for SVOCs in the TCLP extract. The following test conditions were evaluated: controlled conditions at room temperature with weekly and monthly turning; and nutrient addition at room temperature with weekly and monthly turning.

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3.0 BENCH-SCALE STUDY RESULTS

3.1 RESULTS

The results of the biotreatability study are presented in Tables 3-1 through 3-4 and are discussed below. The raw analytical data is presented as Appendix C.

Volatile Organic Compounds

The bioremediation monitoring results for the VOC contaminants of interest, n-butylbenzene and 1,3,5-trimethylbenzene, are presented on Figures 3-1 and 3-2, respectively. These results illustrate that concentrations were at or near the SGVs within one month, and that after the second month of the study, contaminant concentrations for all test conditions had dropped below the SGVs. Therefore, the soil was not analyzed for VOCs during the third round of sampling.

Semi-Volatile Organic Compounds

Figure 3-3 illustrates acenaphthene's response to bioremediation. Acenaphthene is a two aromatic-ringed structure whose response to treatment was considered representative of the other SVOCs present in the soil. With each month of bioremediation, the concentration of acenaphthene decreased for most conditions studied in the laboratory evaluation. Ultimately, the concentration of acenaphthene drops below the SGV following three months of bioremediation. For the majority of the biotreatability study conditions, benzo(a)anthracene, benzo(b)fluoranthene, and benzo(a)pyrene all achieved the SGVs within three months of bioremediation, as illustrated by Figures 3-4, 3-5, and 3-6, respectively. Appendix B presents plotted results for the other SVOCs. The results for pyrene and chrysene are discussed separately below.

Turning Frequency

Phenanthrene was selected as a representative compound to illustrate (see Figure 3-7) the effect turning frequency has on the rate of bioremediation of SVOCs. While monthly

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Table 5-1

LTV Truscon Bioremediation
Bench-Scale Treatability Study

Controlled Conditions

Average Temperature	70°F/ 21°C									60°F/16°C		
	Ave. Initial Conc.	Monthly Turning			Monthly (dup)		Weekly Turning			Weekly Turning		
Date Sampled	12/19/96	2/14/97	3/20/97	4/16/97	3/20/97	4/16/97	2/14/97	3/20/97	4/16/97	2/14/97	3/20/97	4/16/97
TPH (mg/kg)	10,765	2,900	7,210	5,950	5,370	5,760	7,110	5,560	5,570	7,590	7,580	5,530
Volatile Organic Compounds (µg/kg)												
N-Butylbenzene	445	9	ND	NA	ND	NA	8.4	110	NA	26	ND	NA
1,3,5-Trimethylbenzene	101	13	5.2	NA	4.4	NA	13	21	NA	9.2	3.5	NA
Semivolatile Organic Compounds (µg/kg)												
Phenanthrene	9,250	3,700 J	ND	ND	4,300	290 J	1,400 J	ND	360 J	1,500 J	1,600 J	ND
Pyrene	7,550	4,400	3,700 J	3,600	7,100	3,100	4,900	3,300 J	2,000	5,900	3,900 J	3,400
Fluorene	4,050	1,500 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	290 J
Anthracene	3,750	ND	ND	170 J	ND	110 J	ND	ND	140 J	ND	ND	230 J
Acenaphthene	4,200	1,200 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	200 J
Fluoranthene	1,700	2,400 J	1,400 J	ND	6,100	ND	2,000 J	1,100 J	ND	1,900 J	1,800 J	ND
Benzo(a)anthracene	2,350	1,500 J	ND	2,200	3,000 J	ND	2,100 J	1,000 J	ND	2,100 J	1,500 J	ND
Benzo(b)fluoranthene	1,400	1,700 J	1,400 J	ND	3,700 J	ND	2,000 J	1,300 J	ND	1,700 J	1,700 J	ND
Chrysene	3,350	3,000 J	1,100 J	ND	3,500 J	ND	3,600 J	2,000 J	ND	4,100	2,400 J	2,200
Benzo(a)pyrene	1,900	1,500 J	1,300 J	ND	2,600 J	ND	1,800 J	1,300 J	ND	1,800 J	1,700 J	ND

NA = Not Analyzed
ND = Not Detected
J = Concentration is an estimated value, detected below the PQL.

Table 3-2

LTV Truscon Bioremediation
Bench-Scale Treatability Study

Nutrient Addition

Average Temperature	70°F/21°C								60°F/16°C		
	Ave. Initial Conc.	Monthly Turning			Monthly (dup)	Weekly Turning			Weekly Turning		
Date Sampled	**12/19/96**	**2/14/97**	**3/20/97**	**4/16/97**	**2/14/97**	**2/14/97**	**3/20/97**	**4/16/97**	**2/14/97**	**3/20/97**	**4/16/97**
TPH (mg/kg)	10,765	8,080	7,710	7,000	9,040	10,700	5,480	6,400	8,290	7,440	6,440
Volatile Organic Compounds(µg/kg)											
N-Butylbenzene	445	790	ND	NA	40	73	25	NA	90	43	NA
1,3,5-Trimethylbenzene	101	150	1.5	NA	21	18	3.4	NA	19	5.6	NA
Semivolatile Organic Compounds (µg/kg)											
Phenanthrene	9,250	1,300 J	2,300 J	ND	3,800	1,800 J	1,200 J	ND	5,500	1,900 J	ND
Pyrene	7,550	1,800 J	5,400	7,400	4,900	5,700	4,700	2,900	7,300	5,800	4,300
Fluorene	4,050	ND	ND	ND	1,100	ND	ND	ND	1,500 J	ND	ND
Anthracene	3,750	ND	ND	250 J	ND	ND	1,200 J	110 J	ND	ND	170 J
Acenaphthene	4,200	ND	1,600 J	ND	1,300	ND	ND	ND	1,700 J	ND	ND
Fluoranthene	1,700	ND	1,800 J	ND	1,700	1,500 J	1,800 J	ND	4,000	1,700 J	ND
Benzo(a)anthracene	2,350	ND	1,600 J	ND	1,900	1,800 J	1,400 J	ND	3,200 J	1,600 J	ND
Benzo(b)fluoranthene	1,400	ND	1,800 J	ND	1,400	1,200 J	1,900 J	ND	2,500 J	2,000 J	ND
Chrysene	3,350	ND	3,900 J	4,100	2,000	2,100 J	3,100 J	ND	4,500	3,500 J	2,400
Benzo(a)pyrene	1,900	ND	1,800 J	2,100	1,700	1,900 J	1,700 J	ND	2,400 J	2,000 J	ND

NA = Not Analyzed

ND = Not Detected

J = Concentration is an estimated value, detected below the PQL.

LTV Truscon Bioremediation
Bench-Scale Treatability Study

Nutrient Addition With Microbes

Average Temperature	**70°F/21°C**							**60°F/16°C**		
	Ave. Initial Conc.	**Monthly Turning**			**Weekly Turning**			**Weekly Turning**		
Date Sampled	**12/19/96**	**2/24/97**	**3/20/97**	**4/16/97**	**2/24/97**	**3/20/97**	**4/16/97**	**2/24/97**	**3/20/97**	**4/16/97**
TPH (mg/kg)	10,765	5,010	4,780	10,700	3,850	5,980	7,790	8,720	8,530	8,050
Volatile Organic Compounds(µg/kg)										
N-Butylbenzene	445	180	46	NA	120	36	NA	180	50	NA
1,3,5-Trimethylbenzene	101	38	7.1	NA	24	7.7	NA	52	7.7	NA
Semivolatile Organic Compounds (µg/kg)										
Phenanthrene	9,250	2,800 J	1,900 J	1,900	2,700 J	2,400 J	ND	7,700	2,000 J	2,600
Pyrene	7,550	3,300 J	4,200	6,200	4,800	5,200	5,700	6,900	4,200	6,900
Fluorene	4,050	1,100 J	ND	ND	1,500 J	ND	ND	2,400 J	1,100 J	ND
Anthracene	3,750	ND	ND	320 J	ND	1,700 J	ND	1,300 J	ND	ND
Acenaphthene	4,200	ND	ND	ND	ND	ND	ND	1,900 J	ND	ND
Fluoranthene	1,700	1,200 J	1,600 J	ND	1,500 J	1,200 J	ND	4,000	ND	2,300
Benzo(a)anthracene	2,350	ND	1,300 J	ND	2,800 J	1,300 J	ND	2,700 J	1,200 J	2,400
Benzo(b)fluoranthene	1,400	1,200 J	1,400 J	ND	1,500 J	1,400 J	ND	2,300 J	1,100 J	2,100
Chrysene	3,350	2,200 J	3,100 J	1,900	3,100 J	3,100 J	3,100	4,400	2,600 J	4,000
Benzo(a)pyrene	1,900	1,100 J	1,700 J	ND	1,500 J	1,600 J	ND	2,300 J	1,200 J	ND

NA = Not Analyzed
ND = Not Detected
J = Concentration is an estimated value, detected below the PQL.

LTV Truscon Bioremediation
Bench-Scale Treatability Study

Nutrient Addition With Microbes

Average Temperature	**70°F/21°C**							**60°F/16°C**		
	Ave. Initial Conc.	**Monthly Turning**			**Weekly Turning**			**Weekly Turning**		
Date Sampled	**12/19/96**	**2/24/97**	**3/20/97**	**4/16/97**	**2/24/97**	**3/20/97**	**4/16/97**	**2/24/97**	**3/20/97**	**4/16/97**
TPH (mg/kg)	10,765	5,010	4,780	10,700	3,850	5,980	7,790	8,720	8,530	8,050
Volatile Organic Compounds(µg/kg)										
N-Butylbenzene	445	180	46	NA	120	36	NA	180	50	NA
1,3,5-Trimethylbenzene	101	38	7.1	NA	24	7.7	NA	52	7.7	NA
Semivolatile Organic Compounds (µg/kg)										
Phenanthrene	9,250	2,800 J	1,900 J	1,900	2,700 J	2,400 J	ND	7,700	2,000 J	2,600
Pyrene	7,550	3,300 J	4,200	6,200	4,800	5,200	5,700	6,900	4,200	6,900
Fluorene	4,050	1,100 J	ND	ND	1,500 J	ND	ND	2,400 J	1,100 J	ND
Anthracene	3,750	ND	ND	320 J	ND	1,700 J	ND	1,300 J	ND	ND
Acenaphthene	4,200	ND	ND	ND	ND	ND	ND	1,900 J	ND	ND
Fluoranthene	1,700	1,200 J	1,600 J	ND	1,500 J	1,200 J	ND	4,000	ND	2,300
Benzo(a)anthracene	2,350	ND	1,300 J	ND	2,800 J	1,300 J	ND	2,700 J	1,200 J	2,400
Benzo(b)fluoranthene	1,400	1,200 J	1,400 J	ND	1,500 J	1,400 J	ND	2,300 J	1,100 J	2,100
Chrysene	3,350	2,200 J	3,100 J	1,900	3,100 J	3,100 J	3,100	4,400	2,600 J	4,000
Benzo(a)pyrene	1,900	1,100 J	1,700 J	ND	1,500 J	1,600 J	ND	2,300 J	1,200 J	ND

NA = Not Analyzed
ND = Not Detected
J = Concentration is an estimated value, detected below the PQL.

Table 3-4

LTV Truscon Bioremediation
Bench-Scale Treatability Study

Nutrient Addition With MLSS

	Ave. Initial Conc.	Weekly Turning, 70°F/21°C		
Date Sampled	12/19/96	2/24/97	3/20/97	4/16/97
TPH (mg/kg)	12,400	7,690	10,800	7,830
Volatile Organic Compounds(µg/kg)				
N-Butylbenzene	445	110	48	NA
1,3,5-Trimethylbenzene	101	17	8.2	NA
Semivolatile Organic Compounds (µg/kg)				
Phenanthrene	9,250	5,200	26,000	ND
Pyrene	7,550	5,600	17,000	3,200
Fluorene	4,050	2,600 J	6,500	ND
Anthracene	3,750	ND	5,200	320 J
Acenaphthene	4,200	1,700 J	2,000 J	ND
Fluoranthene	1,700	1,500 J	20,000	ND
Benzo(a)anthracene	2,350	1,500 J	8,200	ND
Benzo(b)fluoranthene	1,400	1,500 J	8,300	ND
Chrysene	3,350	3,500 J	9,300	ND
Benzo(a)pyrene	1,900	1,700 J	6,300	ND

NA = Not Analyzed
ND = Not Detected
J = Concentration is an estimated value, detected below the PQL.

Figure 3-1
N-Butylbenzene Results

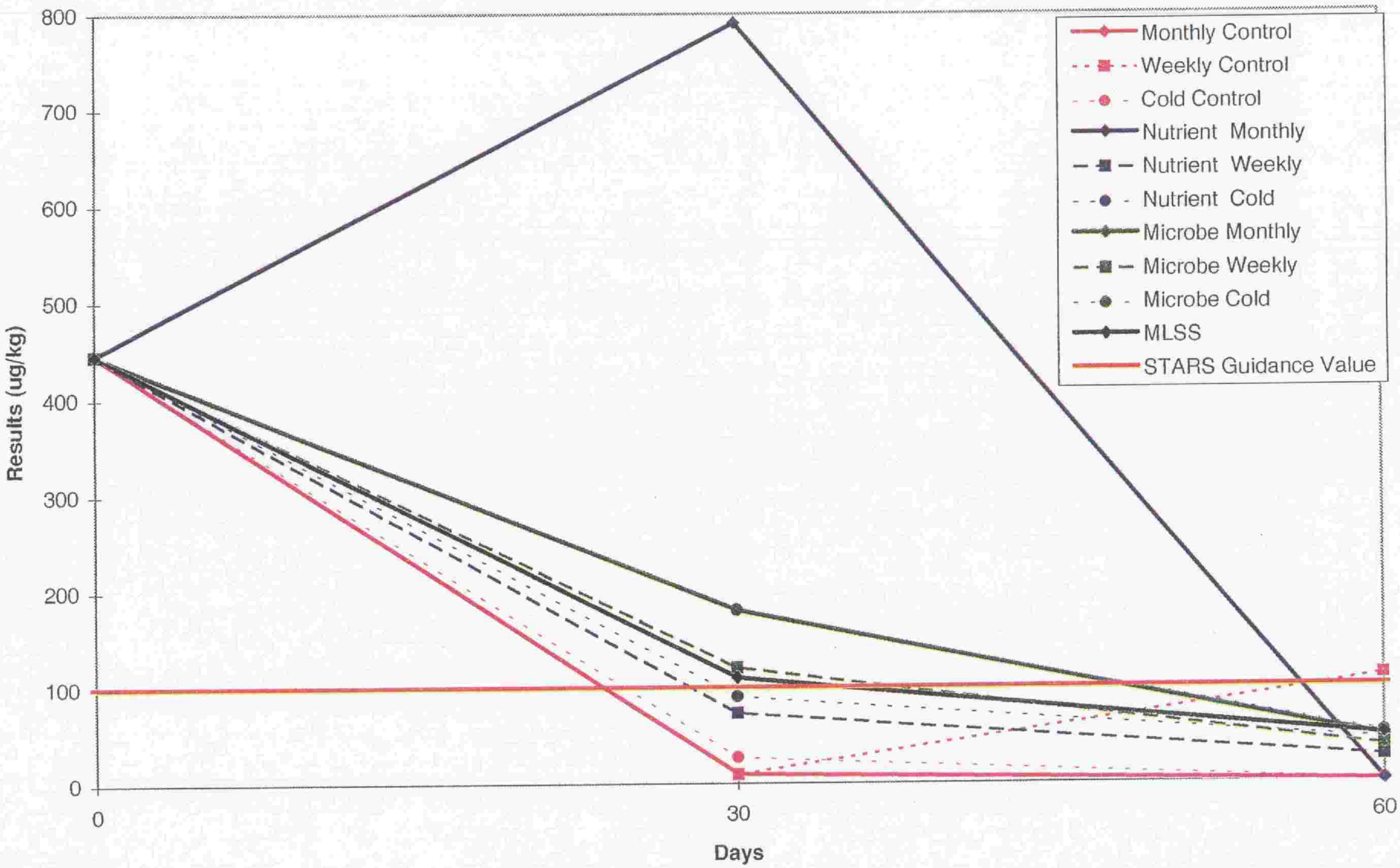


Figure 3-2
1,3,5-Trimethylbenzene

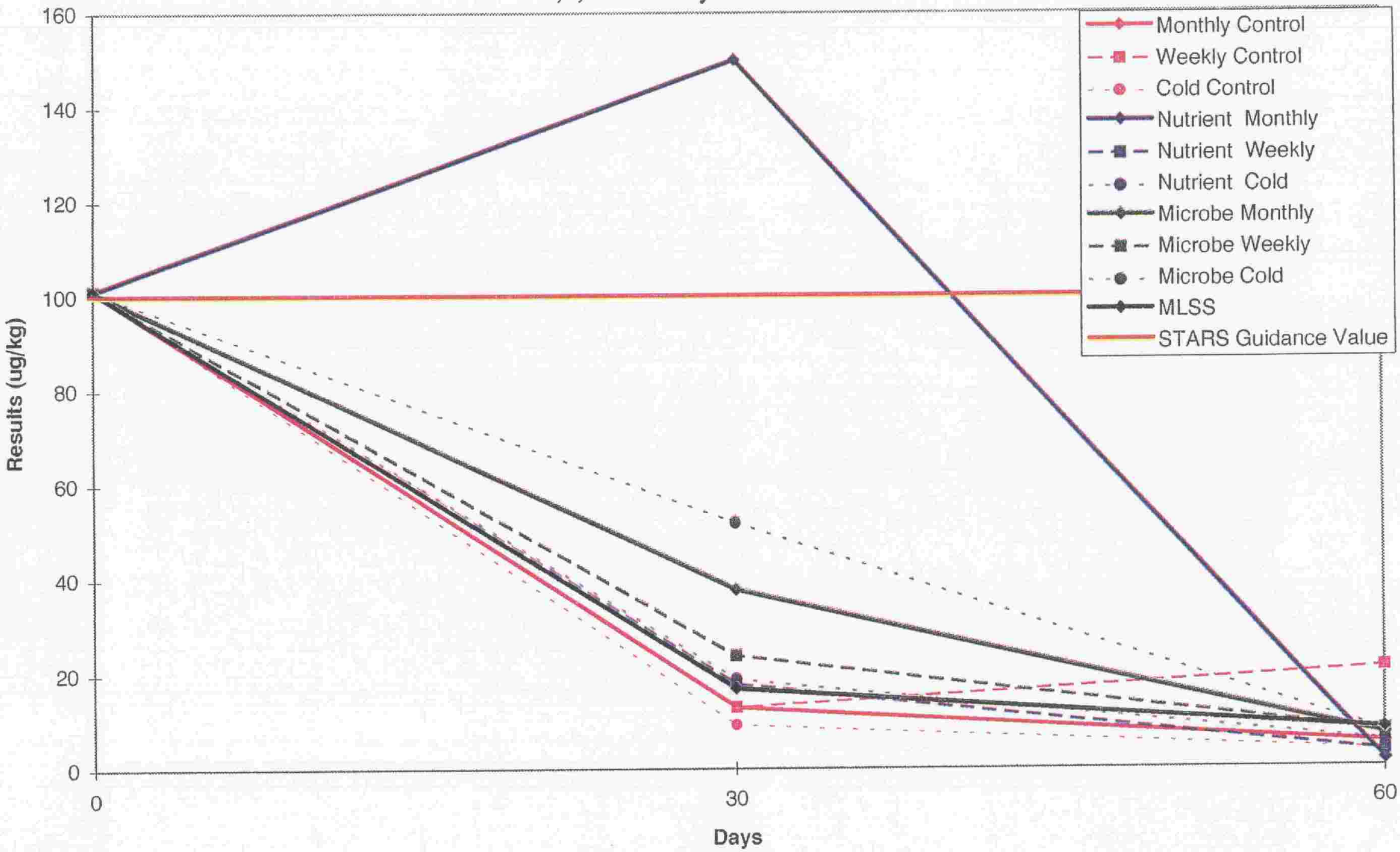


Figure 3-3
Acenaphthene Results

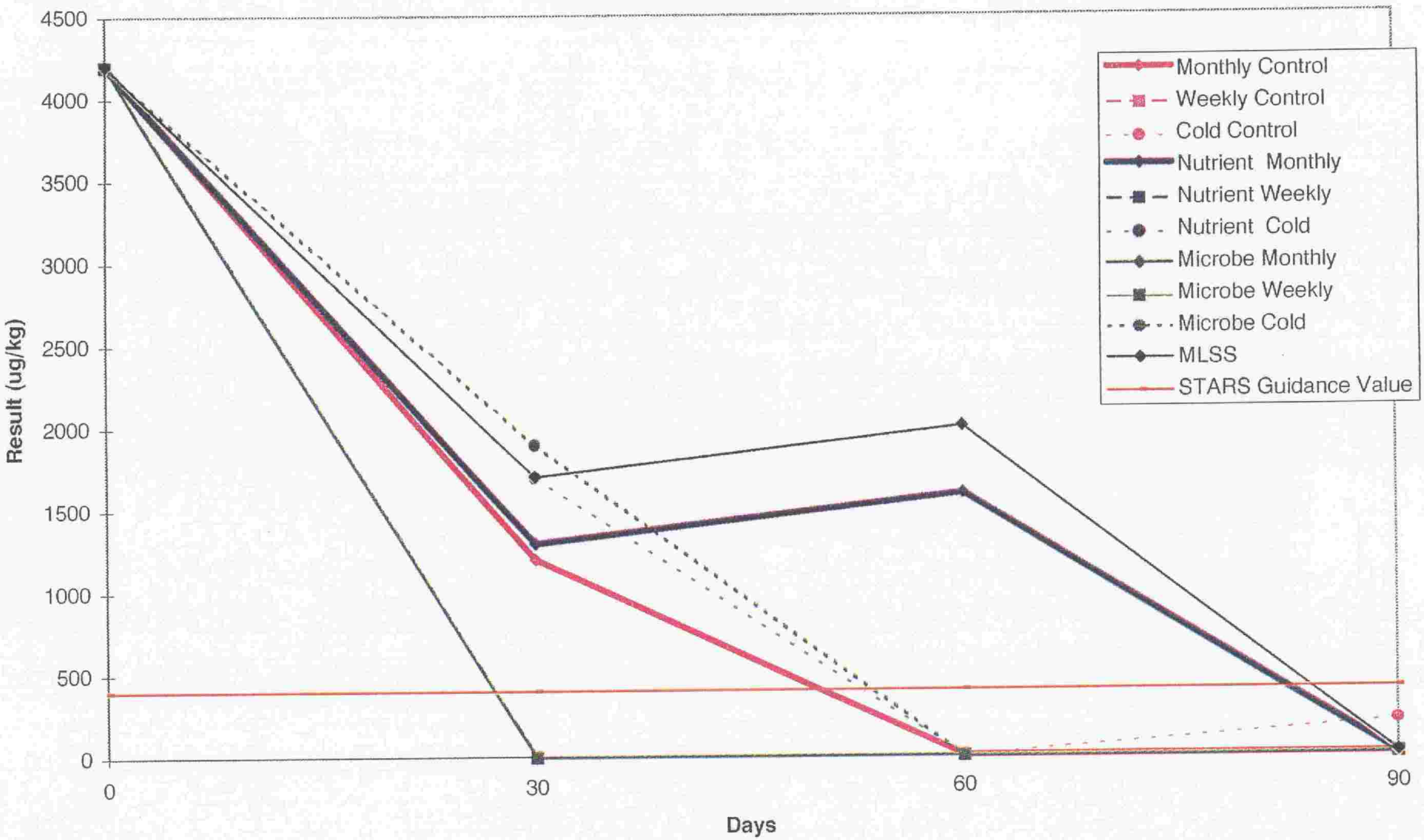


Figure 3-4
Benzo(a)anthracene Results

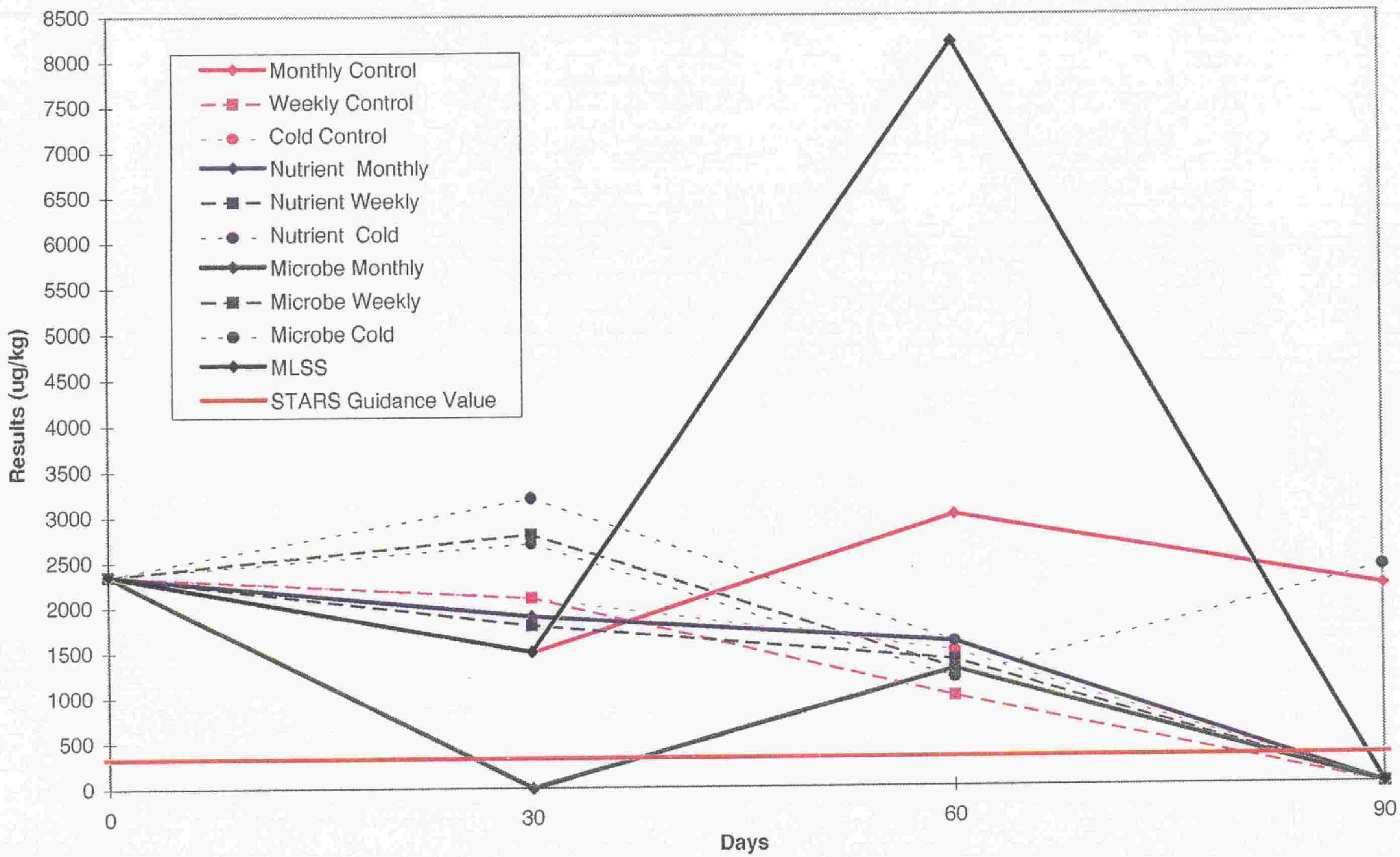


Figure 3-5
Benzo(b)fluoranthene Results

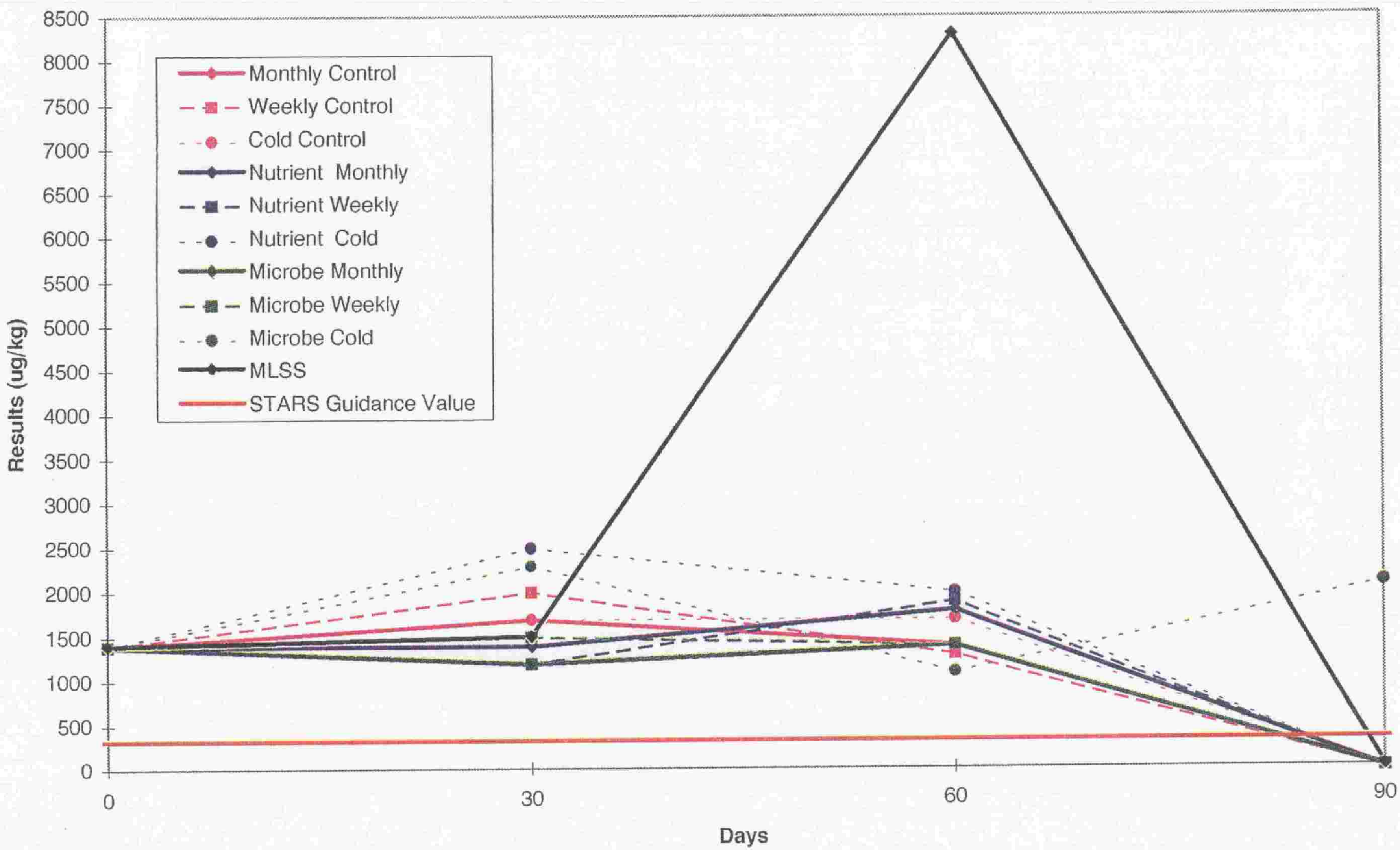


Figure 3-6
Benzo(a)pyrene Results

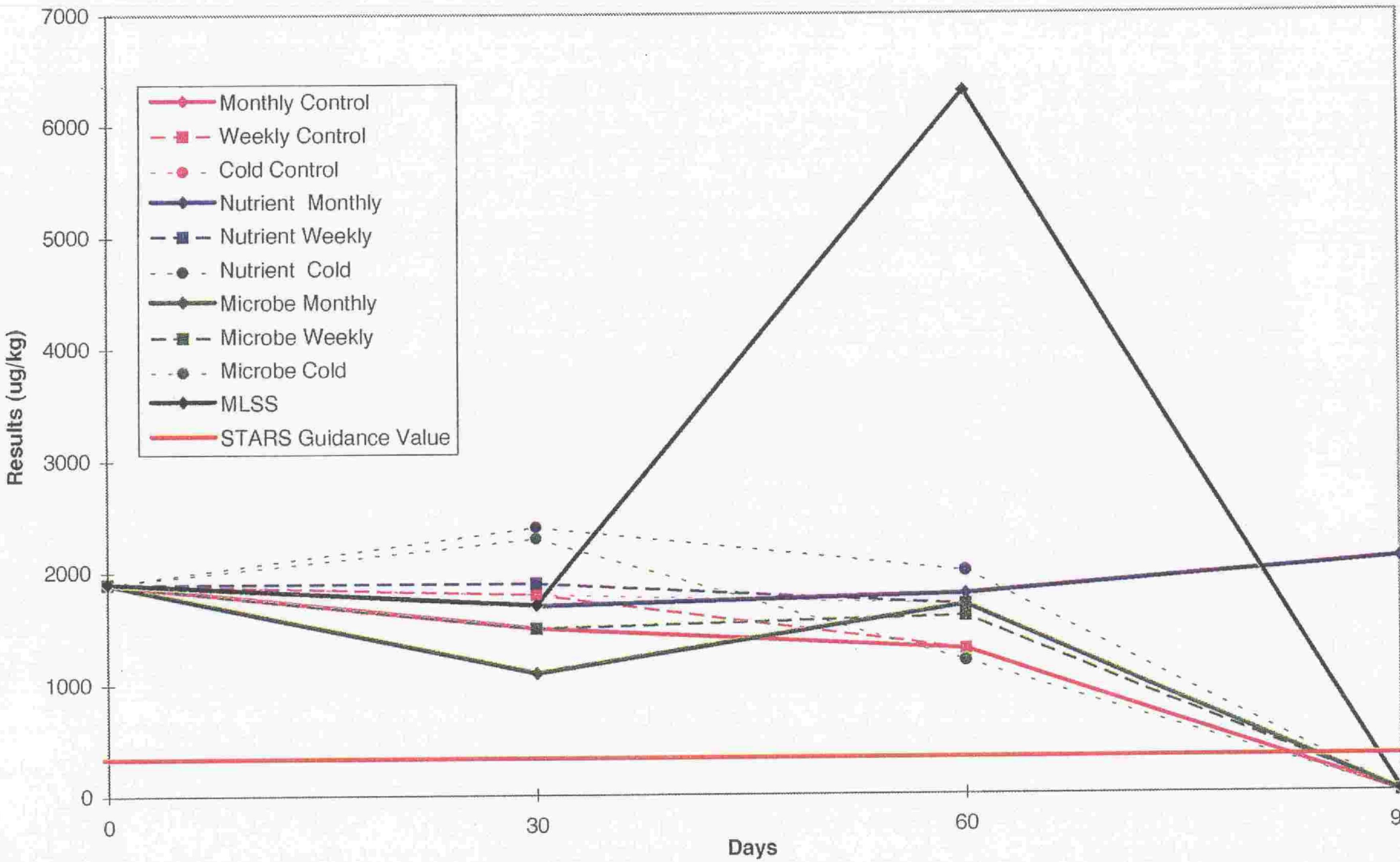
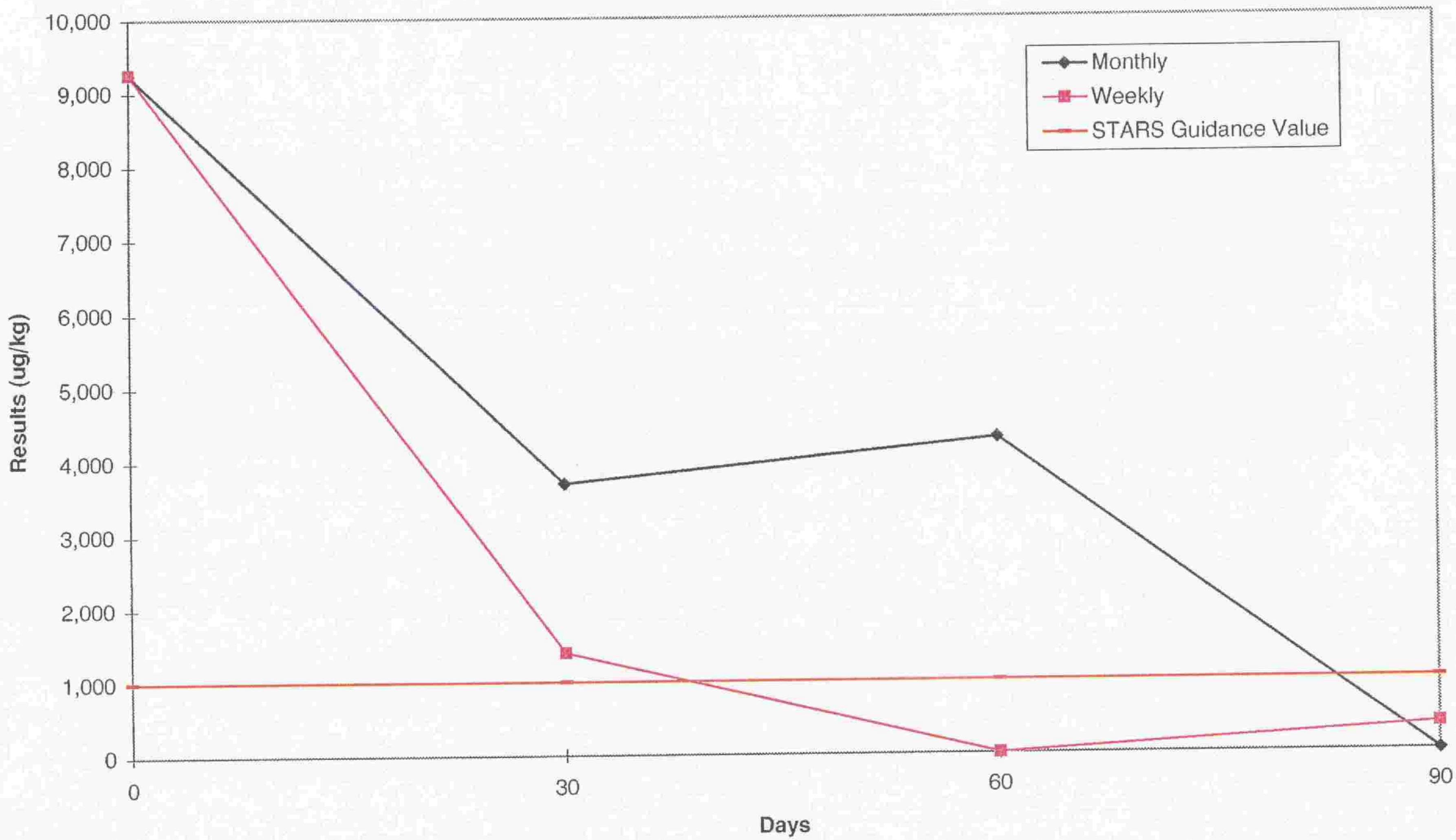


Figure 3-7
Phenanthrene - Controlled Conditions
Monthly versus Weekly Turning



turning of the soil appears to oxygenate the samples adequately to achieve biodegradation, the rate of contaminant degradation is slightly higher for phenanthrene with weekly turning. In general, turning the soil weekly appears to have a slight benefit over monthly turning, although SGVs are achieved in approximately the same time frame for either test condition. SVOCs were not detected for either test condition after four months of bioremediation.

Temperature

Figure 3-8 compares the results of maintaining the soil at room temperature and at 10 degrees cooler on phenanthrene biodegradation. The concentration of phenanthrene is reduced at a slightly higher rate at the warmer temperature, however, both temperature conditions result in a reduction below the SGV in approximately the same time frame. Therefore, the rate of bioremediation of SVOCs does not appear to change significantly as a function of this 10 degree temperature differential.

Soil Additives

The effect of adding nutrients, microbes, and MLSS to the soil was evaluated. Soil bioaugmentation with non-specific organisms (i.e., MLSS) was conducted to compare its degrading potential with contaminant-specific organisms. Bioremediation results for fluorene and phenanthrene, which are representative of those observed for other SVOCs, are presented on Figures 3-9 and 3-10, respectively. Microbe addition slightly decreased the rate of bioremediation of SVOCs and there was no significant advantage to bioaugmenting the soil with MLSS. While the impact of nutrient addition was variable during the bench-scale studies, phosphorus and nitrogen concentrations were observed to decrease over the period of the study, indicating microbial uptake.

Chrysene and Pyrene

Under some test conditions, pyrene and chrysene concentrations still remained above their SGVs after three months of biotreatment, and as illustrated in Figures 3-11 and 3-12, the rate of degradation of these heavier hydrocarbons reached a plateau after two months. This could be the result of either of two different phenomenon: mass transfer may become

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Figure 3-8
Phenanthrene - Nutrient Addition
Warm versus Cold

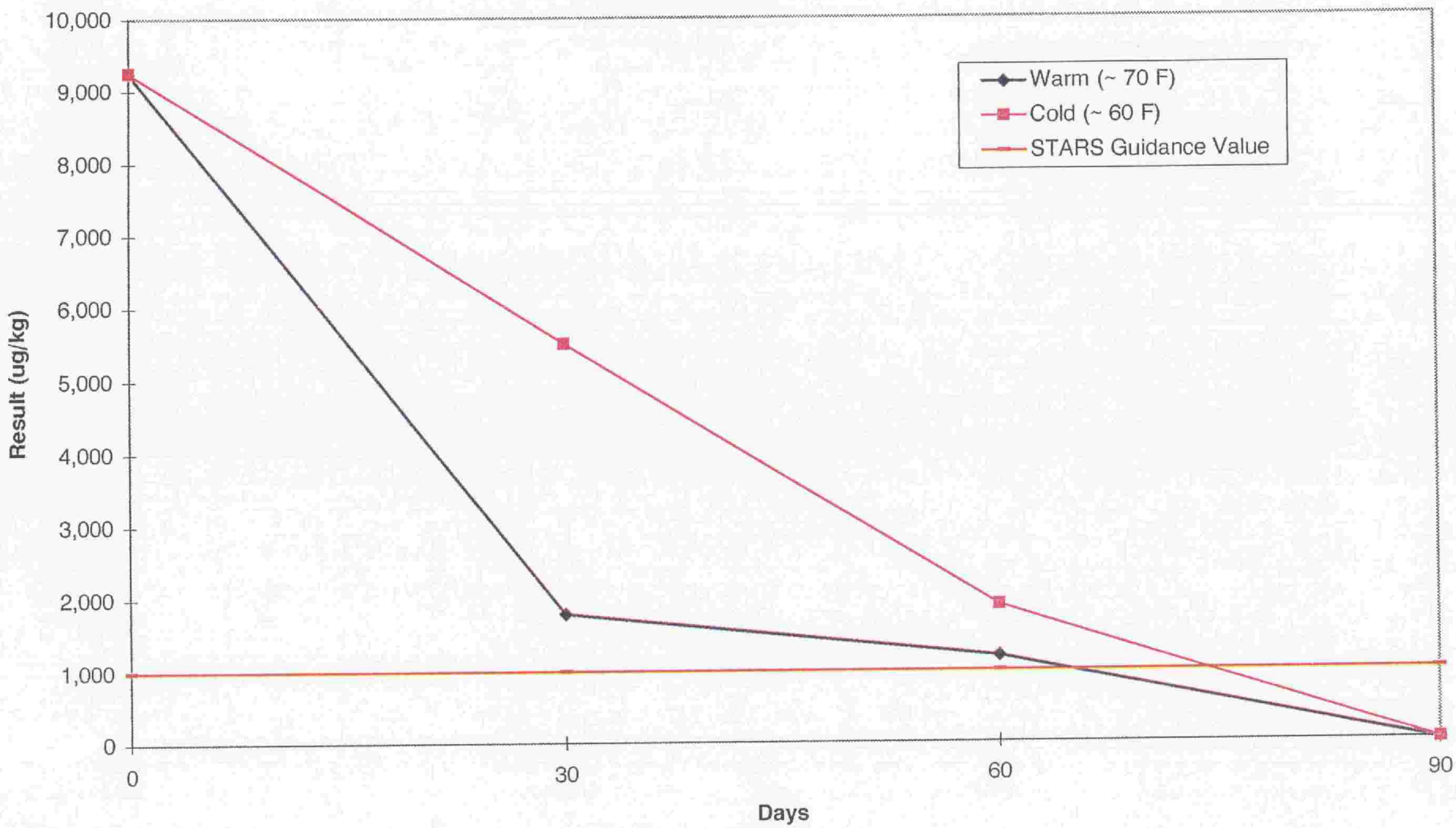


Figure 3-9
Fluorene - Weekly Turning
Nutrient Only versus Microbe Addition

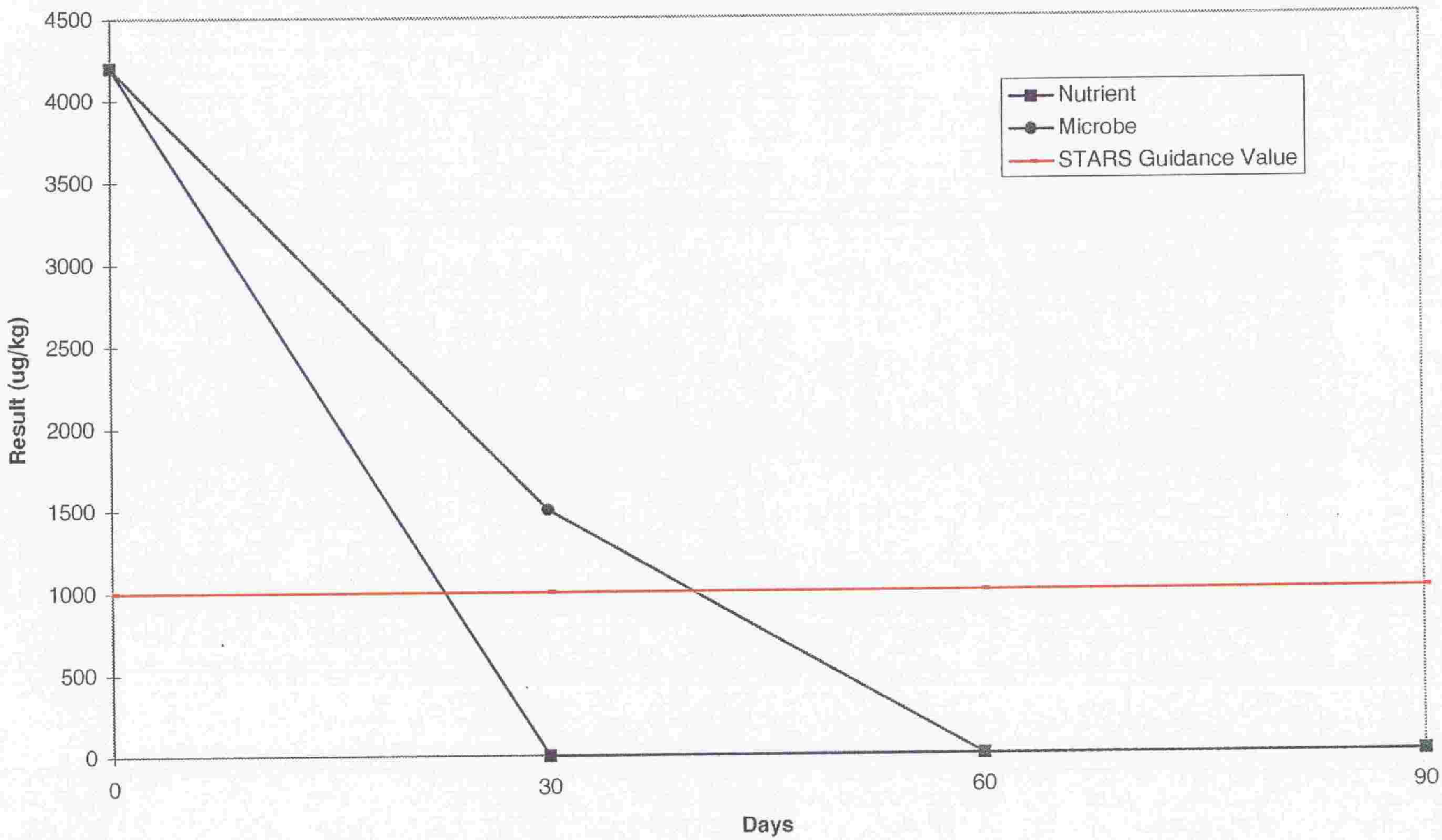


Figure 3-10
Phenanthrene - Weekly Turning
Nutrients Only versus Microbe Addition

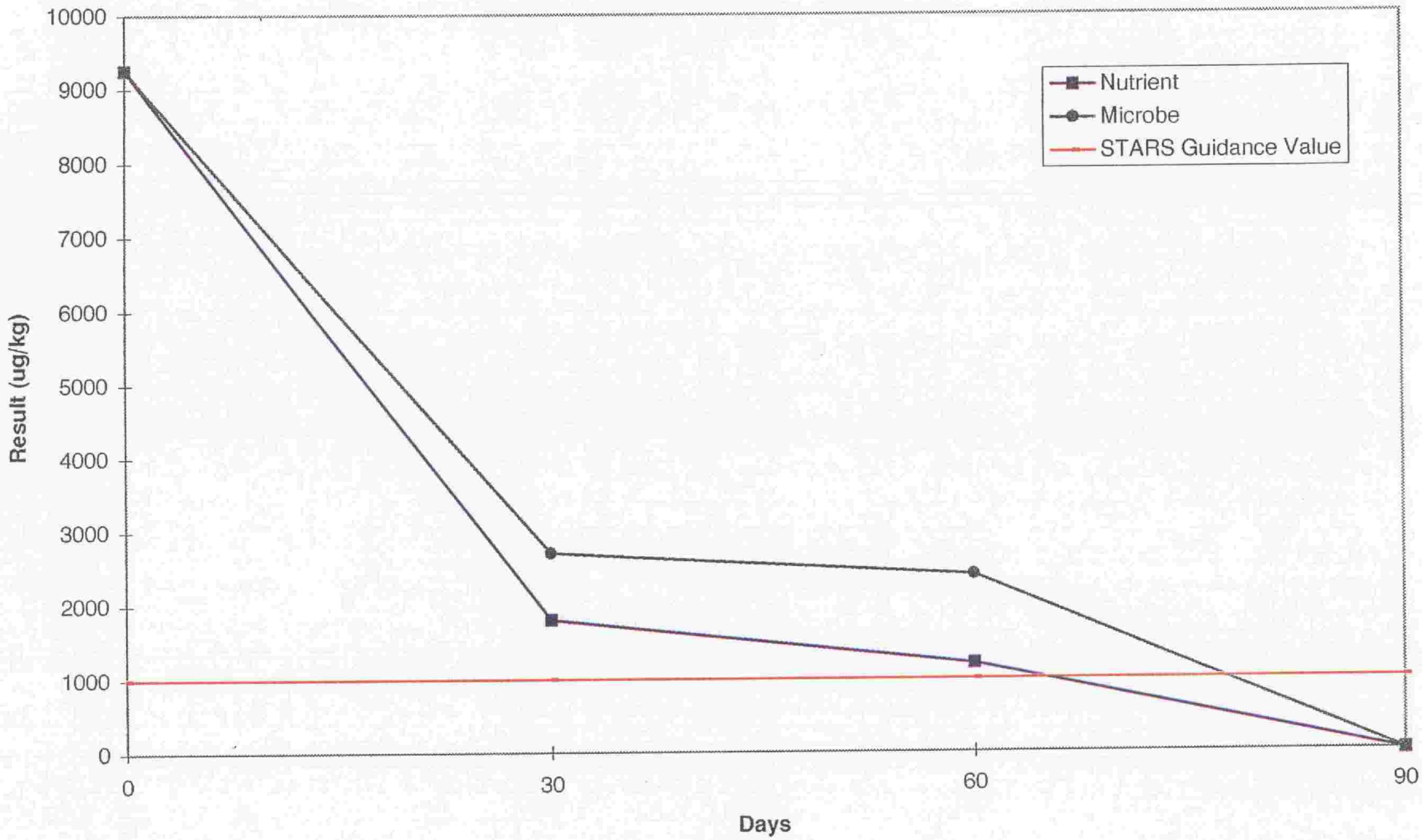


Figure 3-11
Pyrene Results

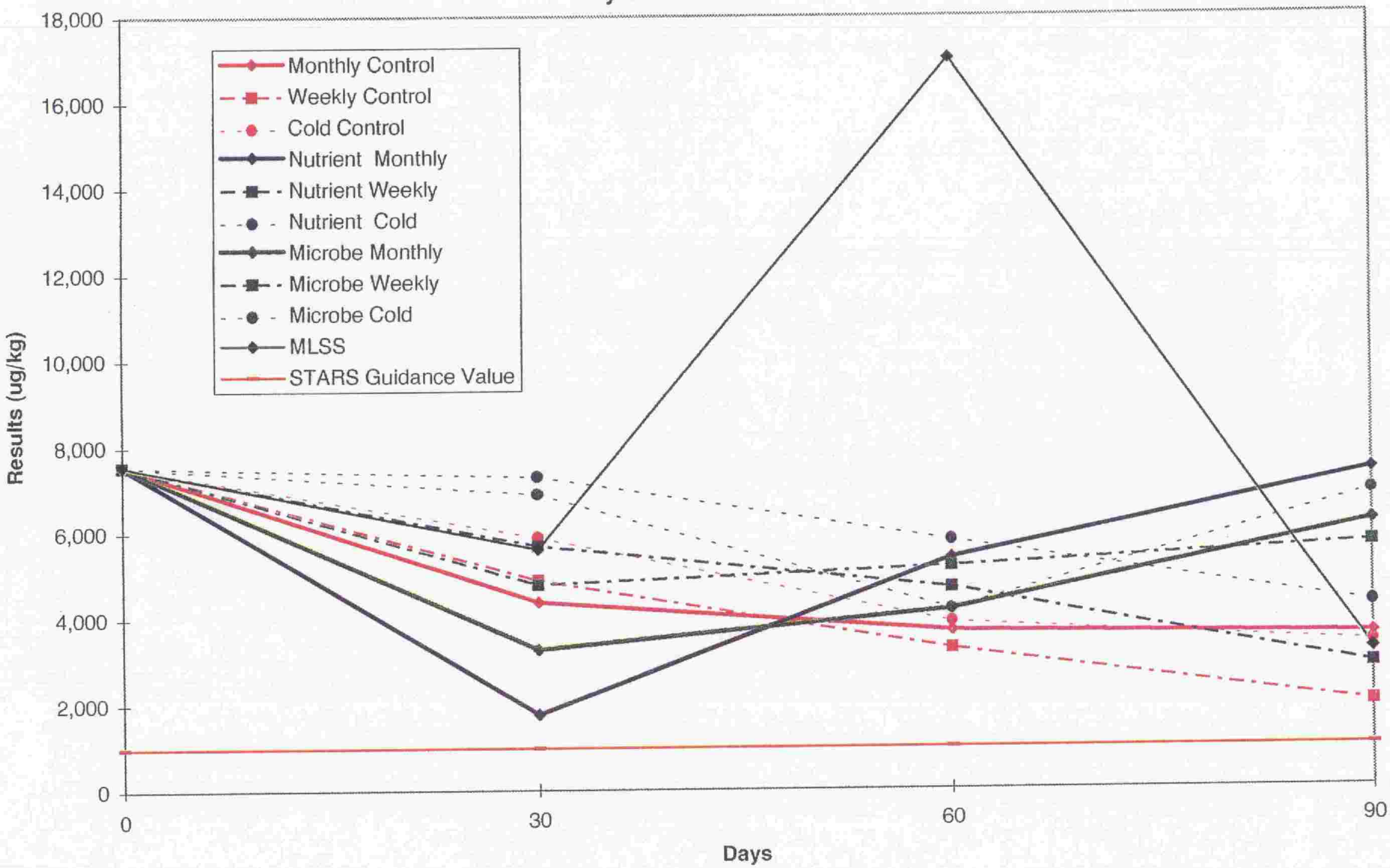
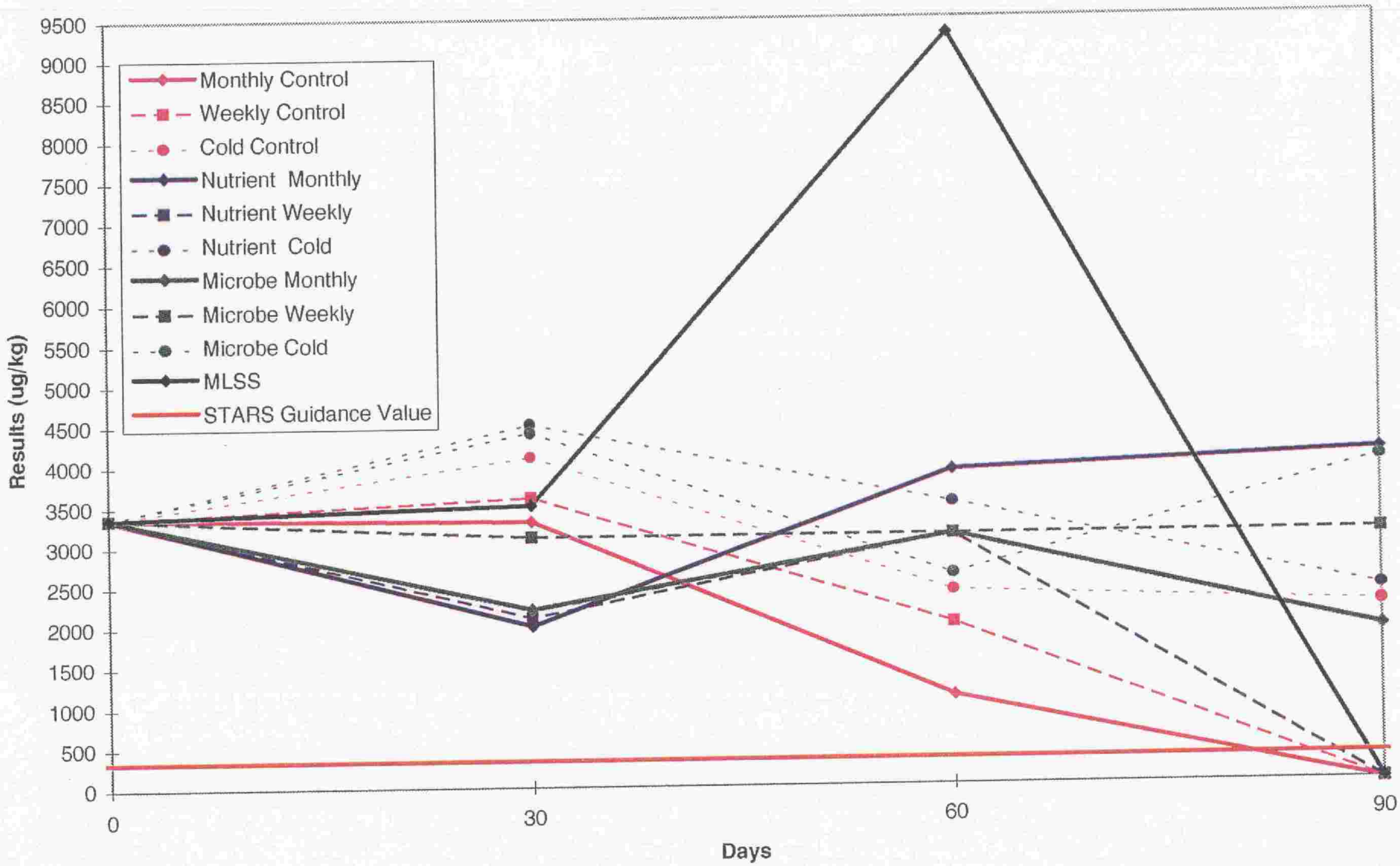


Figure 3-12
Chrysene Results



rate-limiting after approximately two months and, thus, efforts to enhance contact with the contaminants should be stepped up to increase the rate of biodegradation; or the decrease in rate could reflect a microbial die-off due to the reduction in available carbon source, i.e., the available contaminants. However, maintaining existing test conditions achieved reduction of pyrene and chrysene concentrations to non-detectable in the TCLP extract within four months of bioremediation.

Total Petroleum Hydrocarbons

As illustrated on Figure 3-13, TPH degradation mirrors that of phenanthrene (considered a more recalcitrant, higher molecular weight hydrocarbon) and, thus, is considered a good surrogate parameter for tracking bioremediation progress.

3.2 THIRD PARTY MICROCOSM BIOTREATABILITY STUDY

An independent microcosm biotreatability study was performed by Waste Stream Technology (WST) using the same study soil collected from the Truscon site. The soil was homogenized and separated into 2.5 kg microcosms. The following treatment regimens were used: water alone (baseline biological control); WST Nutriblend solution (to cultivate indigenous biological activity); and WST Nutriblend and Bioblend solutions (bioaugmentation). Temperatures were maintained at 20°C in the presence of full-spectrum lighting within an environmentally controlled room. The microcosms were treated daily with the appropriate solution and mixed for approximately 1 minute. The concentration of viable bacteria in the soil was measured bi-weekly. TPH analyses were performed bi-weekly using an analytical method (modified ASTM 8015) with a high degree of specificity for petroleum-related compounds as compared to other TPH analytical methods, which typically provide artificially high soil TPH concentrations.

At the completion of the 56-day biotreatability study, petroleum hydrocarbon degrading bacteria and WST nutrients resulted in a decrease of 68 to 77 percent of the TPH concentrations, which was approximately 15 percent (maximum) greater than the TPH reduction observed in the distilled water microcosm. This minimal increase in degradation

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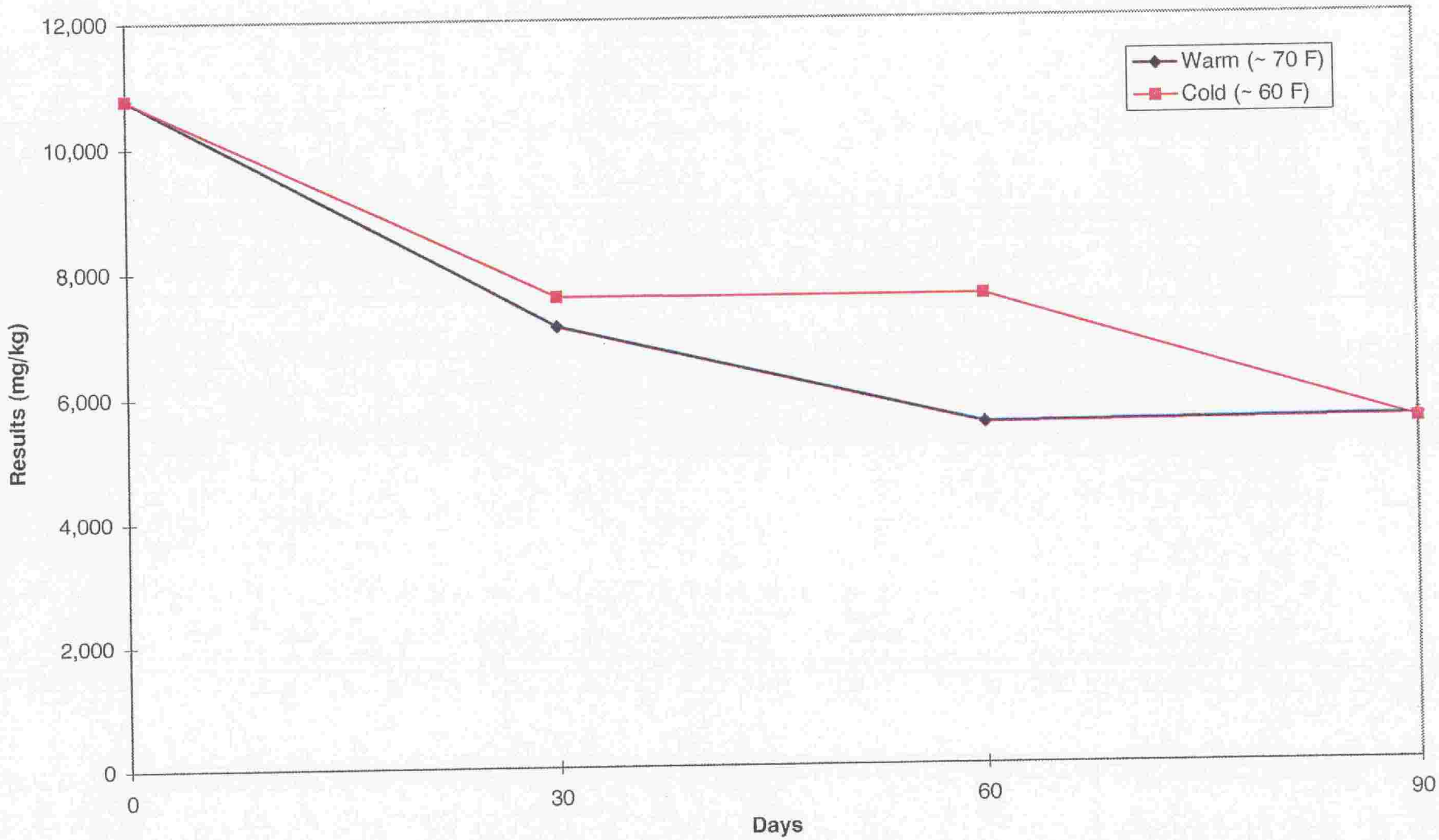
Figure 3-13
TPH - Controlled Conditions
Warm versus Cold



rate achieved with bioaugmentation may be indicative of both a high volatile fraction in the petroleum hydrocarbon, as well as a strong indigenous population of hydrocarbon-degrading bacteria.

3.3 CONCLUSIONS

The following conclusions have been drawn from the bench-scale bioremediation study and are used to develop the full-scale bioremediation plan:

- Bioremediation via landfarming is a viable approach capable of degrading all contaminants of interest.
- Bioremediation of contaminants of interest to below the SGVs should be achieved within two to four months of active tilling.
- Tilling of the soil on a one- to two-week frequency should improve the rate of bioremediation and assist in maintaining a consistent moisture content.
- The addition of microbes does not appear to markedly enhance the rate of bioremediation as compared to the degradation achieved by the indigenous population in the soil.
- Long-term average temperature differentials of up to 10 degrees should not significantly hinder the bioremediation process.
- TPH is a reasonable tracking parameter of the biodegradation progress.

4.0 RECOMMENDATIONS FOR FULL-SCALE APPLICATION

4.1 FACILITIES DESIGN

Approximately 17,000 cubic yards of contaminated soil are currently stockpiled on the existing 3-acre biopad. The biopad liner consists of 6 inches of low permeability soil (less than 10^{-7} cm/s). The location of the biopad is shown on Figure 4-1.

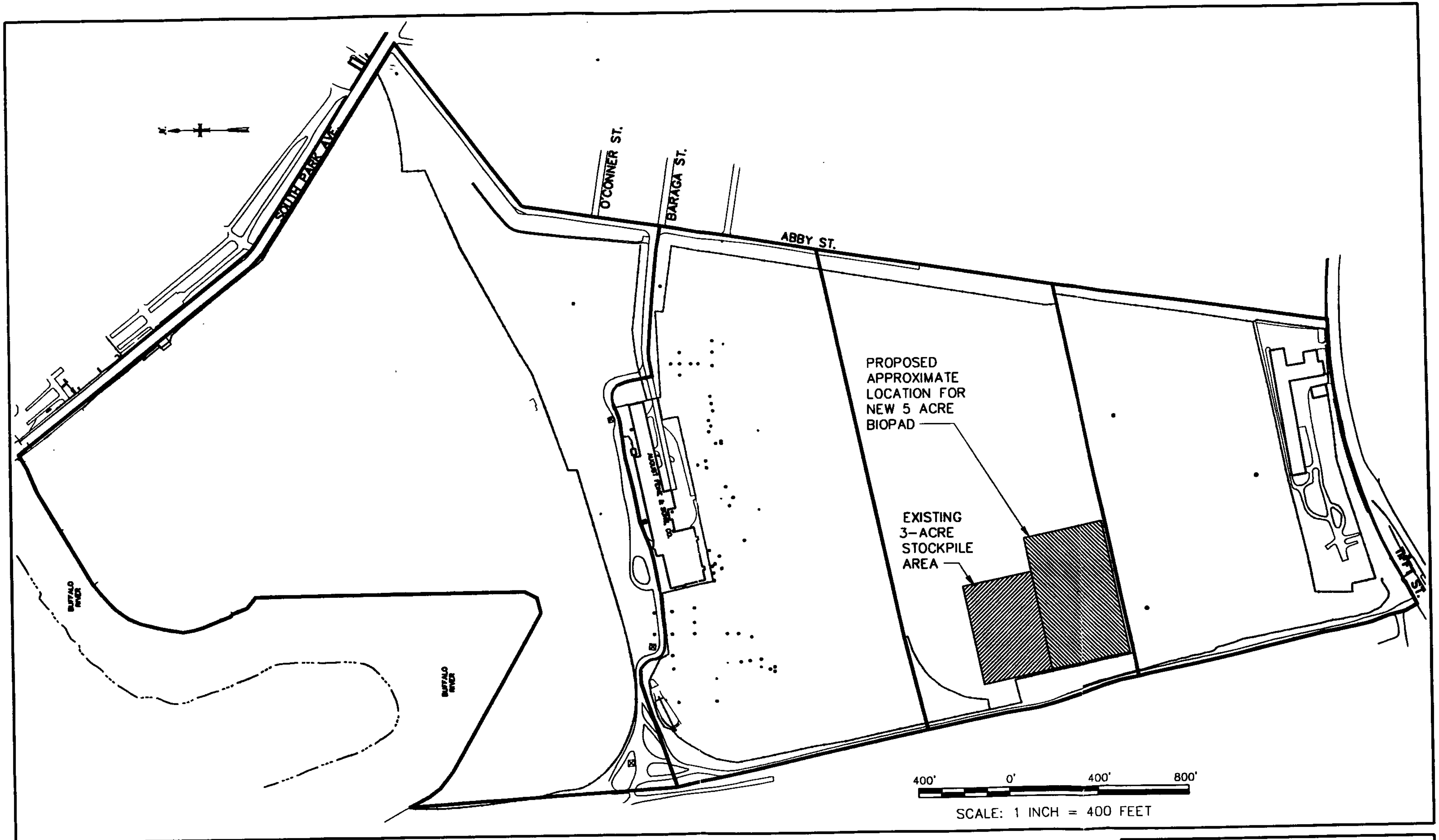
LTV has established a goal of completing bioremediation by the end of 1998. Based on the results of bench-scale treatability studies, up to 4 months (summer season) may be necessary to achieve the target cleanup objectives. Assuming that the effectiveness of the bioremediation efforts will be limited to the depth that can be tilled on a full-scale basis (viz., approximately 15 inches using conventional tilling equipment), and a 4-month bioremediation cycle, five additional acres of biopad may be required to complete the bioremediation by the end of 1997.

The proposed location for the new 5-acre biopad is shown on Figure 4-1. The biopad will be lined with 6 inches of low permeability soil (less than 10^{-7} cm/s). Warning tape will be placed on top of the liner to minimize the potential for damage of the liner during soil handling activities. A berm approximately 24 inches high will be constructed around both the new and existing biopads to prevent run-off/storm water infiltration from migrating laterally. Small sumps will be constructed in each corner of the biopads to facilitate removal of any accumulated water. Water that is removed will be stored on-site in temporary holding tanks for reuse to control moisture content. Excess water will be discharged to the Buffalo Sewer Authority (BSA).

4.2 SOIL HANDLING

The high moisture content of the existing soil stockpile limited access to the top of the stockpile during initial placement activities. In anticipation of high moisture content, soil will be removed from the end of the existing biopad and placed on the new biopad in an approximate 18-inch lift. The remaining soil on the existing biopad will then be leveled.

FIGURE 4-1



LTV STEEL PROPERTY
PROPOSED LOCATION OF NEW BIOPAD

MALCOLM PIRNIE

FIG4-1

LTV STEEL COMPANY
BUFFALO, NEW YORK

MAY 1997

Once remediation of the biopad soil has been completed and confirmed by the NYSDEC, the soil will be pushed aside and stockpiled for use as either on-site fill or off-site backfill.

4.3 SOIL CONDITIONING

At the start of the bioremediation season, nutrients will be incorporated into the soil aimed at achieving an optimum carbon to nitrogen to phosphorus ratio. Although it was determined from the bench-scale bioremediation study that weekly turning of the soil did not result in a large benefit over monthly turning, weekly or bi-weekly tilling and moisture addition, as necessary, will be conducted in the field in order to maintain a moisture content throughout the biopad close to field capacity. Storm water runoff from the biopad will be reused to the maximum extent possible to supply the necessary moisture to the soil to maintain the desired moisture content.

4.4 STORM WATER MANAGEMENT PLAN

Excess storm water accumulated in the corner sumps within each biopad berm will be pumped into temporary holding tanks or a tanker truck. This water will be reused to maintain the desired moisture content. Should the volume of runoff collected exceed the on-site storage capacity due to a large storm event, the excess water will be discharged to the BSA.

4.5 MONITORING PLAN

4.5.1 Soil Sampling

Eight soil samples (one sample per acre of biopad) will be collected monthly, at a minimum, and analyzed for TPH with 48-hour turnaround of analytical results. TPH will be used as a surrogate monitoring parameter for VOCs and SVOCs to determine the rate of bioremediation. At the end of the season (i.e., October-November 1997), or as indicated by TPH concentrations, soil samples will be analyzed for VOCs and SVOCs to confirm the

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reduction of site-specific compounds to below the target cleanup objectives. The TCLP Alternative Method (Method 8021) will be performed on the samples collected for VOC analysis and the TCLP Extraction Method (Method 8270) will be performed on the samples collected for SVOC analysis. According to STARS, the number of samples required for bioremediated soil is related to the quantity of soil being treated. However, a sampling plan for more than 1,000 cubic yards of soil must be submitted for approval. Therefore, the sampling plan consists of: ~~28~~ 30 composite samples, comprised of randomly collected grabs within approximate 115-foot by 115-foot grids, and 8 confirmatory grab samples and analyzed for SVOCs; and ~~28~~ 30 randomly-spaced grab samples and 8 confirmatory composite samples analyzed for VOCs. Duplicate samples will also be collected for quality control. Samples will be collected randomly from six inches below the top of the soil lift to the bottom of the soil lift, taking care not to penetrate the liner. The results of all sampling will be summarized in a bioremediation report at the end of the bioremediation season for review by the NYSDEC prior to disposition of the remediated soil.

4.5.2 Perimeter Air Monitoring

Real-time air monitoring for VOCs will be performed at the perimeter of the work area during initial intrusive soil handling activities (i.e., moving soil from the stockpile to the new biopad, initial soil tilling). For the purposes of this monitoring activity, the perimeter of the work areas are determined to be 50 feet from the outside edge of the biopad. Volatile organic compounds will be monitored at the downwind perimeter of the work area daily during initial active soil handling activities.

- If total organic vapor levels exceed 5 ppm above background, work activities will be halted and monitoring continued under the provisions of a Vapor Emission Response Plan. All readings will be recorded and be available for NYSDEC and NYSDOH personnel to review.

- If two consecutive soil handling activites do not result in total organic vapor levels in excess of 5 ppm above background, perimeter air monitoring will be discontinued.

Vapor Emission Response Plan:

- If the ambient air concentration of organic vapors exceeds 5 ppm above background, but is less than 25 ppm above background at the perimeter of the work area, activities will be suspended and monitoring continued. Activities can resume provided:

  - The organic vapor level at half the distance to the nearest downwind residential or commercial structure is below 5 ppm above background.

  - More frequent intervals of monitoring, as directed by the site safety officer, are conducted.

- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be suspended. When this occurs, downwind air monitoring, as directed by the site safety officer, will be implemented to document vapor concentrations at the nearest residential or commercial structures according to the Major Vapor Emission Response Plan (below).

- If the organic vapor level decreases below 5 ppm above background, work activities can resume, but more frequent intervals of monitoring must be conducted, as directed by the site safety officer.

Major Vapor Emission:

- If any organic levels greater than 5 ppm over background are identified at half the distance to the nearest downwind residential or commercial property, all work activities must be suspended.

- If following the cessation of the work activities, or as a result of an emergency, organic levels persist above 5 ppm above background at half the distance to the nearest downwind residential or commercial property from the work area, then the air quality must be monitored within 20 feet of the wall of the nearest residential or commercial structure (20-Foot Zone).

- If efforts to abate the emission source are unsuccessful and if organic vapor levels are approaching 5 ppm above background for more than 30 minutes in the 20-Foot Zone, then the Major Vapor Emission Response Plan (below) will automatically be placed into effect.

- The Major Vapor Emission Response Plan will be placed into effect if organic vapor levels exceed 10 ppm above background withing the 20-Foot Zone at any time.

Major Vapor Emission Response Plan:

Upon activation, the following activities will be undertaken:

- All state and county emergency response contacts will be advised.
- As required, the local emergency services will immediately be contacted and advised of the situation.
- Frequent air monitoring will be conducted at 30-minute intervals within the 20-Foot Zone. If two successive readings below 5 ppm are measured, the Major Vapor Emission Response is canceled and operations resume under the Vapor Emission Response Plan.

At a maximum, VOC perimeter air monitoring will cease after two months of full-scale bioremediation. This determination is based on biotreatability study results that demonstrated a reduction in VOC concentrations below the SGVs and elimination of petroleum-related odors within two months.

4.6 SCHEDULING

Construction of the stockpile liner will begin immediately and should be ready to receive soil by the second week in June 1997. The 1997 bioremediation efforts are anticipated to extend from July through the end of October 1997. A bioremediation report will then be prepared for submission to the NYSDEC. Soil which meets the bioremediation goals will be removed from the biopads as soon as possible for use as on-site or off-site fill material.

Soil that does not achieve the bioremediation goals in 1997 will be maintained on the biopads through the winter and bioremediation efforts would then be reinitiated in May 1998 and completed by the end of 1998. Accumulated water would be removed from the biopads, as necessary. A second bioremediation report would then be prepared for review/approval by the NYSDEC upon completion of the bioremediation activities.

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5.0 REFERENCES

NYSDEC. 1992. *STARS Memo #1, Petroleum-Contaminated Soil Guidance Policy.* Division of Construction Management. Bureau of Spill Prevention and Response. August.

Waste Stream Technology. 1997. *Draft Treatability Study for the Solid-Phase Ex Situ Bioremediation of Hydrocarbon-Contaminated Soil.* April.

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APPENDIX A

PARTICLE SIZE DISTRIBUTION TEST REPORT

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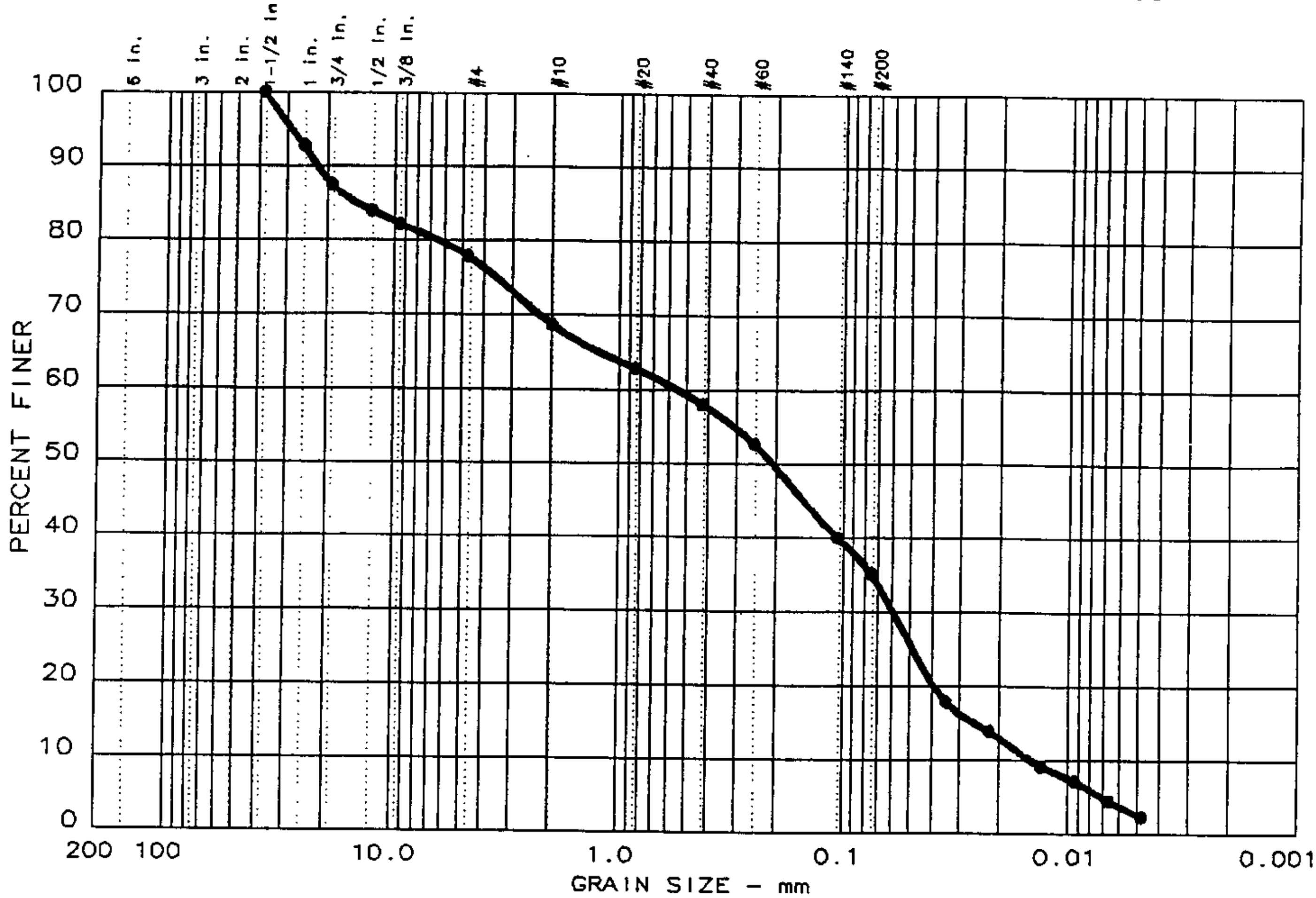
PARTICLE SIZE DISTRIBUTION TEST REPORT



	% +3"	% GRAVEL	% SAND	% SILT	% CLAY	USCS	LL	PI
●	0.0	22.2	42.7	35.1		SM	NP	NP

SIEVE inches size	PERCENT FINER ●		
1.5	100.0		
1	92.7		
0.75	87.5		
0.5	83.9		
0.375	82.1		
	GRAIN SIZE		
D_{60}	0.54		
D_{30}	0.06		
D_{10}	0.01		
	COEFFICIENTS		
C_c	0.44		
C_u	37.6		

SIEVE number size	PERCENT FINER ●		
4	77.8		
10	68.6		
20	62.8		
40	58.0		
60	52.7		
140	40.0		
200	35.1		

Sample information:
● INITIAL COMPOSITE
Silty sand with gravel

Remarks:

MALCOLM PIRNIE, INC.

Project No.: 0848-260
Project: LTV - STEEL / TRUSCON PROPERTY
Date: 1-6-96
Data Sheet No. ____

MALCOLM PIRNIE

APPENDIX B

SVOC PLOTTED RESULTS

Figure B-1
Phenanthrene Results

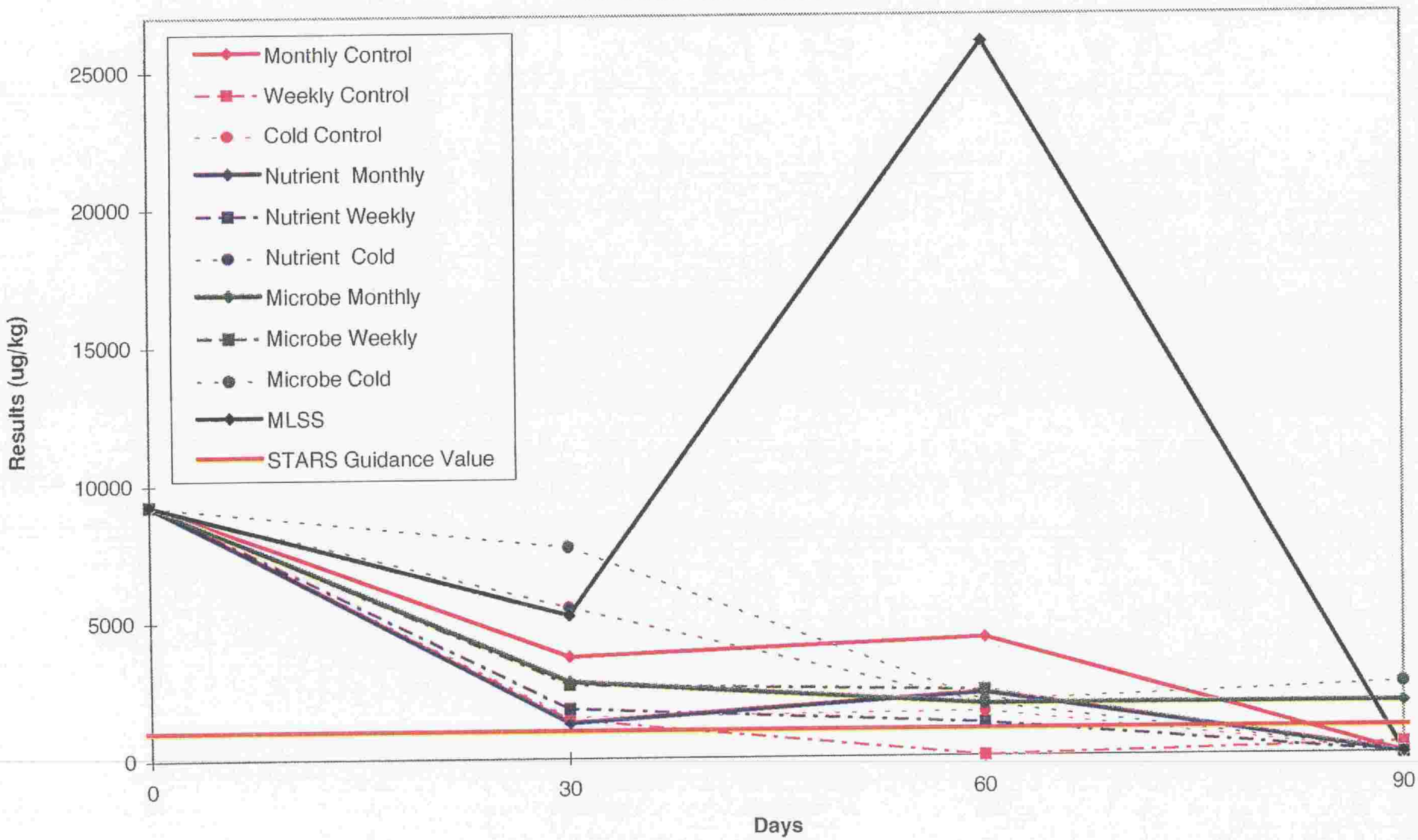


Figure B-2
Fluorene Results

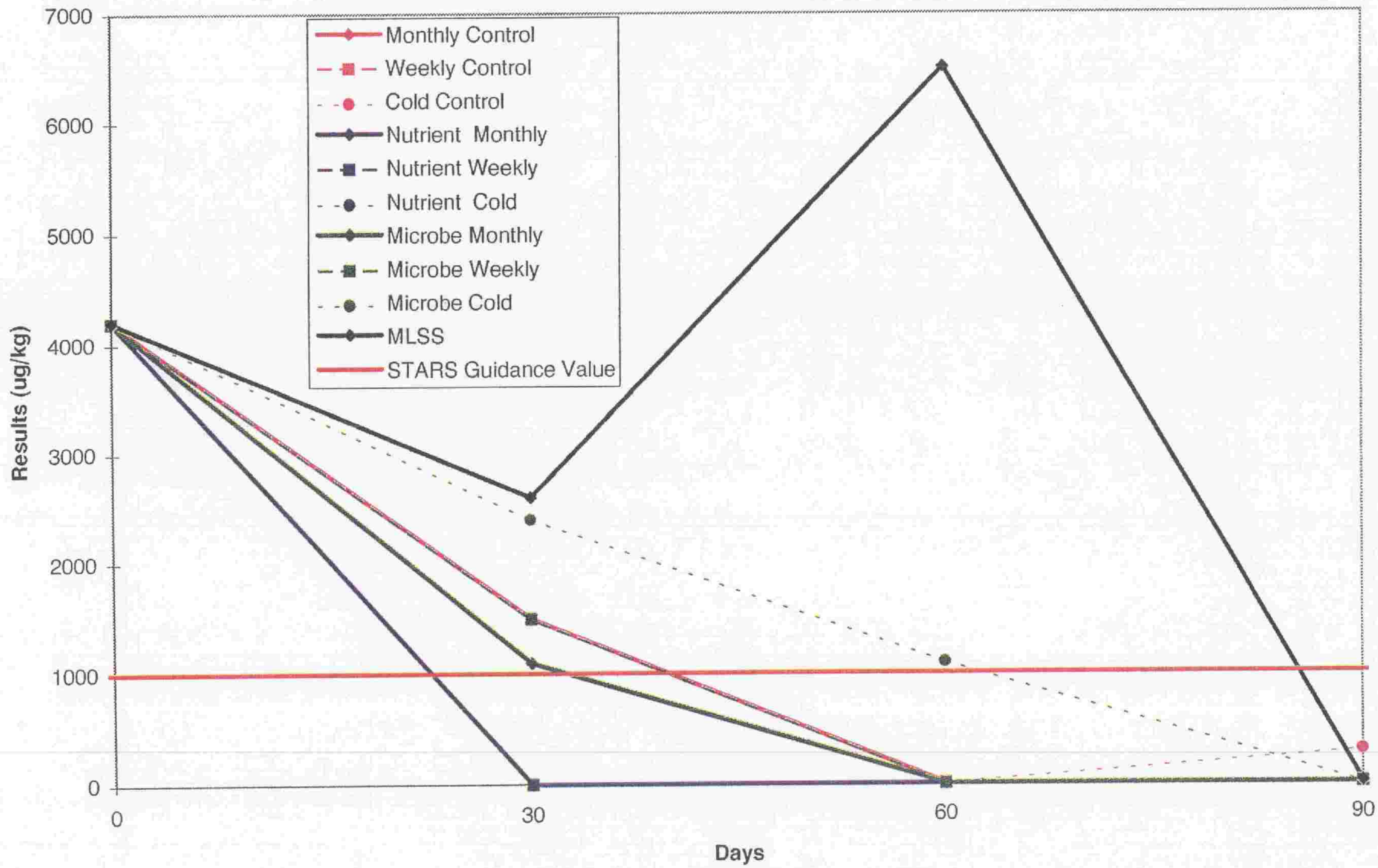


Figure B-3
Anthracene Results

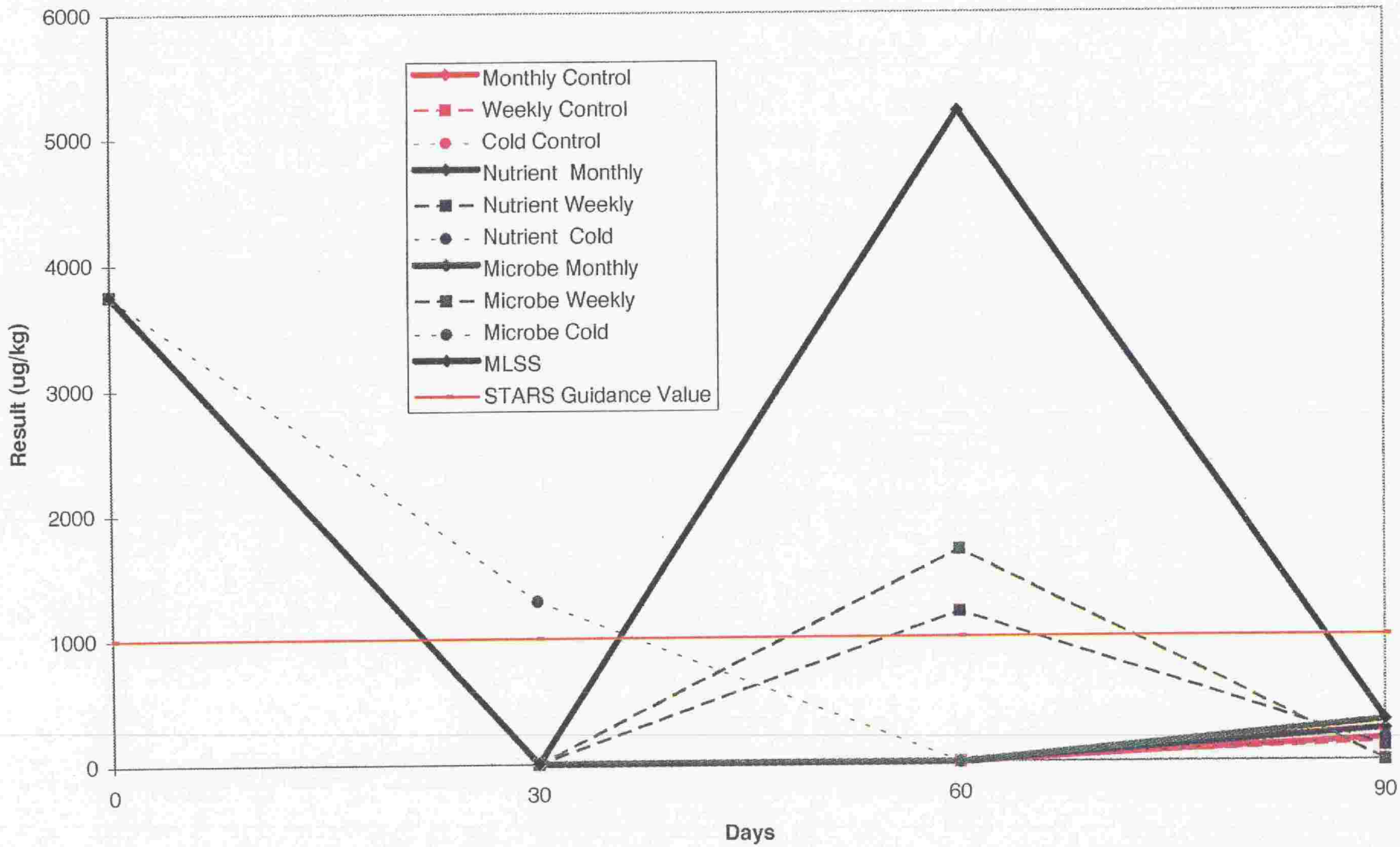
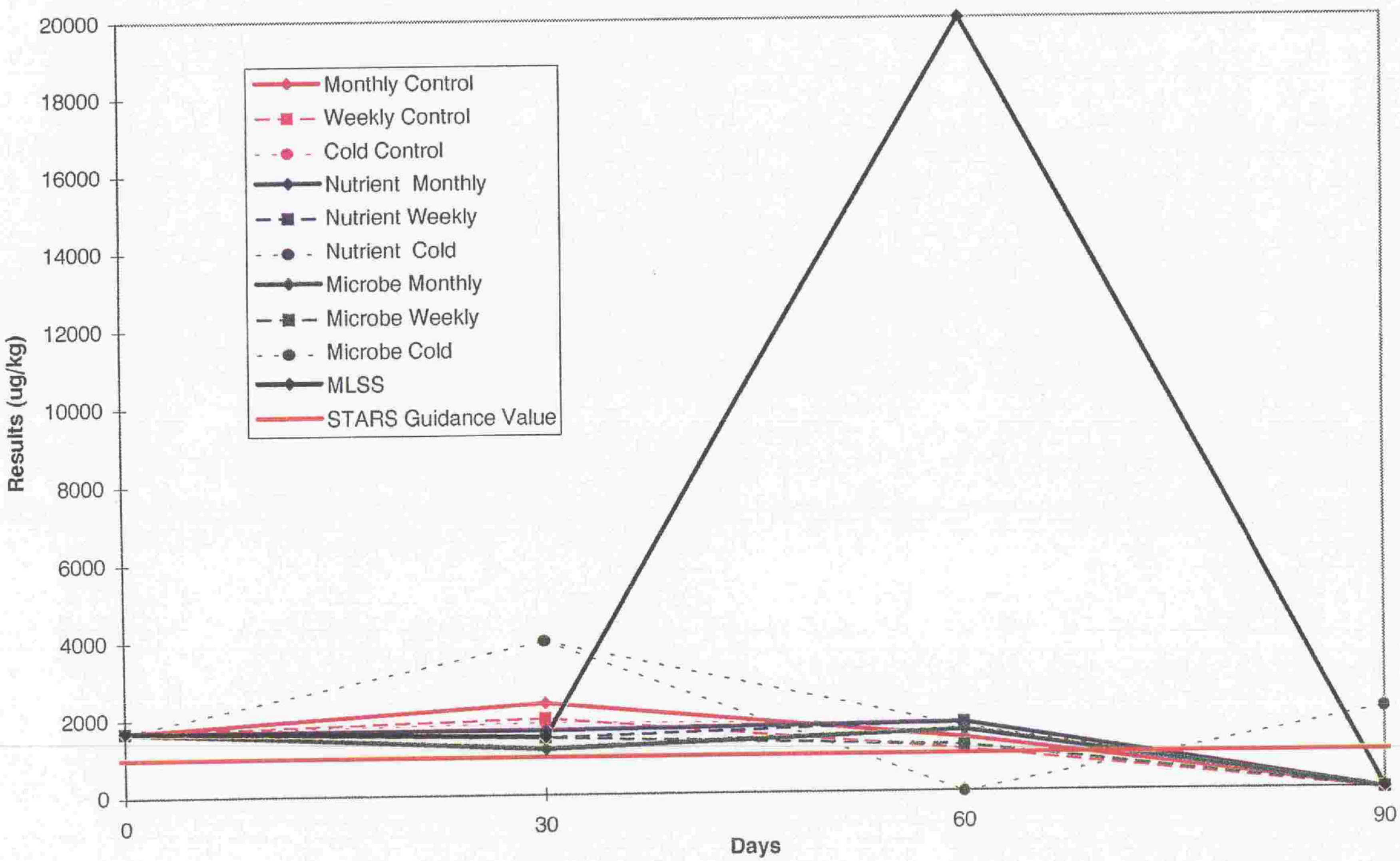


Figure B-4
Fluoranthene Results



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APPENDIX E

BSA PERMIT APPLICATION AND BPDES PERMIT FOR TERMINAL BASIN

FOR BSA USE ONLY:
Date Application Rec'd.: ____________
Industrial Number: ____________
Investigator: ____________

PART A - GENERAL INFORMATION

B.P.D.E.S. DISCHARGE PERMIT APPLICATION

A1. Applicant Business Name: Abby Street Property Land Management Group

A2. Address of premises discharging wastewater:

290 Abby Street — Buffalo — New York — 14220
Street — City — Zip

A3a. Business Address (if different than above):

Same as above
Street — City — State — Zip

b. Mailing Address (if different than above):

158 Chamberlain Drive — Buffalo — New York — 14210
Street — City — State — Zip

A4. Chief Business Official:

Name: (See Attachment 1) Title: ____________

A5. Facility Representative:

Name: E. J. Hartman, Sr. Title: Owners Representative Phone: (716)674-0600

A6. Person to be contacted about this application, if different from above:

Name: ____________ Title: ____________ Phone: ____________

A7. Person to be contacted in case of emergency, if different from above:

Name: Owners Representative Day Phone: (716)674-0600 Night Phone: (716)674-0600

A8. Confidentiality:
Please indicate those sections of this questionnaire that you wish to remain confidential and your basis for requesting confidentiality.
N/A

I have personally examined and am familiar with the information submitted in this document and attachments. Based upon my inquiry of those individuals immediately responsible for obtaining the information reported herein, I believe that the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information.

5-27-97 — LTV STEEL CO
Date — Signature of Official (Seal if Applicable)

<u>**ATTACHMENT 1**</u>

William L. West
LTV Steel Company, Inc.
3100 East 45th Street
Cleveland, OH 44127
(216)429-6471

John K. Heintz, Agent
The Hanna Furnace Corporation
20 Stanwix Street
Pittsburgh, PA 15222
(412)394-4766

PART B - BUSINESS DESCRIPTION

PURPOSE - The business description is primarily used to determine the substances which may enter into the wastewater discharge from the business activity.

B1. Brief Description: Former coke manufacture, facilities demolished and removed.

B2. Business Activity: Standard Industrial Classification (SIC) Codes for Principal Products or Services:

Activity	SIC Code (4 Digits)	Production (Monthly Avg.)*
	3316	0

B3. Is there a scheduled shutdown? Yes____ No____ If yes, when? See B4

B4. Is production seasonal? Yes____ No____ If yes, explain, indicating month(s) of peak production: Production facilities demolished and removed.

B5. Average number of employees per shift: 1st ____ 2nd ____ 3rd ____

Shift start times: 1st ____ 2nd ____ 3rd ____

N/A

Shift end times: 1st ____ 2nd ____ 3rd ____

Shifts normally worked each day:

	Sun.	Mon.	Tue.	Wed.	Thu.	Fri.	Sat.
1st							
2nd							
3rd							

* Monthly average stated shall be the highest monthly average production in the previous five years.

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PART C - WATER SOURCE AND USE

PURPOSE - The Water Source and Use information will enable BSA to determine the Volumes and Sources of wastewater discharged to the BSA sewer.

WATER/WASTEWATER DATA

C1. Water Sources

Water Sources	Average Volume (Gallons per Day)	Peak Flow/Estimated Duration (Gallons per Minute/Time)
Municipal System	N/A	
Recycled		
Private Wells		
Other (Specify) ______		
Water Account No.(s)		

C2. Water Usage

Water Usage	Average Volume (Gallons per Day)	Peak Flow/Estimated Duration (Gallons per Minute/Time)
Cooling Water	N/A	
Boiler Makeup		
Process Water		
Sanitary Purposes		
Other (Specify) ______		

C3. Waste Water Discharge

Waste Water Discharge	Average Discharge (Gallons per Day)	Peak Discharge/Estimated Duration (Gallons per Minute/Time)
Municipal Sewer/Sanitary		
- Process		
- Sanitary		
- Cooling		
Non-Sewered Discharges		
- Natural Receiving Water		
- Storm Drain	82,000	
- Waste Hauler		
- Evaporation		
- Contained in Product		
- Recycled		
- Other (Specify) ______		

C4. Is your facility permitted to discharge liquid wastes under a State (S.P.D.E.S.) Permit?

Yes ______ No X Permit No. ______

C5. Does your facility have a wastewater discharge from any air pollution control equipment?

Yes ______ No X

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PART D - SUBSTANCES OF CONCERN

(REFER TO ATTACHED TABLE I)

Complete all information for those substances your facility has used, produced, stored, distributed, listed under the TRI report or otherwise disposed of since last application. Do not include chemicals used only in analytical laboratory work. Enter the name and code from Table I. If facility uses a substance in any of the Classes A-N which is not specified in the list, enter it as code class plus 99, e.g. B99 with name, usage, etc.

Name of Substance	Class	Average Annual Usage	Amount Now on Hand	Purpose of Use (State whether produced, reacted, blended, packaged, distributed, no longer used)
N/A				

TABLE 1 - SUBSTANCES OF CONCERN

CLASS A - HALOGENATED HYDROCARBONS

A01. Methyl chloride
A02. Methylene chloride
A03. Chloroform
A04. Carbon tetrachloride
A05. Freon/Genetron
A06. Other halomethanes
A07. 1, 1, 1-Trichlorethane
A08. Other haloethanes
A09. Vinyl fluoride
A10. Vinyl chloride
A11. Dichlorethylene
A12. Trichloroethylene
A13. Tetrachloroethylene
A14. Chlorinated propane
A15. Chlorinated propene
A16. Hexachlorobutadiene
A17. Hexachlorocyclopentadiene
A18. Chlorinated benzene
A19. Chlorinated toluene
A20. Fluorinated toluene
A21. Polychlorinated biphenyl (PCB)
A22. Chlorinated naphthalene
A23. Dechlorane ($C_{10}Cl_{12}$)
A99. Halogenated hydrocarbons not specified above

CLASS D - AROMATIC HYDROCARBONS

D01. Benzene
D02. Toluene
D03. Xylene
D04. Biphenyl
D05. Naphthalene
D06. Ethylbenzene
D07. Styrene
D08. Acenaphthene
D09. Fluranthene
D99. Aromatic hydrocarbons not specified above

CLASS E - TARS

E01. Coal tar
E02. Petroleum tar

CLASS B - HALOGENATED ORGANICS (other than hydrocarbons)

B01. Phosgene
B02. Methyl Chloromethyl ether
B03. bis-chloromethyl ether
B04. Other chloroalkyl ethers
B05. Benzoyl chloride
B06. Chlorothymol
B07. Chlorinated phenol
B08. Chlorinated cresols or xylenols
B09. Chloranilic acid
B10. Chloroaryl ethers
B11. Dichlorophene or hexachlorophene
B12. Chlorinated aniline (including methylene bis (2-chloroaniline))
B13. Dichlorobenzidine
B14. Chlorinated diphenyl oxide
B15. Chlorinated toluidine
B16. Kepone ($C_{10}Cl_{10}O$)
B17. Dichlorovinyl sulfonyl pyridine
B18. Chloropicrin
B20. Triclore-propylsulfonyl pyridine
B21. Tetrachloro-methylsulfonyl pyridine
B22. Tetrachloro-isophthalonitrile
B99. Halogenated organics not specified above

CLASS G - MISCELLANEOUS

G01. Asbestos
G02. Acrolein
G03. Acrylonitrile
G04. Isophorone
G05. Nitrosamines
G06. Ethyleneimine
G07. Propiolacetone
G08. Nitrosodimethylamine
G09. Dimethyl hydrazine
G10. Maleic anhydride
G11. Methyl isocyanate
G12. Epoxides
G13. Nitrofurans
G14. Cyanide

CLASS C - PESTICIDES (including herbicides, algaecides, biocides, slimicides and mildewcides)

C01. Aldrin/Dieldrin
C02. Chlordane and metabolites
C03. DDT and metabolites
C04. Endosulfan/Thiodan and metabolites
C05. Endrin and metabolites
C06. Heptachlor and metabolites
C07. Malathion
C08. Methoxychlor
C09. Parathion
C10. Toxaphene
C11. Sevin
C12. Kelthane
C13. Diazinon
C15. Carbaryl
C16. Silvex
C17. Dithiocarbamates
C18. Maneb
C19. Dioxathion
C20. Tandex/Karbutilate
C21. Carbofurans
C22. Pentac
C23. Folpet
C24. Dichlone
C25. Rotenone
C26. Lindane/Isotox
C27. Simazine
C28. Methoprene
C99. Pesticides not specified above

CLASS M - METALS AND THEIR COMPOUNDS

M01. Anthimony
M02. Arsenic
M03. Beryllium
M04. Cadmium
M05. Chromium
M06. Copper
M07. Lead
M08. Mercury
M09. Nickel
M10. Selenium
M11. Silver
M12. Thallium
M13. Zinc
M14. Boron
M15. Manganese
M18. Titanium
M21. Tungster
M22. gold
M83. Pladium
M84. Platinum
M99. Metals not specified above

CLASS F - SUBSTITUTED AROMATICS (other than hydrocarbons and non-halogenated)

F01. Phenol, cresol, or xylenol
F02. Catechol, resorcinol, or hydroquinone
F03. Nitrophenols
F04. Nitrobenzenes
F05. Nitrotoluenes
F06. Aniline
F07. Toluidines
F08. Nitroanilines
F09. Nitroanisole
F10. Toluene diisocyanate
F11. Dimethylaminoazobenzene
F12. Benzoic Acid (and Benzoate salts)
F13. Phthalic, isophthalic or terephthalic acid
F14. Phthalic anhydride
F15. Phthalate esters
F16. Phenoxyacetic acid
F17. Phenylphenols
F18. Nitrobiphenyls
F19. Aminobiphenyls (including benzidine)
F20. Diphenylhydrazine
F21. Naphthylamines
F22. Carbazole
F23. Acetylaminofluorene
F24. Dyes and organic pigments
F25. Pyridine
F99. Substituted aromatics not specified above

If you use chemicals of unknown composition, list trade name or other identification, name of supplier and complete information.

Name of Substance	Average Annual Usage	Amount Now on Hand	Supplier	Purpose of Use (State whether produced, reacted, blended, packaged, distributed, no longer used)

Are you presently permitted to discharge radiological waste by the N.Y.S.D.E.C.? Yes ___ No ___

PART E

E1. Do you have automatic sampling equipment or continuous wastewater flow metering equipment currently in use or included in future plans?

Current: Flow Metering Yes X No ___ Sampling Equipment Yes ___ No X

Planned: Flow Metering Yes ___ No X Sampling Equipment Yes ___ No X

E2. Does your facility pretreat any wastewater prior to discharge to a sanitary sewer? Yes X No ___

If so, please show locations of pretreatment processes on attached schematic process diagram (Part F) and describe below: Stormwater runoff collection

E3. Do you have a spill prevention, containment and control plan (SPCC) for your plant? Yes ___ No X

E4. Do you have a Solvent Management Plan or a Toxic Organic Management Plan? Yes ___ No X

E5. Do you generate any liquid or solid waste such as solvents, electroplating sludges, thinners, oils, still bottoms, fly ash, filler, etc? Yes ___ No X. If yes, please fill out the following table:

Type of Waste	If this waste is produced by pretreatment check here	Amount per Year (Specify lbs, Tons or Gals)	Method of Disposal Check Each method Used				
			On-Site	Sanitary Landfill	Hazardous Waste Facility	Reclaimed or Reused	Other

JUL 01 '97 01:49PM CORP ENV CONTROL 216 425 6541 P.8

E6. Description of Disposal Method:

a. Disposal Site
N/A

b. Hazardous Waste Hauler - Please give name and address ____________________

c. Reclaimed or Reused - Please describe process, if on-site, or give name and address of reclaimer

d. Other - Please describe ____________________

E7. Do you store any hazardous wastes on-site? Yes ___ No X

E8. Have you filed an EPA Form 8700-12 (Notification of Hazardous Waste Activity)? Yes X No ___
If yes, please attach.

E9. What is your Hazardous Waste Number? NYD002110971

E10. Do you discharge into the Buffalo Sewer Authority a waste identified by 40 cfr 261 a hazardous waste?
Yes ___ No X

E11. If your facility is discharging a hazardous waste, have you properly notified the Buffalo Sewer Authority? Yes ___ No ___ N/A

PART F - SCHEMATIC FLOW DIAGRAM

PURPOSE - The Schematic Flow Diagram shows the flow pattern of products through the facility and the various sources of wastewater.

F. Schematic Flow Diagram - For each major activity in which wastewater is generated, draw a diagram of the flow of materials and water from start to completed project, showing all unit processes generating wastewater. Number each unit process having wastewater discharges to the community sewer.

General Instructions - Type or print the information. A seperate Part F should be completed for each major business activity described in Part B.

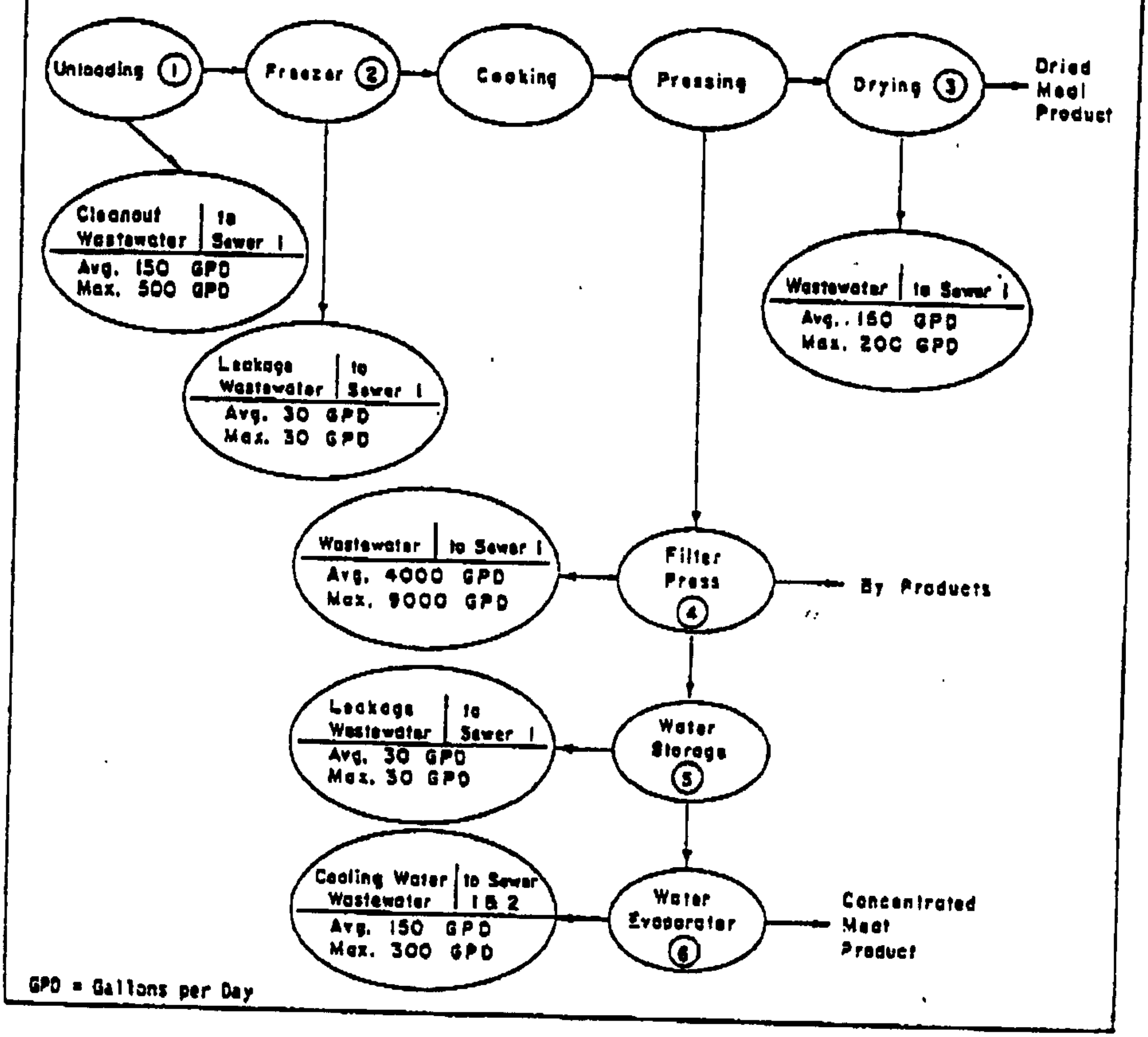
A line drawing (schematic flow diagram) of each major business activity described in Part B is to be drawn in on an attached sheet of paper (all sheets should be letter size). Number each process which generates wastewater using the same numbering as in the building layout or plant site plan shown in Part G. An example of drawing required is shown in Figure 1.

To determine your average daily volume and maximum daily volume of wastewater flow you may have to read water meters, sewer meters, or make estimates of volumes that are not directly measurable.

BPDES.APP
REVISED 3/19/93, 8/30/94, 12/1/96

DO NOT RETURN THIS PAGE WITH APPLICATION

FIGURE 1
ACTIVITY: Meat Processing



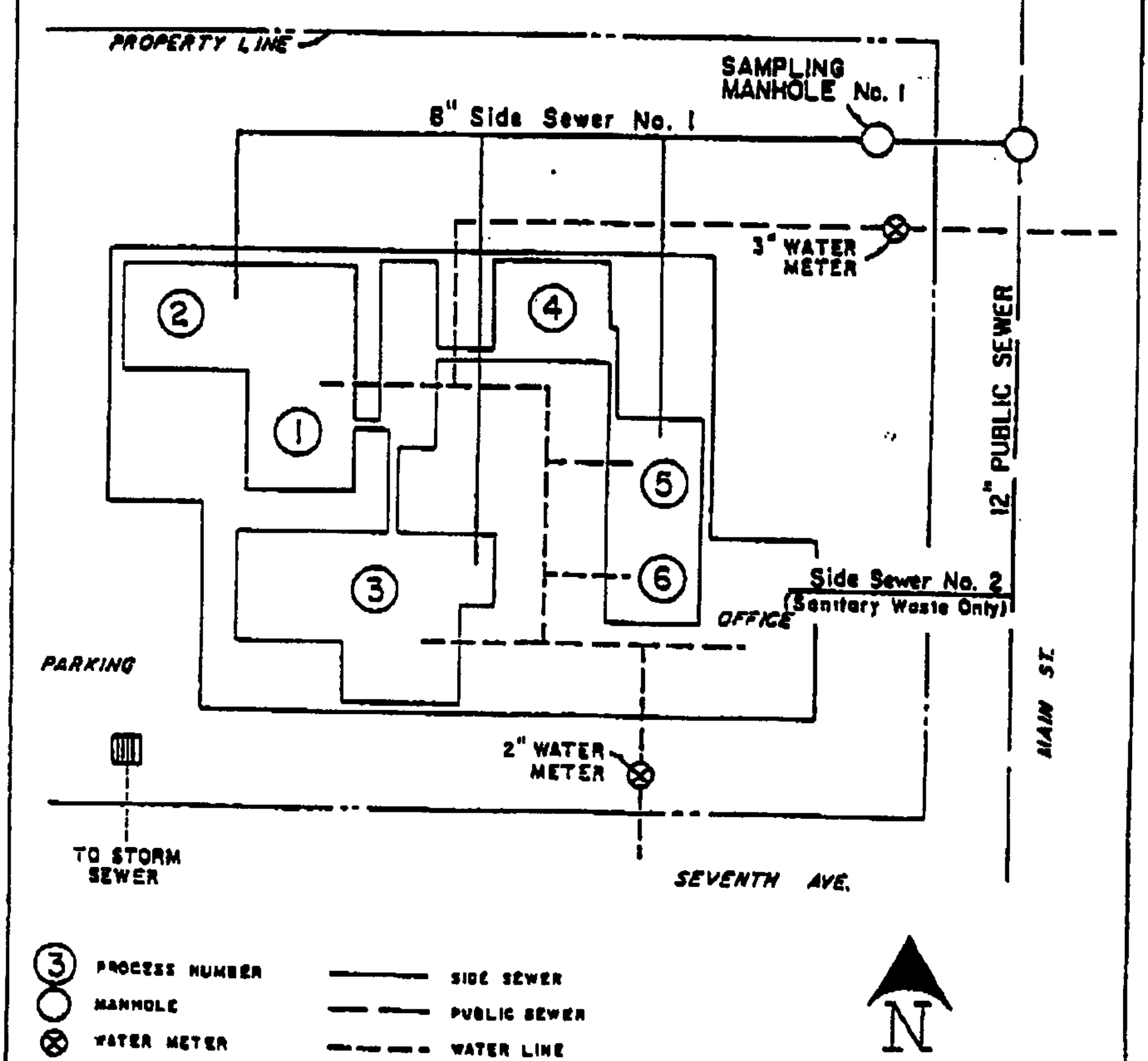
PART G - BUILDING LAYOUT

PURPOSE - The building layout shows the wastewater generating operations which contribute to each side sewer.

INSTRUCTIONS FOR COMPLETING PART G: General Instructions - Type or print the information.

Building Layout - A building layout or plant site plan of the premise is required to complete Part G. An arrow showing north as well as the map scale must be shown. The location of each existing and proposed sampling manhole and side sewer must be clearly identified, including distances as well as all sanitary and wastewater drainage plumbing. Number each unit process discharging wastewater to the community sewer. Use the same numbering system shown in Part F (Schematic Flow Diagram). An example of the drawing required is shown below in Figure 2.

FIGURE 2
ANYBODY'S MEAT CO.
(SCALE: 1" = 100')



BY MWS DATE [illegible]

CHKD. BY ____ DATE ____

URS COMPANY, INC.

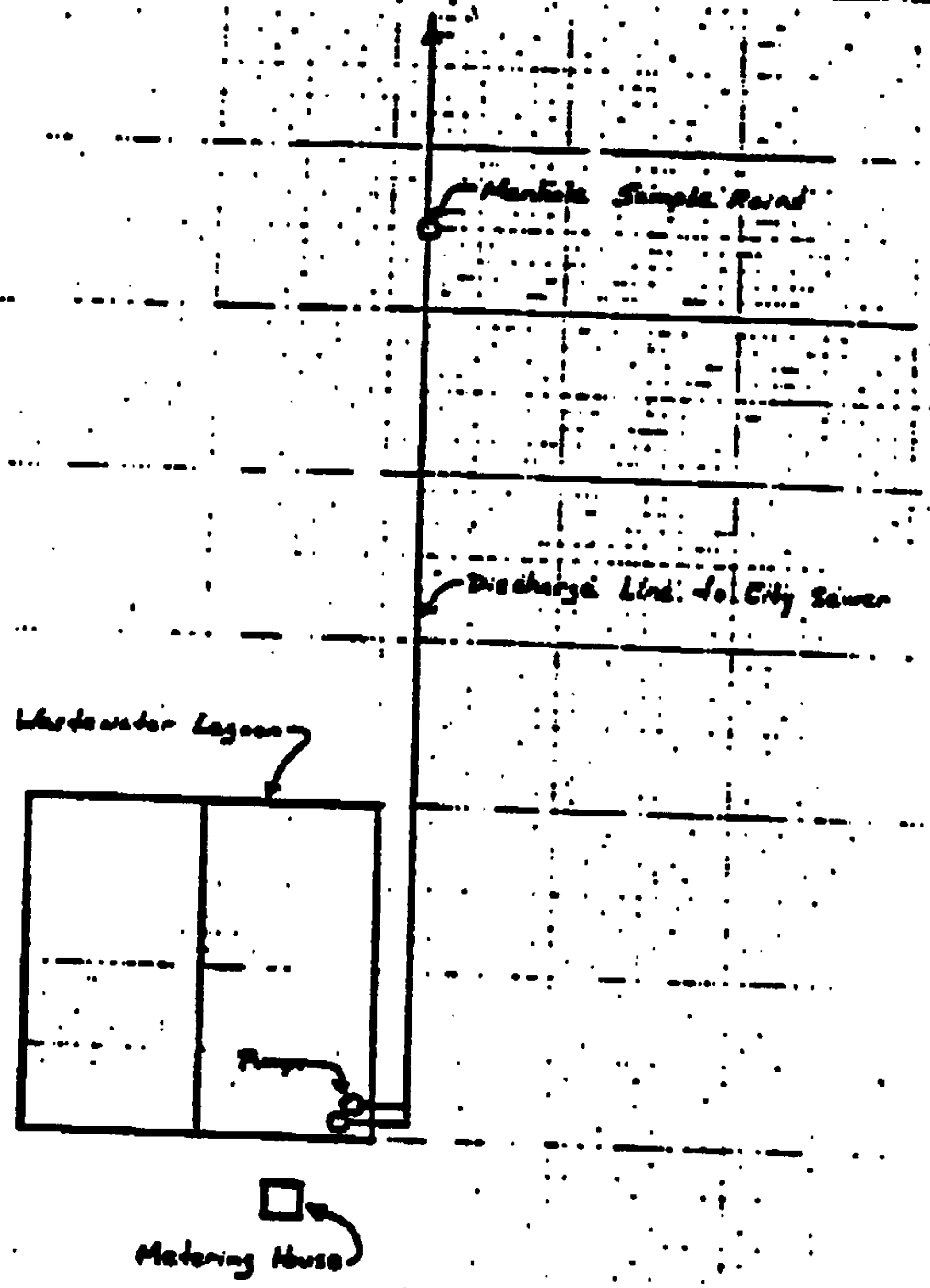
CONSULTING ENGINEERS

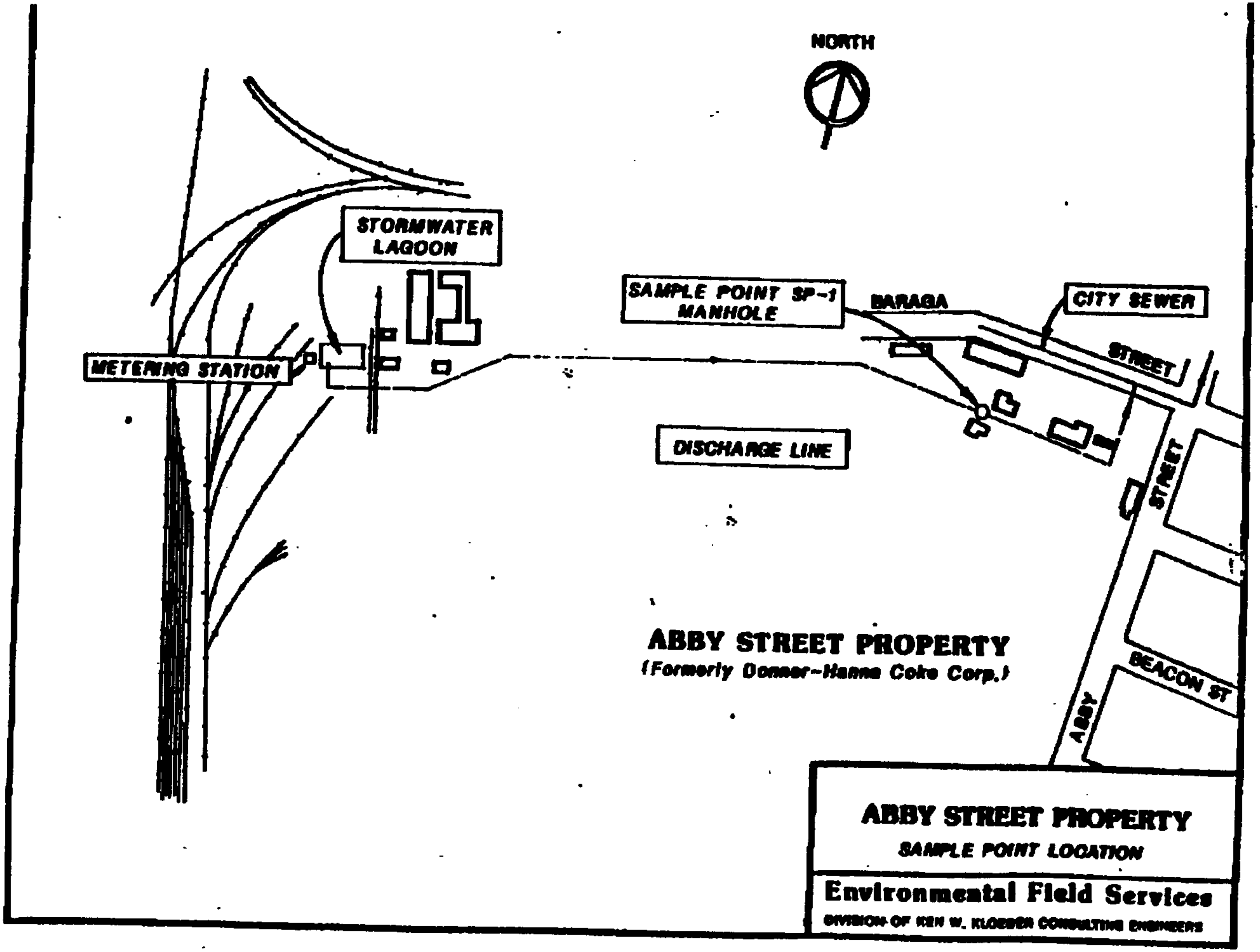
SHEET NO. ____ OF ____

JOB NO. ____

SUBJECT: Donner-Hanna Coke

Lagoon Discharge Sample Point




NORTH
STORMWATER LAGOON
SAMPLE POINT SP-1 MANHOLE
BARAGA
CITY SEWER
STREET
METERING STATION
DISCHARGE LINE
STREET
ABBY STREET PROPERTY
(Formerly Donner-Hanna Coke Corp.)
BEACON ST
ABBY
ABBY STREET PROPERTY
SAMPLE POINT LOCATION
Environmental Field Services
DIVISION OF KEN W. KLOEBER CONSULTING ENGINEERS

... type with ELITE type (12 characters/in.) ... in the unshaded areas only.

Approved OMB No. ...

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTIFICATION OF HAZARDOUS WASTE ACTIVITY

INSTRUCTIONS: If you received a preprinted label, affix it in the space at left. If any of the information on the label is incorrect, draw a line through it and supply the correct information in the appropriate section below. If the label is complete and correct, leave Items I, II, and III below blank. If you did not receive a preprinted label, complete all items. "Installation" means a single site where hazardous waste is generated, treated, stored and/or disposed of, or a transporter's principal place of business. Please refer to the INSTRUCTIONS FOR FILING NOTIFICATION before completing this form. The information requested herein is required by law (Section 3010 of the Resource Conservation and Recovery Act).

NYD002110971

DONNER HANNA COKE CORP
PO BOX A
BUFFALO, NY 14220

ABBEY & MYSTIC STS
BUFFALO, NY 14220

...CIAL USE ONLY

COMMENTS

...LATION'S EPA I.D. NUMBER | APPROVED | DATE RECEIVED (yr., mo., & day)

...F INSTALLATION

...LATION MAILING ADDRESS

STREET OR P.O. BOX

CITY OR TOWN | ST. | ZIP CODE

...ION OF INSTALLATION

STREET OR ROUTE NUMBER

CITY OR TOWN | ST. | ZIP CODE

...LATION CONTACT

NAME AND TITLE (last, first, & job title) | PHONE NO. (area code & no.)

...AR KEVIN ENV CONT MGR | 716-822-1600

...SHIP

A. NAME OF INSTALLATION'S LEGAL OWNER

...UBLIC STEEL & HANNA FURNACE CORPS.

VI. TYPE OF HAZARDOUS WASTE ACTIVITY (enter "X" in the appropriate box(es))

...ERAL / ...-FEDERAL: M

[X] A. GENERATION
[ ] B. TRANSPORTATION (complete item VII)
[X] C. TREAT/STORE/DISPOSE
[ ] D. UNDERGROUND INJECTION

...OF TRANSPORTATION (transporters only – enter "X" in the appropriate box(es))

[ ] B. RAIL [ ] C. HIGHWAY [ ] D. WATER [ ] E. OTHER (specify):

...OR SUBSEQUENT NOTIFICATION

...the appropriate box to indicate whether this is your installation's first notification of hazardous waste activity or a subsequent notification. ...our first notification, enter your installation's EPA I.D. Number in the space provided below.

...FIRST NOTIFICATION [ ] B. SUBSEQUENT NOTIFICATION (complete item C)

C. INSTALLATION'S EPA I.D. NO.

...PTION OF HAZARDOUS WASTES

I.D. — FOR OFFICIAL USE ONLY

W

...RIPTION OF HAZARDOUS WASTES *(continued from front)*

...DOUS WASTES FROM NON-SPECIFIC SOURCES. Enter the four-digit number from 40 CFR Part 261.31 for each listed hazardous ... non-specific sources your installation handles. Use additional sheets if necessary.

1	2	3	4	5	6
7	**8**	**9**	**10**	**11**	**12**

...DOUS WASTES FROM SPECIFIC SOURCES. Enter the four-digit number from 40 CFR Part 261.32 for each listed hazardous waste from ...dustrial sources your installation handles. Use additional sheets if necessary.

13	14	15	16	17	18
0 8 7					
19	**20**	**21**	**22**	**23**	**24**
25	**26**	**27**	**28**	**29**	**30**

...CAL CHEMICAL PRODUCT HAZARDOUS WASTES. Enter the four-digit number from 40 CFR Part 261.33 for each chemical sub... installation handles which may be a hazardous waste. Use additional sheets if necessary.

31	32	33	34	35	36
2 2 0					
37	**38**	**39**	**40**	**41**	**42**
43	**44**	**45**	**46**	**47**	**48**

...FECTIOUS WASTES. Enter the four-digit number from 40 CFR Part 261.34 for each listed hazardous waste from hospitals, veterinary ...edical and research laboratories your installation handles. Use additional sheets if necessary.

49	50	51	52	53	54

...ERISTICS OF NON-LISTED HAZARDOUS WASTES. Mark "X" in the boxes corresponding to the characteristics of non-listed ...astes your installation handles. *(See 40 CFR Parts 261.21 — 261.24.)*

☐ 1. IGNITABLE (D001) ☐ 2. CORROSIVE (D002) ☐ 3. REACTIVE (D003) ☒ 4. TOXIC (D000)

...CATION

...der penalty of law that I have personally examined and am familiar with the information submitted in this and all ...cuments, and that based on my inquiry of those individuals immediately responsible for obtaining the information, ...t the submitted information is true, accurate, and complete. I am aware that there are significant penalties for sub... information, including the possibility of fine and imprisonment.

SIGNATURE	NAME & OFFICIAL TITLE (type or print)	DATE SIGNED
J Repko	J. J. Repko, General Manager	8/14/80

...-12 (6-80) REVERSE

laboratory analytical supplement

I.D. – FOR OFFICIAL USE ONLY

W

DESCRIPTION OF HAZARDOUS WASTES (continued from front)

HAZARDOUS WASTES FROM NON-SPECIFIC SOURCES. Enter the four-digit number from 40 CFR Part 261.31 for each listed hazardous waste from non-specific sources your installation handles. Use additional sheets if necessary.

1	2	3	4	5	6

7	8	9	10	11	12

HAZARDOUS WASTES FROM SPECIFIC SOURCES. Enter the four-digit number from 40 CFR Part 261.32 for each listed hazardous waste from specific industrial sources your installation handles. Use additional sheets if necessary.

13	14	15	16	17	18

19	20	21	22	23	24

25	26	27	28	29	30

COMMERCIAL CHEMICAL PRODUCT HAZARDOUS WASTES. Enter the four-digit number from 40 CFR Part 261.33 for each chemical substance your installation handles which may be a hazardous waste. Use additional sheets if necessary.

31	32	33	34	35	36
P022	P030	P053	P098	P0[illegible]	P106

37	38	39	40	41	42
U002	U019	U022	U031	U211	U044

43	44	45	46	47	48
U032	U055	U117	U122	U133	U134

LISTED INFECTIOUS WASTES. Enter the four-digit number from 40 CFR Part 261.34 for each listed hazardous waste from hospitals, veterinary hospitals, medical and research laboratories your installation handles. Use additional sheets if necessary.

49	50	51	52	53	54

CHARACTERISTICS OF NON-LISTED HAZARDOUS WASTES. Mark "X" in the boxes corresponding to the characteristics of non-listed hazardous wastes your installation handles. (See 40 CFR Parts 261.21 — 261.24.)

☐ 1. IGNITABLE (D001) ☐ 2. CORROSIVE (D002) ☐ 3. REACTIVE (D003) ☐ 4. TOXIC (D000)

CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

SIGNATURE	NAME & OFFICIAL TITLE (type or print)	DATE SIGNED
[signature]		8-14-80

EPA Form 3510-3 (6-80) REVERSE

DONNER-HANNA COKE JOINT VENTURE

laboratory analytical mical supplement

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W

X. DESCRIPTION OF HAZARDOUS WASTES *(continued from front)*

HAZARDOUS WASTES FROM NON-SPECIFIC SOURCES. Enter the four-digit number from 40 CFR Part 261.31 for each listed hazardous waste from non-specific sources your installation handles. Use additional sheets if necessary.

1	2	3	4	5	6

7	8	9	10	11	12

HAZARDOUS WASTES FROM SPECIFIC SOURCES. Enter the four-digit number from 40 CFR Part 261.32 for each listed hazardous waste from specific industrial sources your installation handles. Use additional sheets if necessary.

13	14	15	16	17	18

19	20	21	22	23	24

25	26	27	28	29	30

COMMERCIAL CHEMICAL PRODUCT HAZARDOUS WASTES. Enter the four-digit number from 40 CFR Part 261.33 for each chemical substance your installation handles which may be a hazardous waste. Use additional sheets if necessary.

31	32	33	34	35	36
U135	U144	U151	U154	U165	U169

37	38	39	40	41	42
U188	U196	U239			

43	44	45	46	47	48

LISTED INFECTIOUS WASTES. Enter the four-digit number from 40 CFR Part 261.34 for each listed hazardous waste from hospitals, veterinary hospitals, medical and research laboratories your installation handles. Use additional sheets if necessary.

49	50	51	52	53	54

CHARACTERISTICS OF NON-LISTED HAZARDOUS WASTES. Mark "X" in the boxes corresponding to the characteristics of non-listed hazardous wastes your installation handles. (See 40 CFR Parts 261.21 – 261.24.)

☐ 1. IGNITABLE (D001) ☐ 2. CORROSIVE (D002) ☐ 3. REACTIVE (D003) ☐ 4. TOXIC (D000)

. CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

SIGNATURE	NAME & OFFICIAL TITLE (type or print)	DATE SIGNED
[signature]		8-14-80

EPA Form 8700-12 (6-80) REVERSE

LHS, KHN
Terminal drain
to be closed –

BUFFALO SEWER AUTHORITY

1038 CITY HALL
BUFFALO, NEW YORK 14202 - 3378
PHONE: (716) 851 - 4664 FAX: (716) 856-6810

HERBERT L. BELLAMY, JR.
Chairman
EDWARD J. PAWLIK
Vice Chairman
REV. MSGR. JOHN R. GABALSKI
Assistant Vice Chairman
DANIEL R. ACKER
Secretary
JAMES P. NAPLES
Assistant Secretary

BUFFALO SEWER AUTHORITY CORPORATE SEAL 1935

RECEIVED
SEP 11 1995
MANAGER - WASTE MANAGEMENT
ENVIRONMENTAL CONTROL

September 1, 1995

Mr. John Etchison
LTV Steel Company
3100 East 45th Street
Cleveland, Ohio 44127

RE: BPDES Permit #94-06-BU044

Dear Mr. Etchison:

The Buffalo Sewer Authority (BSA) presently has a concentration limit and mass allocation for Total Phenols. The discharge from the Abby Street Property is permitted for 8.0 mg/l under BPDES Permit #94-06-BU044. The permit should also have a mass limit.

A review of the files indicate that a daily discharge limit of 0.5 lbs. for Total Phenols would be sufficient to protect the BSA sewer system and not cause any significant permit discharge violations.

Please find enclosed a revised page two of the BPDES permit which reflects the addition of 0.5 lbs. daily maximum discharge limit for Total Phenols. Discard the present page two and replace it with the new one.

Refer any questions or comments to the Industrial Waste Section at 883-1820, extension 255.

As always, your cooperation is appreciated.

Very truly yours,

Frank DiMascio

Frank DiMascio, P.E.
Principal Sanitary Engineer

JC/JO:cb

CC: James Williams
James Caruso
Edward Hartman

G:IW\LTV.Ltr

PART I SPECIFIC CONDITIONS

A. DISCHARGE LIMITATIONS & MONITORING REQUIREMENTS

During the period beginning the effective date of this Permit and lasting until the expiration date, discharge from the permitted facility outfall(s) shall be limited and monitored by the permittee as specified below (see attached map).

Sample Point	Parameter	Discharge Limitations (mg/l except pH) Daily Max.	Sampling Requirements Period	Type
001	pH	5.0 - 12.0 S.U.	1 day	composite
	T. Ext. Hydrocarbons	100	1 day	composite
	T. Phenol (1)	8.0mg/l 0.5 lbs.	1 day	composite
	T. Cyanide (1)	1.0 lb.	1 day	composite
	EPA Test Procedures 601/602 (1)	N/L	1 day	grab
	EPA Test Procedure 625	N/L	1 day	composite
	T. Flow	200,000 GPD Avg.	1 day	metered continuously

(1) Four (4) grabs must be taken during the course of one (1) normal work day and equally spaced over this period of time. The four (4) grabs may be composited prior to analysis. However, the compositing must be done at a New York State Department of Health Certified Lab.

JUL 01 '97 10:48AM CORP ENV CONTROL 216 429 6541 P.3/3

APPENDIX F

LEXIS-VISTA SITE DATABASE PRINTOUTS

Copyright 1996 VISTA Information Solutions, Inc.
Facility Index System (FINDS)

EPA-ID: NYD002110971

VISTA-NO: 209473109

DONNER-HANNA COKE JOINT VENTUR
ABBY & MYSTIC STS
BUFFALO, NY 14220

LAST-UPDATE: September 16, 1993

EPA-REGION: 02

COUNTY: ERIE

FEDERAL-FACILITY: Unknown

SIC-CODES:
3312
3312
3312
3312
3312
3312

INDIAN-LAND: Unknown

AGENCY-ID:

UNKNOWN AGENCY ID NUMBER:

HWDMS AGENCY ID NUMBER: NYD002110971

PCS/NPDES AGENCY ID NUMBER: NY0003310

AFS/AIRS AGENCY ID NUMBER: 3602900003

AFS/AIRS AGENCY ID NUMBER: 3602990003

CERCLIS AGENCY ID NUMBER: NYD002110971

DOCKETS AGENCY ID NUMBER: 02-77-0007

CICIS AGENCY ID NUMBER: 004008L

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Facility Index System (FINDS)

EPA-ID: NYD987000734

VISTA-NO: 209504942

DONNER HANNA COKE JOINT VENTURE
S PARK STATION
BUFFALO, NY 14220

LAST-UPDATE: January 03, 1994

EPA-REGION: 02

COUNTY: ERIE

FEDERAL-FACILITY: Unknown

INDIAN-LAND: Unknown

AGENCY-ID:

UNKNOWN AGENCY ID NUMBER:

FTTS/NCDB AGENCY ID NUMBER: I02#198708115002 1

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SPL: State Priority List

LAST-UPDATE: July ,1996

DONNER HANNA COKE
ABBY AND MYSTIC STREET
BUFFALO NY VS E ERIE
ERIE
716-822-1600

VISTA-NO: 125147

EPA-NUMBER: NYD002110971

AGENCY-ID: 915017

VERIFIED FACILITY INFORMATION:
BUFFALO
14220

OWNER-INFO:
MULTIPLE SITE OWNERS

FACILITY-TYPE: OPEN DUMP

STATE-STATUS: ACTION MAY BE DEFERRED

WASTE: AMMONIUM SUBSTANCE COKE RELATED WASTE

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SPL: State Priority List

LAST-UPDATE: June ,1995

DONNER-HANNA COKE
ABBY AND MYSTIC STREET
BUFFALO NY VS E ERIE
ERIE

VISTA-NO: 5618296

EPA-NUMBER: NYD002110971

AGENCY-ID: HS9014

VERIFIED FACILITY INFORMATION:
BUFFALO
.4220

OWNER-INFO:
JTV STEEL CO.& HANNA
310 ABBY STREET
BUFFALO, NY 14220

WASTE: METALS & OTHER

* SITE DESCRIPTION:
HRS SCORE 5.45 DONNER-HANNA COKE CORPORATION OWNE COKE FACILITY FROM ABOUT 1930 UNTIL THE COMPANY DISSOLVED IN 1979. IT WAS TH

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SPL: State Priority List

LAST-UPDATE: July ,1996

REPUBLIC STEEL (LTV) (MARILLA ST. LF
MARILLA STREET & HOPKINS STREET
BUFFALO NY VS E ERIE
ERIE

VISTA-NO: 351598

EPA-NUMBER: NYD000813402

AGENCY-ID: 915047

VERIFIED FACILITY INFORMATION:
BUFFALO
14220

OWNER-INFO:
LTV STEEL
25 PROSPECT ST.
CLEVELAND OH

FACILITY-TYPE: LANDFILL

STATE-STATUS: REMEDIAL ACTION PENDING

WASTE: OTHER PICKLE LIQUOR

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AIRS: Aerometric Information Reporting System

LAST-UPDATE: September, 1995

VISTA-NO: 000125147

EPA-ID: NYD002110971

DONNER HANNA COKE
ABBY & MYSTIC STS.
BUFFALO NY 14220

FACILITY-ID: 00003

STATE-REGIST-NO: 1402000447

AIRS-ID: 3602900003

SIC: MFG-BLAST FURNACES & STEEL MILLS

AIR QUALITY CONTROL REGION: 162

OPERATING STATUS: OPERATING

SIP SOURCE

POLLUTANT INFORMATION:
POLLUTANT:CARBON MONOXIDE
COMPLIANCE: IN COMPLIANCE - INSPECTION
ATTAINMENT/NONATTAINMENT INDICATOR: ATTAINMENT

POLLUTANT INFORMATION:
POLLUTANT:NITROGEN DIOXIDE
COMPLIANCE: IN COMPLIANCE - INSPECTION
ATTAINMENT/NONATTAINMENT INDICATOR: ATTAINMENT

POLLUTANT INFORMATION:
POLLUTANT:TOTAL PARTICULATE MATTER
COMPLIANCE: IN COMPLIANCE - INSPECTION
ATTAINMENT/NONATTAINMENT INDICATOR: NONATTAINMENT

POLLUTANT INFORMATION:
POLLUTANT:SULFUR DIOXIDE
COMPLIANCE: IN COMPLIANCE - INSPECTION

POLLUTANT INFORMATION:
POLLUTANT:VOLATILE ORGANIC COMPOUNDS
COMPLIANCE: IN COMPLIANCE - INSPECTION
ATTAINMENT/NONATTAINMENT INDICATOR: NONATTAINMENT

ACTION INFORMATION:
ACTION NUMBER: 001
DATE ACHIEVED: 06/26/75
PENALTY:$0

ACTION INFORMATION:
ACTION NUMBER: 002
ACTION: EPA SURVEILLANCE ACTION
DATE ACHIEVED: 08/07/75
PENALTY:$0

ACTION INFORMATION:
ACTION NUMBER: 004
ACTION: EPA ABATEMENT ORDER ISSUED
DATE ACHIEVED: 08/20/75
PENALTY:$0

ACTION INFORMATION:
ACTION NUMBER: 005
ACTION: ABATEMENT PROGRESS REPORT TO EPA
DATE ACHIEVED: 09/22/75
PENALTY:$0

ACTION INFORMATION:
ACTION NUMBER: 006
ACTION: 114 LETTER SENT
DATE ACHIEVED: 11/26/75
PENALTY:$0

ACTION INFORMATION:
ACTION NUMBER: 007
ACTION: 114 RESPONSE DUE
DATE ACHIEVED: 01/13/76
PENALTY:$0

ACTION INFORMATION:
ACTION NUMBER: 008
ACTION: EPA SURVEILLANCE ACTION
DATE ACHIEVED: 11/13/75
PENALTY:$0

ACTION INFORMATION:
ACTION NUMBER: 009
ACTION: EPA SURVEILLANCE ACTION
DATE ACHIEVED: 09/13/76
PENALTY:$0

ACTION INFORMATION:
ACTION NUMBER: 010
ACTION: EPA ABATEMENT ORDER ISSUED
DATE ACHIEVED: 10/01/76
PENALTY:$0

ACTION INFORMATION:
ACTION NUMBER: 011
ACTION: CONFERENCE RQST
DATE ACHIEVED: 10/13/76
PENALTY:$0

ACTION INFORMATION:
ACTION NUMBER: 012
ACTION: GENERAL ACTION TYPE SPECIFIED BY COMMENTS
DATE ACHIEVED: 12/07/76
PENALTY:$0

ACTION INFORMATION:
ACTION NUMBER: 013
ACTION: EPA ABATEMENT ORDER ISSUED
DATE ACHIEVED: 04/12/77
PENALTY:$0

ACTION INFORMATION:
ACTION NUMBER: 014
ACTION: WTHDR ORD 60227
DATE ACHIEVED: 03/27/79
PENALTY:$0

ACTION INFORMATION:
ACTION NUMBER: 015
ACTION: STATE ORDER ISSUED
DATE ACHIEVED: 08/08/80
PENALTY:$0

ACTION INFORMATION:
ACTION NUMBER: 016
ACTION: EPA SURVEILLANCE ACTION
DATE ACHIEVED: 05/31/78
PENALTY:$0

POLLUTANT INFORMATION:
POLLUTANT:NITROGEN DIOXIDE
COMPLIANCE: IN COMPLIANCE - INSPECTION
ATTAINMENT/NONATTAINMENT INDICATOR: ATTAINMENT

POLLUTANT INFORMATION:
POLLUTANT:TOTAL PARTICULATE MATTER
COMPLIANCE: IN COMPLIANCE - INSPECTION
ATTAINMENT/NONATTAINMENT INDICATOR: ATTAINMENT

POLLUTANT INFORMATION:
POLLUTANT:SULFUR DIOXIDE
COMPLIANCE: IN COMPLIANCE - INSPECTION
ATTAINMENT/NONATTAINMENT INDICATOR: ATTAINMENT

POLLUTANT INFORMATION:
POLLUTANT:VOLATILE ORGANIC COMPOUNDS
COMPLIANCE: IN COMPLIANCE - INSPECTION
ATTAINMENT/NONATTAINMENT INDICATOR: NONATTAINMENT

ACTION INFORMATION:
ACTION NUMBER: 001
ACTION: PRE-APPLICATION CONFERENCE

DATE ACHIEVED: 07/01/77
PENALTY:$0

ACTION INFORMATION:
ACTION NUMBER: 002
ACTION: INSPECTION BY STATE
DATE ACHIEVED: 06/25/85
PENALTY:$0

ACTION INFORMATION:
ACTION NUMBER: 003
ACTION: INSPECTION BY STATE
DATE ACHIEVED: 06/25/85
PENALTY:$0

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AIRS: Aerometric Information Reporting System

LAST-UPDATE: September, 1995

VISTA-NO: 005618296

DONNER HANNA COKECORP
ABBY & MYSTIC STS
BUFFALO NY 14220

FACILITY-ID: 00461

STATE-REGIST-NO: 1402000447

AIRS-ID: 3602900461

SIC: MFG-BLAST FURNACES & STEEL MILLS

AIR QUALITY CONTROL REGION: 162

OPERATING STATUS: PERMANENTLY CLOSED

ACTION INFORMATION:
ACTION NUMBER: 000
PENALTY:$0

NSPS

POLLUTANT INFORMATION:
POLLUTANT:CARBON MONOXIDE
COMPLIANCE: IN COMPLIANCE - SHUT DOWN
ATTAINMENT/NONATTAINMENT INDICATOR: NONATTAINMENT

POLLUTANT INFORMATION:
POLLUTANT:NITROGEN DIOXIDE
COMPLIANCE: IN COMPLIANCE - SHUT DOWN
ATTAINMENT/NONATTAINMENT INDICATOR: ATTAINMENT

POLLUTANT INFORMATION:
POLLUTANT:TOTAL PARTICULATE MATTER
COMPLIANCE: IN COMPLIANCE - SHUT DOWN
ATTAINMENT/NONATTAINMENT INDICATOR: NONATTAINMENT

POLLUTANT INFORMATION:
POLLUTANT:SULFUR DIOXIDE
COMPLIANCE: IN COMPLIANCE - SHUT DOWN

POLLUTANT INFORMATION:
POLLUTANT:VOLATILE ORGANIC COMPOUNDS
COMPLIANCE: IN COMPLIANCE - SHUT DOWN
ATTAINMENT/NONATTAINMENT INDICATOR: NONATTAINMENT

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AIRS: Aerometric Information Reporting System

LAST-UPDATE: September, 1995

VISTA-NO: 000186571

EPA-ID: NYD000818724

HANNA FURNACE
FUHRMAN BLVD
BUFFALO NY 14240

FACILITY-ID: 00122

STATE-REGIST-NO: 1402000684

AIRS-ID: 3602900122

SIC: MFG-BLAST FURNACES & STEEL MILLS

AIR QUALITY CONTROL REGION: 162

OPERATING STATUS: PERMANENTLY CLOSED

SIP SOURCE

POLLUTANT INFORMATION:
POLLUTANT:CARBON MONOXIDE
COMPLIANCE: IN COMPLIANCE - SHUT DOWN
ATTAINMENT/NONATTAINMENT INDICATOR: ATTAINMENT

POLLUTANT INFORMATION:
POLLUTANT:NITROGEN DIOXIDE
COMPLIANCE: IN COMPLIANCE - SHUT DOWN
ATTAINMENT/NONATTAINMENT INDICATOR: ATTAINMENT

POLLUTANT INFORMATION:
POLLUTANT:TOTAL PARTICULATE MATTER
COMPLIANCE: IN COMPLIANCE - SHUT DOWN
ATTAINMENT/NONATTAINMENT INDICATOR: NONATTAINMENT

POLLUTANT INFORMATION:
POLLUTANT:SULFUR DIOXIDE
COMPLIANCE: IN COMPLIANCE - SHUT DOWN

POLLUTANT INFORMATION:
POLLUTANT:VOLATILE ORGANIC COMPOUNDS
COMPLIANCE: IN COMPLIANCE - SHUT DOWN
ATTAINMENT/NONATTAINMENT INDICATOR: NONATTAINMENT

ACTION INFORMATION:
ACTION NUMBER: 001
ACTION: 114 LETTER SENT
DATE ACHIEVED: 09/04/74

PENALTY:$0

ACTION INFORMATION:
ACTION NUMBER: 003
ACTION: EPA ABATEMENT ORDER ISSUED
DATE ACHIEVED: 10/15/74
PENALTY:$0

ACTION INFORMATION:
ACTION NUMBER: 004
ACTION: EPA NOTICE OF VIOLATION
DATE ACHIEVED: 12/28/76
PENALTY:$0

ACTION INFORMATION:
ACTION NUMBER: 005
ACTION: HEARING REQUEST
DATE ACHIEVED: 02/08/77
PENALTY:$0

ACTION INFORMATION:
ACTION NUMBER: 006
ACTION: EPA SOURCE INSPECTION
DATE ACHIEVED: 01/28/77
PENALTY:$0

ACTION INFORMATION:
ACTION NUMBER: 007
ACTION: EPA SURVEILLANCE ACTION
DATE ACHIEVED: 05/21/77
PENALTY:$0

ACTION INFORMATION:
ACTION NUMBER: 008
ACTION: 114 LETTER SENT
DATE ACHIEVED: 07/12/77
PENALTY:$0

ACTION INFORMATION:
ACTION NUMBER: 009
ACTION: 114 RESPONSE DUE
DATE ACHIEVED: 08/04/77
PENALTY:$0

ACTION INFORMATION:
ACTION NUMBER: 010
ACTION: VISIBLE EMISSIONS EVALUATION
DATE ACHIEVED: 11/30/78
PENALTY:$0

ACTION INFORMATION:
ACTION NUMBER: 011
ACTION: 114 LETTER SENT
DATE ACHIEVED: 03/06/80
PENALTY:$0

ACTION INFORMATION:
ACTION NUMBER: 012
ACTION: 114 RESPONSE DUE
DATE ACHIEVED: 04/02/80
PENALTY:$0

ACTION INFORMATION:
ACTION NUMBER: 013
ACTION: STATE ORDER ISSUED
DATE ACHIEVED: 05/30/80
PENALTY:$0

ACTION INFORMATION:
ACTION NUMBER: 020
ACTION: FINAL COMPLIANCE
DATE ACHIEVED: 06/01/83
PENALTY:$0

ACTION INFORMATION:
ACTION NUMBER: 022
ACTION: INSPECTION BY STATE
DATE ACHIEVED: 12/06/82
PENALTY:$0

ACTION INFORMATION:
ACTION NUMBER: 023
ACTION: INSPECTION BY STATE
DATE ACHIEVED: 12/06/82
PENALTY:$0

LEVEL 1 - 12 OF 40 DOCUMENTS

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NO FURTHER REMEDIAL ACTION PLANNED (NFRAP)

TAPE-DATE: April, 1997

EPA-ID: NYD002110971

VISTA-NO: 227002181

DONNER-HANNA COKE
ABBY & MYSTIC STS
BUFFALO NY 14220

County: ERIE

County-Code: 029

Latitude: 4251057

Longitude: 07850198

EPA-Region: 02

Congress-Distr: 37

Federal-Facility: NO

Ownership: OTHER

SMSA-Info: BUFFALO, NY

NPL-Status: IS NOT CURRENTLY NOR WAS FORMERLY ON THE PROPOSED OR FINAL NPL. INCLUDES UNANTICIPATED REMOVALS OCCURRING AT A LOCATION NOT PREVIOUSLY IDENTIFIED AS A CERCLIS SITE.

Prop-NPL-Upd-No: 00

Final-NPL-Upd-No: 00

USGS-Hydro-Loc: 04120103

* * * * * * * * OPERABLE UNIT/EVENT INFORMATION * * * * * * * *

Oper-Unit-Info:
Operable Unit: SITE EVALUATION/DISPOSITION

Event: DISCOVERY
Actual Compl. Date: 06/01/81

Event: PRELIMINARY ASSESSMENT
Actual Compl. Date: 09/01/84
Action Priority Level: LOWER

Event: SCREENING SITE INSPECTION
Actual Start Date: 11/26/90

Actual Compl. Date: 02/14/91
Action Priority Level: NO FURTHER REMEDIAL ACTION PLANNED

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NO FURTHER REMEDIAL ACTION PLANNED (NFRAP)

TAPE-DATE: April, 1997

EPA-ID: NYD002103844

VISTA-NO: 227002192

HANNA FURNANCE
1818 FUHRMANN BLVD
BUFFALO NY 14203

County: ERIE

County-Code: 029

Latitude: 4283344

Longitude: 07885445

EPA-Region: 02

Congress-Distr: 37

Federal-Facility: NO

Ownership: OTHER

SMSA-Info: BUFFALO, NY

Description: SITE 30 ACRE WAS OPERATION THAT BEGAN IN 1902 & STOPPED PRODIN 1982. BEGIN 1930 WASTE BY-PROD FROM THE BLAST FURN STOCKPILED ON SITE. (FLUE ASH, FILTER CAKE).214,000 TON/YR GEN MAJORITY OF IT TRANSPORTED. CONTAINS NON HAZARDOUS ALUMINUM,SIL

NPL-Status: IS NOT CURRENTLY NOR WAS FORMERLY ON THE PROPOSED OR FINAL NPL. INCLUDES UNANTICIPATED REMOVALS OCCURRING AT A LOCATION NOT PREVIOUSLY IDENTIFIED AS A CERCLIS SITE.

USGS-Hydro-Loc: 04120103

* * * * * * * * OPERABLE UNIT/EVENT INFORMATION * * * * * * * *

Oper-Unit-Info:
Operable Unit: SITE EVALUATION/DISPOSITION

Event: DISCOVERY
Actual Compl. Date: 04/15/80

Event: SCREENING SITE INSPECTION
Actual Start Date: 09/19/86
Actual Compl. Date: 09/29/86
Action Priority Level: NO FURTHER REMEDIAL ACTION PLANNED

:vent: PRELIMINARY ASSESSMENT
ıctual Compl. Date: 09/29/86
Action Priority Level: LOWER

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DOCKETS: Civil and Judicial Actions (EPADKT)

CASE-NO: 02-77-0007

CASE-NAME: DONNER-HANNA COKE CO

FILE-DATE: May 24, 1977

CONCLUSION-DATE: February 12, 1979

JUDICIAL-DISTRICT: West

COURT-DOCKET:

FEDERAL-PENALTY: $ 0

RECOVERY-AWARDED: NOT AVAILABLE NOT AVAILABLE

DEFENDANT-INFO:

DONNER-HANNA COKE CO.

SITE-INFO:

VISTA-NO: 231000540
EPA-ID: NYD002110971
DONNER-HANNA COKE JOINT VENTUR
ABBY & MYSTIC STS
BUFFALO, NY 14220

LAW-INFO:

LAW: Clean Air Act
SECTION: 110
VIOLATION: State implementation plan
POLLUTANT: Particulate Matter

Copyright 1997 VISTA Information Solutions, Inc.
DOCKETS: Civil and Judicial Actions (EPADKT)

CASE-NO: 02-78-0017

CASE-NAME: HANNA FURNACE

FILE-DATE: April 05, 1979

CONCLUSION-DATE: June 11, 1980

JUDICIAL-DISTRICT: West

COURT-DOCKET:

FEDERAL-PENALTY: $ 0

RECOVERY-AWARDED: NOT AVAILABLE NOT AVAILABLE

DEFENDANT-INFO:

HANNA FURNACE

SITE-INFO:

VISTA-NO: 231000567
EPA-ID: NYD002103844
HANNA FURNACE CORPORATION
1299 UNION ROAD
BUFFALO, NY 14240

LAW-INFO:

LAW: Clean Air Act
SECTION: 110
VIOLATION: State implementation plan
POLLUTANT: Particulate Matter

LEVEL 1 - 17 OF 40 DOCUMENTS

Copyright 1995 VISTA Information Solutions, Inc.
Facility Index System (FINDS)

EPA-ID: NYD002110971

VISTA-NO: 000125147

DONNER-HANNA COKE JOINT VENTUR
ABBY & MYSTIC STS
BUFFALO, NY 14220

LAST-UPDATE: September 16, 1993

EPA-REGION: 02

COUNTY: ERIE

FEDERAL-FACILITY: Unknown

SIC-CODES:
3312
3312
3312
3312
3312
3312

INDIAN-LAND: Unknown

AGENCY-ID:

UNKNOWN AGENCY ID NUMBER:

HWDMS AGENCY ID NUMBER: NYD002110971

PCS/NPDES AGENCY ID NUMBER: NY0003310

AFS/AIRS AGENCY ID NUMBER: 3602900003

AFS/AIRS AGENCY ID NUMBER: 3602990003

CERCLIS AGENCY ID NUMBER: NYD002110971

DOCKETS AGENCY ID NUMBER: 02-77-0007

CICIS AGENCY ID NUMBER: 004008L

LEVEL 1 - 18 OF 40 DOCUMENTS

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Facility Index System (FINDS)

EPA-ID: NYD987000734

VISTA-NO: 005224266

DONNER HANNA COKE JOINT VENTURE
S PARK STATION
BUFFALO, NY 14220

AST-UPDATE: January 03, 1994

EPA-REGION: 02

OUNTY: ERIE

FEDERAL-FACILITY: Unknown

INDIAN-LAND: Unknown

GENCY-ID:

UNKNOWN AGENCY ID NUMBER:

TTS/NCDB AGENCY ID NUMBER: I02#198708115002 1

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Resource Conservation and Recovery Information System (RCRIS)

EPA ID: NYD002110971
FACILITY EPA ID: N/A
VISTA NO: 229262346

DONNER-HANNA COKE JOINT VENTURE
ABBY & MYSTIC STS
EDWIN HARTMAN SR., SUPT. NY 14220

AST UPDATE: April, 1997

GENERATOR TYPE: LARGE QUANTITY GENERATOR

* * * * * * * * RCRA SUMMARY INFORMATION * * * * * * * *

ACTIVITIES:

ANDLER IS A VERIFIED, FULLY REGULATED, GENERATOR

* * * * * * * * GENERAL FACILITY INFORMATION * * * * * * * *

COUNTY: NY029- ERIE

EXISTENCE DATE: 29/12/1920

PREVIOUS EPA ID: N/A

PA REGION: 02

AILING ADDRESS:

290 ABBY STREET
BUFFALO NY 14220

URRENT OWNER:

EPURBLIC STEEL CORPORATION&HANNA FURNAC
.O. BOX 6778
CLEVELAND , OH 44101
(216) 622-5000

CURRENT OPERATOR:

ONNER-HANNA COKE JOINT VENTURE
OX A
OPERCITY , NY 99999

DONNER-HANNA COKE JOINT VENTURE VISTA NO: 229262346

(716) 822-1600

IC CODE:

312 - MFG-BLAST FURNACES & STEEL MILLS (primary)

* * * * * * * * NOTIFICATION LETTERS FILED * * * * * * * *

RA Section 3010(a) requires hazardous waste handlers (generators, transporters of TSD operators) to file a notification with the EPA. The following summarizes the information provided in the handler's notification form 8700-12.

ate of Notification Letter: August 18,80

ASTE ACTIVITIES FOUND ON SITE:

LARGE QUANTITY GENERATOR
NOT A TRANSPORTER, UNVERIFIED
OT A TSD, UNVERIFIED
OT A BURNER/BLENDER, UNVERIFIED
HANDLER IS ENGAGED IN RECYCLING HAZ. WASTE - NOT A RECYCLER,UNVERIFED

ONTACT INFORMATION:

KEVIN D MAHAR , ENV CONT MGR
BBY & MYSTIC STS
OWIN HARTMAN SR., SUPT. , NY 14220
(716) 822-1600

* * * * * * * * PART A - APPLICATION * * * * * * * *

RCRA Section 3005 requires every owner or operator of a TSD facility to obtain a ermit. Those facilities in operation prior to November 19, 1980 were permitted o continue operating on an interim basis if they filed a Part A application. The following summarizes the information provided in the handler's Part A Permit Application.

Date of Part A Application: November 19,80

ASTE ACTIVITIES FILED:

NOT A GENERATOR, UNVERIFIED
OT A TRANSPORTER, UNVERIFIED
OT A TSD, UNVERIFIED
NOT A BURNER/BLENDER, UNVERIFIED
ANDLER IS ENGAGED IN RECYCLING HAZ. WASTE - NOT A RECYCLER,UNVERIFED

PROCESSES FILED:

ROCESS TYPE: S02: TANK STORAGE
nspection Results : 20000.000 gallons
SUBMITTED ON PART A, SUBSEQUENTLY VERIFIED AS NON-EXISTING

ROCESS TYPE: S04: SURFACE IMPOUNDMENT STORAGE
Inspection Results : 15000.000 gallons

SUBMITTED ON PART A, SUBSEQUENTLY VERIFIED AS NON-EXISTING

PROCESS TYPE: T01: TANK TREATMENT
Inspection Results : 10000.000 gallons per day
UBMITTED ON PART A, SUBSEQUENTLY VERIFIED AS NON-EXISTING

PROCESS TYPE: T04: OTHER
Inspection Results : 5000.000 gallons per day
UBMITTED ON PART A, SUBSEQUENTLY VERIFIED AS NON-EXISTING

PROCESS TYPE: S02: TANK STORAGE
esign Capacity : 20000.000 gallons
UBMITTED ON PART A, UNVERIFIED

PROCESS TYPE: S04: SURFACE IMPOUNDMENT STORAGE
esign Capacity : 15000.000 gallons
SUBMITTED ON PART A, UNVERIFIED

ROCESS TYPE: T01: TANK TREATMENT
esign Capacity : 10000.000 gallons per day
SUBMITTED ON PART A, UNVERIFIED

ROCESS TYPE: T04: OTHER
Design Capacity : 5000.000 gallons per day
SUBMITTED ON PART A, UNVERIFIED

CONTACT INFORMATION:

EVIN D MAHAR , ENV CONT MGR
BBY & MYSTIC STS
EDWIN HARTMAN SR., SUPT. , NY 14220
(716) 822-1600

* * * * * * * * * PERMIT ACTIVITY INFORMATION * * * * * * * * *

his section summarizes RCRA permit and/or closure events for each TSD process at the facility.

EVENT: P1

Date	Agency	Event
ovember 1,19	EPA	

,NYD00211

Name:PROCESS: S04-SURFACE IMPOUNDMENT STORAGE,Gallons, 15000.000, 1
rocess Commercial Status: N/A
Operating Status: Protective Filer
Legal Status: Never Regulated as a TSD
tatus Effective Date: November 19,1980
,NYD00211

DONNER-HANNA COKE JOINT VENTURE VISTA NO: 229262346

Name:PROCESS: S02-TANK STORAGE,Gallons, 20000.000, 1
rocess Commercial Status: N/A
Operating Status: Protective Filer
Legal Status: Never Regulated as a TSD
tatus Effective Date: November 19,1980
,NYD00211

Name:PROCESS: T04-OTHER TREATMENT,Gallons per Day, 5000.000, 1
rocess Commercial Status: N/A
Operating Status: Protective Filer
Legal Status: Never Regulated as a TSD
tatus Effective Date: November 19,1980
,NYD00211

Name:PROCESS: T01-TANK TREATMENT,Gallons per Day, 10000.000, 1
rocess Commercial Status: N/A
Operating Status: Protective Filer
Legal Status: Never Regulated as a TSD
tatus Effective Date: November 19,1980

* * * * * * * * EPA INSPECTIONS * * * * * * * *

The EPA inspects facilities to confirm the hazardous waste activities that are listed in Notification letters and Part A applications. The following reflects the findings of such inspections.

INSPECTION DATE: December 31,79

ASTE ACTIVITIES FOUND ON SITE:

LARGE QUANTITY GENERATOR
OT A TRANSPORTER, UNVERIFIED
NOT A TSD, UNVERIFIED
NOT A BURNER/BLENDER, UNVERIFIED
ANDLER IS ENGAGED IN RECYCLING HAZ. WASTE - NOT A RECYCLER,UNVERIFED

PROCESSES FOUND ON SITE:

ROCESS TYPE: S02: TANK STORAGE
Inspection Results : 20000.000 gallons
SUBMITTED ON PART A, SUBSEQUENTLY VERIFIED AS NON-EXISTING

ROCESS TYPE: S04: SURFACE IMPOUNDMENT STORAGE
Inspection Results : 15000.000 gallons
SUBMITTED ON PART A, SUBSEQUENTLY VERIFIED AS NON-EXISTING

PROCESS TYPE: T01: TANK TREATMENT
Inspection Results : 10000.000 gallons per day
UBMITTED ON PART A, SUBSEQUENTLY VERIFIED AS NON-EXISTING

PROCESS TYPE: T04: OTHER
nspection Results : 5000.000 gallons per day
UBMITTED ON PART A, SUBSEQUENTLY VERIFIED AS NON-EXISTING

LEVEL 1 - 30 OF 40 DOCUMENTS

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Resource Conservation and Recovery Information System (RCRIS)

EPA ID: NYD000818724
FACILITY EPA ID: N/A
VISTA NO: 229261049

THE HANNA FURNACE CORPORATION
1818 FUHRMAN BLVD
BUFFALO NY 14203

LAST UPDATE: April, 1997

GENERATOR TYPE: LARGE QUANTITY GENERATOR

* * * * * * * * RCRA SUMMARY INFORMATION * * * * * * * *

ACTIVITIES:

ANDLER IS A VERIFIED, FULLY REGULATED, GENERATOR

* * * * * * * * GENERAL FACILITY INFORMATION * * * * * * * *

COUNTY: NY029- ERIE

EXISTENCE DATE: N/A

PREVIOUS EPA ID: N/A

EPA REGION: 02

AILING ADDRESS:

BOX 1207
BUFFALO NY 14240

CURRENT OWNER:

ATIONAL STEEL CORPORATION

* * * * * * * * NOTIFICATION LETTERS FILED * * * * * * * *

CRA Section 3010(a) requires hazardous waste handlers (generators, transporters of TSD operators) to file a notification with the EPA. The following summarizes the information provided in the handler's notification form 8700-12.

ate of Notification Letter: August 18,80

THE HANNA FURNACE CORPORATION VISTA NO: 229261049

WASTE ACTIVITIES FOUND ON SITE:

LARGE QUANTITY GENERATOR
NOT A TRANSPORTER, UNVERIFIED
NOT A TSD, UNVERIFIED
NOT A BURNER/BLENDER, UNVERIFIED
HANDLER IS ENGAGED IN RECYCLING HAZ. WASTE - NOT A RECYCLER,UNVERIFED

CONTACT INFORMATION:

THEODORE M FRAZELL , VP & GEN MG
318 FUHRMAN BLVD
BUFFALO , NY 14203
(716) 827-9322

LEVEL 1 - 32 OF 40 DOCUMENTS

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Resource Conservation and Recovery Information System (RCRIS)

EPA ID: NYD000813402
FACILITY EPA ID: N/A
VISTA NO: 229260982

REPUBLIC STEEL BUFFALO DISTRIC LTV
HOPKINS & MARILLA STS
BUFFALO NY 14220

AST UPDATE: April, 1997

GENERATOR TYPE: NOT A GENERATOR, VERIFIED

* * * * * * * * GENERAL FACILITY INFORMATION * * * * * * * *

COUNTY: NY029- ERIE

EXISTENCE DATE: 19/11/1980

REVIOUS EPA ID: N/A

PA REGION: 02

AILING ADDRESS:

O BOX 6
BUFFALO NY 14240

URRENT OWNER:

EPUBLIC STEEL CORP
O BOX 6778
CLEVELAND , OH 44101
(216) 622-5000

URRENT OPERATOR:

LARENCE A HACKETT INC
O BOX 130
OPERCITY , NY 99999
(716) 692-8300

IC CODE:

312 - MFG-BLAST FURNACES & STEEL MILLS (primary)

REPUBLIC STEEL BUFFALO DISTRIC LTV VISTA NO: 229260982

* * * * * * * * NOTIFICATION LETTERS FILED * * * * * * * *

RCRA Section 3010(a) requires hazardous waste handlers (generators, transporters of TSD operators) to file a notification with the EPA. The following summarizes the information provided in the handler's notification form 8700-12.

Date of Notification Letter: August 18,80

ASTE ACTIVITIES FOUND ON SITE:

NOT A GENERATOR, VERIFIED
OT A TRANSPORTER, UNVERIFIED
.SD
NOT A BURNER/BLENDER, UNVERIFIED
ANDLER IS ENGAGED IN RECYCLING HAZ. WASTE - NOT A RECYCLER,UNVERIFED

CONTACT INFORMATION:

OHN POTWOR , SUPT ENVIR CONT
HOPKINS & MARILLA STS
BUFFALO , NY 14220
716) 821-5410

* * * * * * * * PART A - APPLICATION * * * * * * * *

CRA Section 3005 requires every owner or operator of a TSD facility to obtain a permit. Those facilities in operation prior to November 19, 1980 were permitted to continue operating on an interim basis if they filed a Part A application. he following summarizes the information provided in the handler's Part A Permit Application.

ate of Part A Application: November 19,80

WASTE ACTIVITIES FILED:

OT A GENERATOR, UNVERIFIED
NOT A TRANSPORTER, UNVERIFIED
TSD
OT A BURNER/BLENDER, UNVERIFIED
ANDLER IS ENGAGED IN RECYCLING HAZ. WASTE - NOT A RECYCLER,UNVERIFED

PROCESSES FILED:

PROCESS TYPE: S03: WASTE PILE
Inspection Results : 60000.000 cubic yards
UBMITTED ON PART A, SUBSEQUENTLY VERIFIED AS NON-EXISTING

PROCESS TYPE: S03: WASTE PILE
Design Capacity : 60000.000 cubic yards
UBMITTED ON PART A, UNVERIFIED

CONTACT INFORMATION:

OHN POTWOR , SUPT ENVIR CONT
HOPKINS AND MARILLA STREETS

REPUBLIC STEEL BUFFALO DISTRIC LTV VISTA NO: 229260982

BUFFALO , NY 14220
716) 821-5410

* * * * * * * * PERMIT ACTIVITY INFORMATION * * * * * * * *

his section summarizes RCRA permit and/or closure events for each TSD process at the facility.

VENT: PERMIT1

EVENT: CLOSE1

Date	Agency	Event
November 1,19	EPA	
December 12,19	State	PLAN RECEIVED - CLOSURE
arch 3,19	State	PLAN APPROVED - CLOSURE
April 4,19	State	PLAN APPROVED - CLOSURE
eptember 09,19	EPA	
November 1,19	EPA	LOSS OF INTERIM STATUS

,NYD00081

Name:PROCESS: D80-LANDFILL,Acre-Feet, 85.000, 1
Process Commercial Status: N/A
perating Status: Protective Filer
Legal Status: Never Regulated as a TSD
Status Effective Date: December 11,1985
,NYD00081

Name:PROCESS: S03-WASTE PILE,Cubic Yards, 60000.000, 1
Process Commercial Status: N/A
perating Status: Protective Filer
Legal Status: Never Regulated as a TSD
Status Effective Date: November 19,1980

* * * * * * * * EPA INSPECTIONS * * * * * * * *

he EPA inspects facilities to confirm the hazardous waste activities that are listed in Notification letters and Part A applications. The following reflects the findings of such inspections.

NSPECTION DATE: September 23,91

ASTE ACTIVITIES FOUND ON SITE:

NOT A GENERATOR, VERIFIED

REPUBLIC STEEL BUFFALO DISTRIC LTV VISTA NO: 229260982

NOT A TRANSPORTER, UNVERIFIED
NOT A TSD, VERIFIED
NOT A BURNER/BLENDER, UNVERIFIED
HANDLER IS ENGAGED IN RECYCLING HAZ. WASTE - NOT A RECYCLER,UNVERIFED
TSD STATUS: DEFINITIONALLY EXCLUDED WASTES
TSD STATUS: NOT REGULATED,

PROCESSES FOUND ON SITE:

PROCESS TYPE: S03: WASTE PILE
Inspection Results : 60000.000 cubic yards
SUBMITTED ON PART A, SUBSEQUENTLY VERIFIED AS NON-EXISTING

LEVEL 1 - 36 OF 40 DOCUMENTS

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RCRA Corrective Action Record (CORRACTS)

EPA-ID: NYD000813402

VISTA NO: 216318944

REPUBLIC STEEL BUFFALO DISTRIC LTV
HOPKINS & MARILLA STS
BUFFALO NY 14220

AST UPDATE: December, 1996

EPA REGION: 02

XISTENCE DATE: 11/19/1980

WASTE RECEIPT: Verified to be non-commercial

OTIFICATION: Not a non-notifier

AND TYPE: Facility is not located on Indian land, additional information is not nown

LATITUDE: 4250200

ONGITUDE: 07850000

AILING ADDRESS:
O BOX 6
BUFFA NY 14240

ONTACT INFORMATION:
ART A DATA CONTACT
JOHN POTWORA SUPT ENVIR CONT
OPKINS AND MARILLA STREETS
UFFA NY 14220
(716) 821-5410

OTIFICATION DATA CONTACT
JOHN POTWORA SUPT ENVIR CONT
HOPKINS & MARILLA STS
UFFA NY 14220
716) 821-5410

WNER/OPERATOR:
URRENT OWNER
TYPE - PRIVATE
REPUBLIC STEEL CORP
O BOX 67
LEVELAND OH 44101
(216) 622-5000

URRENT OPERATOR
TYPE - PRIVATE

REPUBLIC STEEL BUFFALO DISTRIC LTV 216318944

CLARENCE A HACKETT INC
O BOX 1
NY
(716) 692-8300

IC CODE: 3312 - MFG-BLAST FURNACES & STEEL MILLS (primary)

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SWS: Solid Waste Sites

LAST-UPDATE: January ,1997

MARILLA STREET SLF (LTV)
1175 S. PARK AVE
BUFFALO NY VS E ERIE
ERIE

VISTA-NO: 5620453

GENCY-ID: 15S32

ERIFIED-INFO:
UFFALO
14220

WNER-INFO:
EPUBLIC STEEL CORP

ACILITY STATUS: INACTIVE

WASTE: OTHER

LEVEL 1 - 39 OF 40 DOCUMENTS

Copyright 1997 VISTA Information Solutions, Inc.
USTAST: Underground/Aboveground Storage Tanks

LAST-UPDATE: January ,1997

DONNER HANNA COKE CORP
BOX A SOUTH PARK STATION
BUFFALO NY VS E ERIE
ERIE

VISTA-NO: 1530140

.GENCY-ID: 9-1440

ITY:
JFFALO

ZIP:
1220

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