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Division of Hazardous Waste Remediation

Record of Decision

Diarsenol Co. - Kingsley Park Site

City of Buffalo, Erie County

I.D. Number 9-15-124

March 1994

New York State Department of Environmental Conservation

MARIO M. CUOMO, *Governor* LANGDON MARSH, *Acting Commissioner*

DECLARATION STATEMENT - RECORD OF DECISION

DIARSENOL COMPANY, KINGSLEY PARK
Inactive Hazardous Waste Site
City of Buffalo, Erie County, New York
Site No. 9-15-124

Statement of Purpose and Basis

This Record of Decision (ROD) presents the selected remedial action for the Diarsenol Company, Kingsley Park Inactive Hazardous Waste Disposal Site (Diarsenol) which was chosen in accordance with the New York State Environmental Conservation Law (ECL). The remedial program selected is not inconsistent with the National Oil and Hazardous Substances Pollution Contingency Plan of March 8, 1990 (40CFR300).

This decision is based upon the Administrative Record of the New York State Department of Environmental Conservation (NYSDEC) for Diarsenol and upon public input on the Proposed Remedial Action Plan (PRAP) presented by the NYSDEC. A bibliography of the documents included as a part of the Administrative Record is included in Appendix B.

Assessment of the Site

Actual or threatened releases of hazardous waste constituents from this site presented a potential threat to public health and the environment. This threat was addressed by the implementation of an Interim Remedial Measure (IRM) to remove contaminated soils. This ROD includes the installation and operation of a groundwater collection system to enhance the overall effectiveness of the IRM.

Description of Selected Remedy

Based upon the results of the IRM, the Remedial Investigation/Feasibility Study (RI/FS), and the criteria identified for evaluation of alternatives, the NYSDEC has selected a groundwater collection system for this site. This system will address the area of arsenic contaminated groundwater which exceeds New York State Drinking Water Standards.

The major elements of the selected remedy incorporate:

- The completion of the onsite and offsite soil removal Interim Remedial Measure completed in Spring 1992.

- Installation of a passive drain system to collect impacted groundwater from beneath the Park and discharge it to the Buffalo Sanitary Sewer System. The drain system will be designed to allow for periodic sampling and system inspection.

- Continued sampling of the site monitoring wells to assess the performance of the collection system.

New York State Department of Health Acceptance

The New York State Department of Health concurs with the remedy selected for this site as being protective of human health.

Declaration

The selected remedy is protective of human health and the environment, complies with State and Federal requirements that are legally applicable or relevant and appropriate to the remedial action to the extent practicable, and is cost effective. This remedy utilizes permanent solutions and alternative treatment or resource recovery technologies, to the maximum extent practicable, and satisfies the preference for remedies that reduce toxicity, mobility, or volume as a principal element.

March 31, 1994
Date

Ann Hill DeBarbieri
Deputy Commissioner

TABLE OF CONTENTS

RECORD OF DECISION

DIARSENOL COMPANY, KINGSLEY PARK

City of Buffalo, Erie County, New York

Site No. 9-15-124

March 1994

SECTION 1: SITE DESCRIPTION

The Diarsenol Company, Kingsley Park Site, Inactive Hazardous Waste Site Number 915124, is located in the City of Buffalo, Erie County, New York (Figure 1). The site is situated in an urban residential neighborhood and is bounded by Kingsley Street on the south, Riley Street on the north, and is east of Jefferson Avenue and west of Roehrer Avenue. Homes are located in close proximity to the Park along Riley Street and east of the Park on Kingsley Street. The site is approximately 2 acres in size (Figure 2). There are no nearby bodies of water and the site is basically flat with no more than one to two feet of local topographic relief.

During soil sampling conducted in the mid-1980's, arsenic contamination was detected. Follow-up sampling determined that shallow soils in the Park and in adjacent yards, as well as a localized area of deeper soils in the park, were contaminated with arsenic at levels which posed a potential health risk.

SECTION 2: SITE HISTORY

2.1: Operational/Disposal History

The Diarsenol Company was a pharmaceutical manufacturer which produced an arsenic based medication consisting of up to 31 percent arsenic. Diarsenol operated from 1925 until the early 1940s at the Kingsley Park location. From the 1940s until 1967, various owners occupied the site. In 1967, the City of Buffalo acquired the property and by 1972, all the Diarsenol buildings were removed and a public park and playground was in place.

It is suspected that off-specification products or unused raw materials were dumped behind the former building in a depression detected during the site investigation. A second possible explanation for the site contamination is that at the time of building demolition, material inside the structure was released to the environment and moved around during grading activities. Dump

2.2: Remedial History

The following is a chronology of the environmental investigations at the site:

- August 31, 1983: The Erie County Department of Environment and Planning collected six soil samples. Arsenic was detected at a maximum concentration of 87 parts per million (ppm). (Hazardous waste disposal was not confirmed.)

- December 11, 1986: NUS Corporation, working on behalf of the United States Environmental Protection Agency (USEPA), collected 13 soil samples with a maximum arsenic concentration of 656 ppm. (Hazardous waste disposal was not confirmed.)

- May and June 1989: Ecology and Environment (E&E), on behalf of the NYSDEC, collected 56 soil samples with a maximum arsenic concentration of 2,180 ppm. Two of the samples submitted to the laboratory for Extraction Procedure Toxicity testing (EP Tox) exceeded the regulatory maximum level of 5 ppm leachable arsenic, confirming the presence of hazardous waste.

- June 18, 1990: The New York State Department of Health (NYS DOH) took 26 soil samples from residential properties; maximum arsenic concentration of 400 ppm.

- July 26, 1990: NYS DOH collected 25 soil samples from residential properties; maximum arsenic concentration of 110 ppm.

- September 18, 1990: Engineering Science, Inc. (ES) (consultant to the NYSDEC) began a Remedial Investigation of the site and collected 25 soil samples, with a maximum detected arsenic concentration of 3,410 ppm.

- October and November 1990: ES conducted soil and groundwater sampling in the Park and in the surrounding neighborhood. One monitoring well was installed and 75 soil samples were collected and analyzed with a maximum arsenic concentration of 7,090 ppm and two samples exceeding EP Toxicity limits.

- December 1993: ES and the NYSDEC installed and sampled four monitoring wells, two on residential properties north of the Park and two just inside along the eastern fenceline of the Park.

As a result of the preliminary sampling results from the Engineering Science investigation reported in February 1991, the NYSDEC conducted an Interim Remedial Measure (IRM) at the Park from September 1991 to December 1991. The IRM consisted of the excavation and removal of arsenic contaminated soils to an approved disposal facility. A total of 9,568 tons of soil were classified as non-hazardous waste and 1,981 tons were disposed of as hazardous waste.

Upon completion of the removal action, the Park and surrounding properties were returned to original grade with clean fill and topsoil. Landscaping was conducted to return the area to as near its original condition as was feasible. Four shallow groundwater monitoring wells were installed, in addition to the well installed in November 1990 and all five wells were sampled several times. Four additional wells were installed in December 1993 to assess groundwater quality beneath properties surrounding the Park. This brought the total number of wells to nine.

SECTION 3: CURRENT STATUS

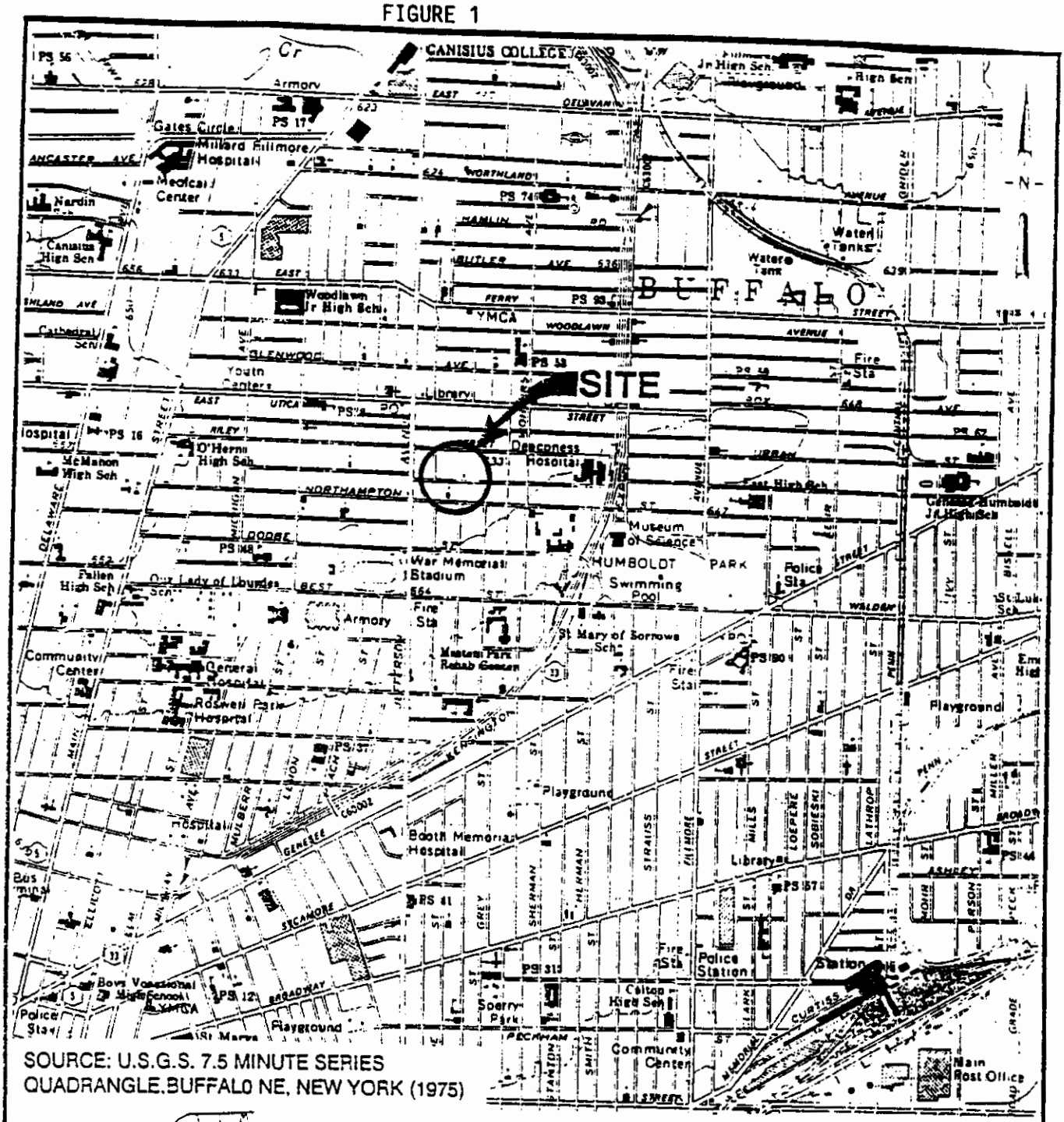
In response to a determination that the presence of hazardous waste at the Site presented a significant threat to human health, the NYSDEC has recently completed a Remedial Investigation/Feasibility Study (RI/FS).

3.1: Summary of the Remedial Investigation

The purpose of the RI was to define the nature and extent of any contamination resulting from previous activities at the site.

The RI was conducted in two phases. The first phase was conducted between September 1990 and February 1991, the second phase between June 1993 and January 1994. The results of the first phase of the investigation are presented in the February 1991 report titled "Diarsenol-Kingsley Park Final

FIGURE 1



SOURCE: U.S.G.S. 7.5 MINUTE SERIES
QUADRANGLE.BUFFALO NE, NEW YORK (1975)

QUADRANGLE LOCATION

SITE LOCATION MAP

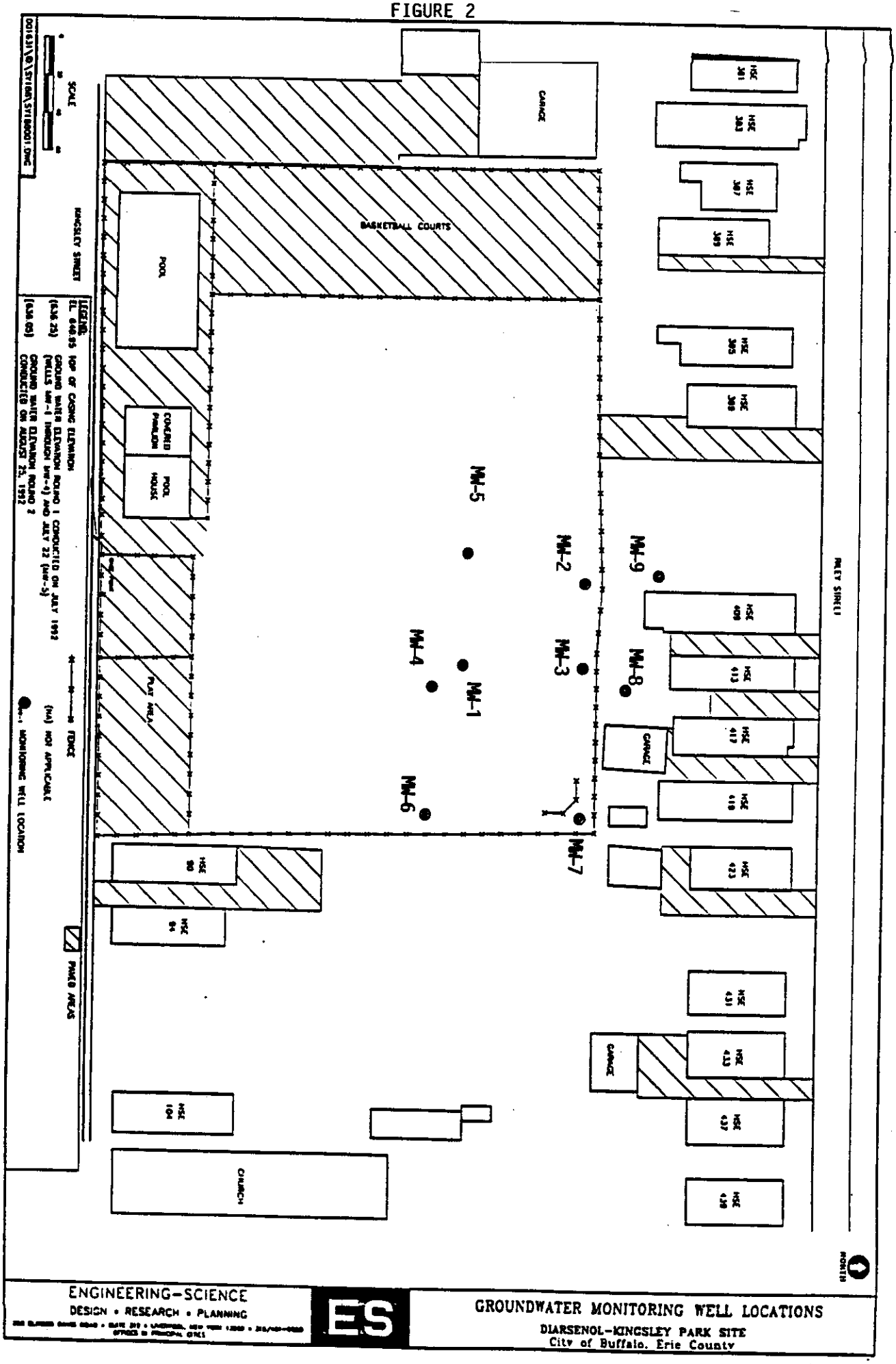
DIARSENOL COMPANY
KINGSLEY PARK SITE
BUFALO, NEW YORK

SCALE: 1" = 2,000'

2,000 0 2,000 FEET

ES ENGINEERING–SCIENCE

FIGURE 2



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GROUNDWATER MONITORING WELL LOCATIONS
DIARSENOL-KINGSLEY PARK SITE
City of Buffalo, Erie County

Interim Remedial Report" and the second phase results are presented in a report dated February 1994.

The RI activities consisted of the following:

- Magnetometer survey to identify any buried metal objects (ie.: drums, pipelines, tanks).
- Surface soil sampling and analysis at surveyed grid points in and around the Park.
- Borings to collect subsurface soil samples and characterize and classify the soils beneath the site.
- Installation of groundwater monitoring wells to test groundwater quality.

To determine which media (soil, groundwater, etc.) contained contamination at levels of concern, the analytical data obtained from the RI was compared to environmental Standards, Criteria, and Guidance (SCGs, presented in Section 5). Groundwater SCGs identified for the Diarsenol Company, Kingsley Park site were based on NYSDEC Ambient Water Quality Standards and Guidance Values. For the evaluation and interpretation of soil analytical results, NYSDEC soil cleanup guidelines for the protection of groundwater, background conditions, and risk-based remediation criteria were used to develop remediation goals.

Based upon the results of the RI, in comparison to the SCGs, certain areas and media of the site required remediation which was accomplished by the IRM (see Section 3.2). These media are summarized below. More complete information can be found in the RI Report.

Chemical concentrations are reported in parts per billion (ppb) and parts per million (ppm). For comparison purposes, SCGs are given for each medium.

The primary contaminant of concern at the site is arsenic. Arsenic is a metallic element which is found naturally in New York State soils at levels which range from 2 to 20 ppm. In urban and industrial areas and in areas where orchards were kept, elevated levels of arsenic are often found. Growers of apples and other fruit often used arsenic based pesticides to control insects. This sometimes resulted in significantly elevated arsenic levels in soils.

Arsenic is a toxic element which may be ingested, inhaled or absorbed through the skin. Of these possible exposure routes, oral ingestion was the most immediately threatening exposure route at this site.

Depending on the level and length of arsenic exposure, various symptoms may be displayed. Arsenic can irritate the skin, eyes, or lungs. Long term exposure may cause weakness, nausea, stomach pain, diarrhea, inflammation of the eyes, nose and throat or a variety of other symptoms.

There are no other contaminants of concern related to the disposal of hazardous waste at this site or the past activities conducted by the Diarsenol Company.

Section 3.3 below describes the types of human exposures that previously presented added health risks to persons at or around the site.

The Remedial Investigation identified contamination in two media, soil and groundwater. The levels and extent encountered are outlined below.

Soil

As a result of the IRM, all soils with arsenic above remedial goals were removed from the site and adjacent properties.

Before completion of the IRM, the most widespread contamination was limited to the upper one to two feet of soil and fill. Arsenic levels in these shallow soils ranged from 3.5 ppm to 3,410 ppm with an average value of 204 ppm. The highest arsenic concentrations were detected in soil borings at a depth of 1 to 4 feet. Concentrations ranged from 9 to 7,090 ppm, with an average concentration of 1225 ppm. Contamination decreased rapidly once the borings passed through the surface fill material.

Sediments

No sediments were found at the site.

Groundwater

Off-site groundwater underneath nearby residences was found to meet New York State drinking water and groundwater standards. Groundwater contamination exceeded the drinking water standard of 25 parts per billion (ppb) for arsenic in three of the on-site monitoring wells in the last round of sampling conducted in December 1993. Arsenic concentrations in these three wells ranged from 40 ppb to 3,600 ppb. (Table 1)

Surface Water

No surface water is present at the site.

Waste Materials

Although no drums or other obvious waste materials were found at the site, a vein of a yellow material, containing arsenic, was found several feet below the surface of the park during the soil removal. This material was excavated and removed from the Park. Generally, soil contamination was the primary concern at the site.

Air

Air monitoring was conducted during site activities but no site impacts on air quality were detected.

3.2 Interim Remedial Measures:

Interim Remedial Measures (IRMs) are conducted at sites when a source of contamination or an exposure pathway can be effectively addressed before completion of the RI/FS.

Based on the initial RI results, an IRM was conducted at the Park. The IRM was conducted from September 1991 until December 1991 and consisted of the excavation and removal of 11,549 tons of soil. Of this amount 9,568 tons were classified as non-hazardous and 1,981 tons were classified as hazardous.

TABLE 1

GROUNDWATER ANALYTICAL DATA

ANALYTICAL RESULTS - TOTAL AND DISOLVED ARSENIC IN PARTS PER BILLION (PPB)

Monitoring Well	Round 1:12/21/90		Round 2:07/16/92		Round 3:08/25/92		Round 4:10/09/92		Round 5:12/28/93		Round 6:02/17/94	
	Total	Disolved	Total	Disolved	Total	Disolved	Total	Disolved	Total	Disolved	Total	Disolved
MW-1	45	33	100	-	30	21	11	22	40	60	31	-
MW-2			15,000	-	26,000	7,500	4,900	3,300	3,600	2,600	1,600	-
MW-3			40	-	35	40	57	52	80	60	211	-
MW-4			6	-	9	<5	<5	<5	5	3	<3	-
MW-5			20	-	17	<5	<5	<5	6	4	5	-
MW-6									4	<3	4	-
MW-7									<3	<3	4	-
MW-8									<3	<3	<3	-
MW-9									10	10	6	-
Sump-001									10	8		

\- Indicates that sample was not analyzed for desolved arsenic.

< Indicates that arsenic was not detected at the indicated value.

(1) Wells 2 thru 5 were drilled after Round 1 sampling.

(2) Wells 6 thru 9 were drilled after Round 4 sampling.

(3) New York State Drinking Water Standard for arsenic is 25 ppb.

Over most of the Park and in backyards which showed contamination, an average of one to two feet of soil were removed and tested. In the north-central area of the Park, an area of higher and deeper contamination was defined and the excavation was conducted to a depth of approximately ten feet.

After the completion of the removal action, clean backfill and topsoil were replaced and landscaping was done to return the Park to its original condition.

3.3 Summary of Human Exposure Pathways:

An exposure pathway is the process by which an individual comes into contact with a contaminant. The five elements of an exposure pathway are 1) the source of contamination; 2) the environmental media and transport mechanisms; 3) the point of exposure; 4) the route of exposure; and 5) the receptor population. These elements of an exposure pathway may be based on past, present, or future events.

There are no longer any completed pathways of human exposure at the site. Although arsenic contaminated groundwater exists under a small portion of the site, the proposed remedy, in conjunction with the clean soil between the surface and the groundwater prevent contact with the groundwater.

Before the IRM soil removal, there was the potential for direct contact with contaminated media. Arsenic contaminated soil was present at the surface in both the Park and the in surrounding yards. An exposure pathway, as described above, could have existed when persons using the Park came into contact with these contaminated soils.

3.4 Summary of Environmental Exposure Pathways:

No significant environmental exposure pathways were documented. Due to the combination of the site's urban nature and its isolation from any surface water, no environmental impacts are anticipated.

SECTION 4: ENFORCEMENT STATUS

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

The NYSDEC and the City of Buffalo (current owner of the Park) entered into a Consent Order on April 4, 1991 (Index No. B9-0326-90). The Order obligates the City of Buffalo to implement a full remedial program and commits the City to pay 25% of all on-site costs incurred. All off-site costs, as well as 75% of on-site costs are being paid by 1986 Environmental Quality Bond Act (EQBA) funding.

SECTION 5: SUMMARY OF THE REMEDIATION GOALS

Goals for the remedial program were established through the remedy selection process stated in 6NYCRR 375-1.10. These goals were established under the overall goal of protecting human health and the environment and meeting all Standards, Criteria, and Guidance (SCGs).

At a minimum, the remedy selected should eliminate or mitigate all significant threats to public health and the environment presented by the hazardous waste disposed at the site through the proper application of scientific and engineering principles.

The goals selected for this site are:

- Eliminate significant contamination present within the soils on site.
- Eliminate the potential for direct human contact with the contaminated soils on site.
- Mitigate the impacts of contaminated groundwater to the environment.
- Prevent, to the extent practicable, migration of contaminants to groundwater.
- Provide for attainment of SCGs for groundwater quality at the limits of the area of concern (AOC).

SECTION 6: SUMMARY OF THE EVALUATION OF ALTERNATIVES

Completion of the IRM addressed soil contamination at the site. To determine if any further action is warranted, site conditions and potential remedial alternatives were evaluated in a report dated February 1994. A description of the alternatives follows.

6.1: Description of Alternatives

No Further Action

This alternative recognizes the remediation of the site completed under the previously completed IRM. It requires continued monitoring only, to evaluate the effectiveness of the remediation completed under the IRM.

The IRM achieved the remedial goals listed in Section 5, with the exception of meeting groundwater standards in a small section of the site. The goals were achieved through the removal of arsenic contaminated soils and the disposal of such soils at a secure landfill. In order to monitor the effectiveness of the IRM, two more groundwater sampling events, over a one year period, would be conducted.

Shallow Groundwater Collection

This alternative consists of a system of shallow groundwater collection trenches and pipes which would collect groundwater in areas where groundwater fails to meet standards. The water would drain by gravity through pipes to the sewer system for disposal. (Figures 3&4)

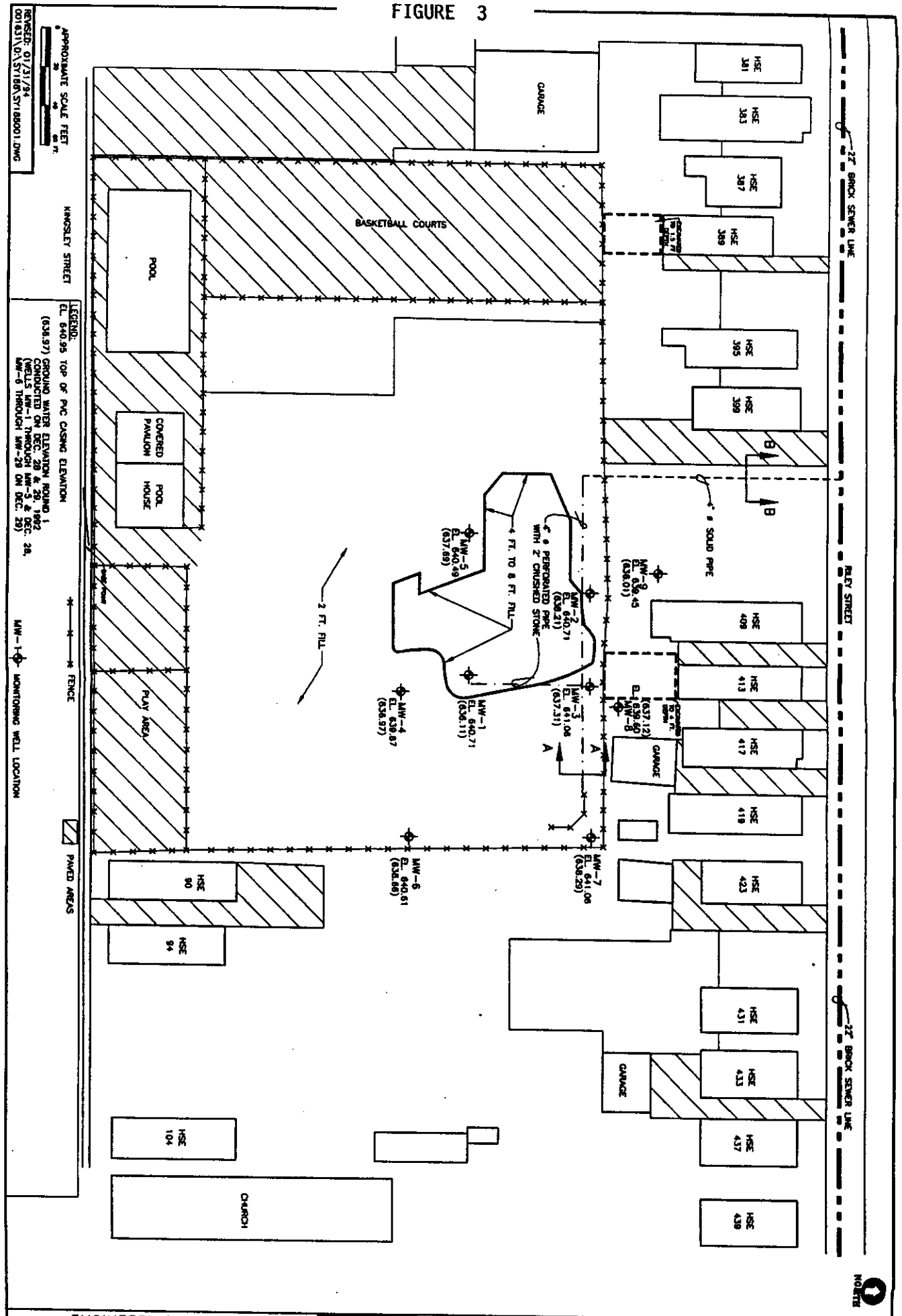
This alternative also includes continued monitoring of groundwater quality for one to five years. This time period is dependent upon the rate of improvement of groundwater quality.

This alternative would enhance the soil removal and cover completed during the IRM. It would afford an additional level of certainty with regard to contaminant removal and control.

6.2 Evaluation of Remedial Alternatives

Both the No Further Action and the Shallow Groundwater Collection System alternatives are protective of human health and the environment. With the removal of arsenic contaminated soil from the Park and

FIGURE 3



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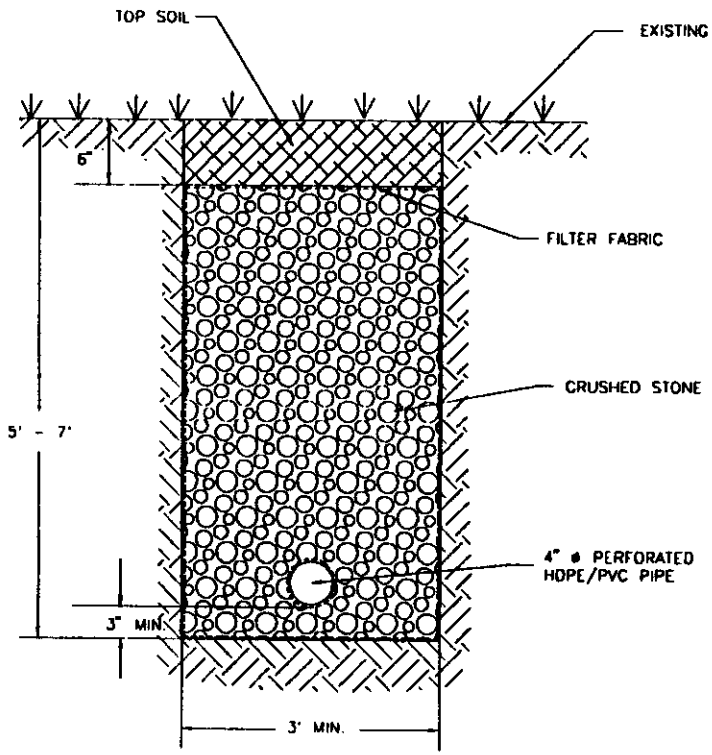
CONCEPTUAL SHALLOW SUBDRAIN SYSTEM LAYOUT
DIARSENOL-KINGSLEY PARK SITE
City of Buffalo, Erie County

FIGURE 4



A
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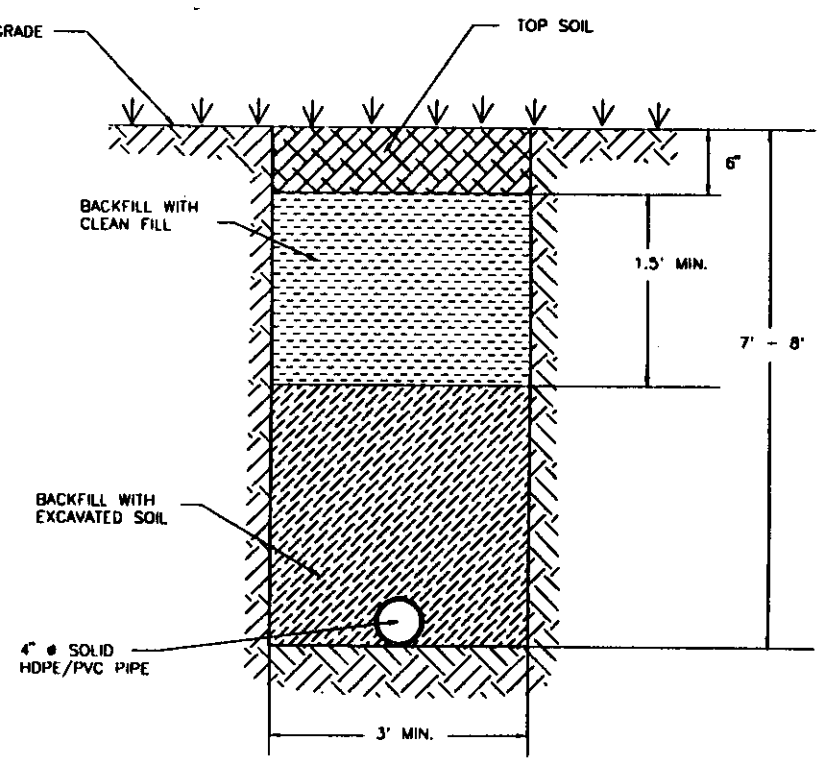
SUBDRAIN DETAIL
NOT TO SCALE



B
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TRANSMISSION LINE DETAIL
NOT TO SCALE

surrounding private yards, and the introduction of clean fill and topsoil to replace contaminated materials, the threat of direct contact has been eliminated.

Although groundwater in a localized area of the site contains arsenic at levels that exceed groundwater standards, the threat to human health and the environment is minimal due to the following factors:

- Groundwater at the site is perched on a very low permeability clay layer effectively isolating it from any impact on surrounding groundwater.
- There is no local use of groundwater as a drinking water source.
- The effected groundwater at the site is limited to a small area.
- A buffer of clean soil exists between the surface and the contaminated groundwater.
- The results of the investigation indicate that there is very little movement of site groundwater.
- The physical characteristics of the soils at the site make them a very low water producer, making the pumping of impacted groundwater impractical.

Nevertheless, enhancing the IRM by implementing the Shallow Groundwater Collection System alternative goes beyond the No Further Action alternative by directly addressing the groundwater contamination that is present. This is readily implementable, provides an overall greater degree of protectiveness, and would promote drainage of the clean fill brought to the site. This additional drainage may also help alleviate the muddy conditions at the surface that occasionally occur due to rainfall.

Therefore, the Shallow Groundwater Collection System alternative, in conjunction with the completed IRM, more completely attains the remedial goals for the site.

SECTION 7: SUMMARY OF THE SELECTED ALTERNATIVE

Based upon the results of the RI/FS, and the evaluation presented in Section 6, the NYSDEC is proposing that a groundwater collection system be constructed with continued monitoring of groundwater at the site.

This selection is based upon the results of the Interim Remedial Measure and RI/FS conducted at the site. The IRM consisted of:

- The removal and disposal of arsenic contaminated soils from the Park and impacted private yards adjacent to the Park.
- Backfilling and seeding of all excavated areas with clean fill and top soil.
- Installation of monitoring wells and sampling of groundwater to assure that drinking water SCGs are not exceeded at the site boundaries.

The Shallow Groundwater Collection System would enhance the IRM by including appropriate trench drains connected to the local sewer system, gravity drainage of the contaminated groundwater, and monitoring of groundwater quality.

This alternative is justified because it would result in the attainment of the Remedial Action Objectives as outlined in this document. This alternative is protective of human health and the environment, and addresses the localized area of groundwater contamination on-site. SCGs are already attained at the site boundaries, and the proposed collection system with continued monitoring would assure that this continues to be the case.

The cost of the IRM was $ 1,641,109. The cost of the Shallow Groundwater Collection system and monitoring will be approximately $48,000.

SECTION 8: HIGHLIGHTS OF COMMUNITY PARTICIPATION

During the course of the RI/FS and the Interim Remedial Measures conducted a the site, the public was involved through the use of mailings to a list of over 400 members of the public, and public meetings held by the Department to inform the public regarding major milestones or significant activities at Diarsenol.

The following is a partial list of the citizen participation activities conducted at the site:

Public Mailings

- April 2, 1990: Councilman Collins sent a letter to residents regarding 4/9/90 public meeting which NYSDEC was to attend.

- June 4, 1990: NYSDEC Fact Sheet and NYS DOH "Facts on Arsenic"

- June 14, 1990: Letter outlining planned NYS DOH sampling. Letter hand carried door-to-door.

- July 10, 1990: Letter presenting the results of the June 18th NYS DOH soil sampling.

- July 10, 1990: Fact sheet presented to Buffalo Common Council by M.L. Doster.

- July 20, 1990: NYS DOH distributed fact sheet to mailing list.

- August 24, 1990: Letter presenting the results of the July 26th NYS DOH/NYSDEC soil sampling.

- October 10, 1990: Letter to announce the start date of the Remedial Investigation.

- October 17, 1990: The above letter was circulated door-to-door in the immediate neighborhood of the Park.

- March 1991: Fact sheet and announcement of release of Interim Remedial Investigation Report and March 21st public meeting.

- May 6, 1991: Press release from NYSDEC on signing of Consent Order.

- July 12, 1991: NYSDEC Construction Services fact sheet to public regarding IRM.

- July 17, 1991: Public meeting announcement.

- August 22, 1991: Press release regarding award of IRM contract.
- September 1991 - December 1991: Eleven (11) status reports on the ongoing construction (IRM) activities were circulated in Kingsley Park neighborhood.

- February 20, 1992: Press release regarding substantial completion of IRM.

- April 20, 1992: Letter to citizens providing tentative final work schedule.

- August 14, 1992: Press release announcing the completion of the IRM cleanup.

- June 30, 1993: Fact Sheet and announcement of the planned installation of four additional wells.

- February 1, 1994: Announcement of the release of the PRAP and the upcoming public meeting on February 14, 1994.

Public Meetings

- April 9, 1990: Meeting to outline planned Remedial Investigation.

- July 16, 1990: Meeting held at Deaconess Hospital. Mr. Allen represented NYSDEC. NYS DOH circulated a fact sheet entitled "Kingsley Park Neighborhood Soil Sample Results, July 1990".

- March 21, 1991: Meeting to announce results of Interim Remedial Investigation and proposed IRM.

- July 24, 1991: Meeting regarding upcoming IRM work.

- February 14, 1994: Meeting to release Proposed Remedial Action Plan and outline the results of the Remedial Investigation and Feasibility Study.

APPENDIX A

Diarsenol Company, Kingsley Park
Responsiveness Summary

General Questions

Q1: How does the New York State Department of Environmental Conservation (NYSDEC) account for the initial increase in arsenic concentrations in several of the monitoring wells after the removal of the arsenic contaminated soil?

A: The excavation of soils removed the greatest levels of arsenic contamination from Kingsley Park and the surrounding yards. The coarse fill materials, which were used after the removal of contaminated soils, promoted the ponding of subsurface water inside the Park. This promoted contact of water with the low levels of arsenic in the deeper soils, which were disturbed during the removal, and resulted in the transfer of some of this arsenic to the groundwater. In subsequent sampling events the levels of arsenic in groundwater have shown a steady decline. This is to be expected as conditions at the Park stabilize. The remedy selected in the ROD will further accelerate the decline in arsenic concentrations.

Q1a: Has the clean-up solved the problem of the leaching characteristics (of arsenic)?

A: The soil removal IRM eliminated the threat posed by arsenic contaminated soils. The groundwater collection system will address any remaining problems from arsenic leaching into groundwater.

Q2: Is arsenic contaminated water leaving the Park?

A: The NYSDEC has installed wells around the area of arsenic contaminated groundwater in the Park. These wells have been sampled and the analysis shows that the water around the Park meets drinking water standards for arsenic. Very little water is actually flowing from the Park because the native soils are very clay and silt rich and do not allow water to flow through them easily. The selected remedy will collect the limited amount of water which is currently leaving the Park.

Q3: When water evaporates from the Park, does it put arsenic in the air?

A: No. The arsenic dissolved in the groundwater stays in the ground when the water evaporates.

Q4: Does the water seeping into local basements pose a threat to the residents and will the NYSDEC address it?

A: Water seeping into basements was sampled from one of the homes nearest the area of significant groundwater contamination in the Park. This water met drinking water standards. Furthermore, water from wells between the Park and local homes also met drinking water standards. While no direct action will be taken to fix leaking basements, implementation of the selected remedy may lower the local water level and reduce leaking into basements nearest the Park.

Q5: There is concern that contamination may have moved out of the Park during the soil removal. Could rain or wind have transported arsenic contamination across Kingsley Street while the IRM was going on?

A: Sampling was conducted throughout the removal action to make sure that no airborne transport occurred. After the completion of the removal the buildings between the park excavations and Kingsley Street were checked for contamination. Both of these showed that no contamination moved offsite as a result of the work done in the Park.

Q6: Were samples taken on Kingsley Street? There is concern about possible contamination across the street from the Park.

A: Several samples were taken during the RI/FS on Kingsley Street. Even before the Remedial Investigation the New York State Department of Health (NYS DOH) sampled across from the Park and the results detected arsenic below the clean-up level used for the Park and surrounding yards.

Q6a: Can people on Kingsley Street (or elsewhere) get test kits to sample their basements (for arsenic)?

A: We are not aware of any "home test kits" to analyze for arsenic.

Q7: When will Kingsley Park be opened to the public?

A: The NYSDEC now considers the Park safe for public use. The actions which have been described in the ROD are intended to accelerate the collection and drainage of groundwater and are not the result of any current threat the Park poses to the public.

Q8: Will the grass the City plants in the Park be safe for the children to play on?

A: Yes the grass will be safe from contamination because the contaminated soils were removed and replaced with clean fill and clean topsoil.

Q9: Can the NYSDEC take additional soil samples along Kingsley Street?

A: Soil samples were taken before and during the Remedial Investigation of the Kingsley Park site. Despite the lack of evidence of contamination on the south side of Kingsley, the DEC will consider collection and analysis of additional soil samples.

Q10: Why is the DEC only allowing 30 days for the public to comment on the Proposed Remedial Action Plan? Can the public have additional time to comment, beyond the March 4th deadline?

A: The 30 day comment period is a minimum standard requirement intended to prevent the cleanup process from being unduly delayed. We agree to extend the comment period until March 21st.

Q11: There are old reports that during the original building demolition and site grading, neighbors were allowed to remove soil from the Park for landscaping and gardening. Was there initial testing in this regard?

A: Testing (soil sampling) was conducted over a wide area away from the actual Park. Since there appears to be additional public concern regarding this matter the NYSDEC will collect additional soil samples. (See Q9 above)

Q12: Were all adjacent properties originally tested for contamination?

A: Yes. All adjacent properties were tested. Sampling was conducted outward from the area of highest contamination, and continued until the levels of arsenic were at or below background concentrations.

Q13: Were lead, construction waste, and PAHs tested for and are they related to the site?

A: Due to the high levels of arsenic and lead detected in the initial soil samples from the area of the Park, these two metals were the primary focus of the investigation. The investigation determined that lead was not related to the disposal activities at Kingsley Park. Lead and PAHs were however addressed by the IRM to the extent that they were both removed with the arsenic contaminated soils. Construction "waste" consisting of bricks or pieces of concrete do not pose a chemical threat, but if found in the surface soil, they were removed along with the excavated soils. In addition, analysis conducted on groundwater at the site, as a precondition to the proposed discharge to the sewer, did include a wide list of contaminants including volatiles, BNAs, and metals. Of these only arsenic was detected above drinking water standards.

Q14: Was there adequate testing for dust and dirt in the air during the removal of soils during the IRM? Was follow-up testing done?

A: Continuous air monitoring was conducted at the excavation and at the perimeter of the site. At no time during the IRM did particulate concentrations exceed the action limit for the site. In addition, monitors were set up around the site and samples were sent to the laboratory each day that earth moving activities were conducted. These samples were tested for arsenic and lead. At no time were arsenic or lead detected in the dust samples. After the completion of the IRM "wipe samples" were taken from the site buildings with the results being below detection limits.

Q15: What actions will be taken by the State after the comment period is closed and how will this address the problems at the Park?

A: The selected remedial action will remove the contaminated groundwater located below the surface of Kingsley Park. It will also prevent this groundwater from impacting the basements of home surrounding the Park. In this way the remedy will protect both those who use the Park and those living in the area of the Park.

Q16: At a meeting conducted by the EPA in North Tonawanda, people could just walk in and get their questions answered. Why wasn't this meeting set-up the same way?

A: The type of meeting described sounds like an availability session. This is one type of public meeting used by the NYSDEC. The reason it was not used in this case is that an availability session is not as well suited to giving a presentation to a large number of people. Due to the number of people on the Kingsley Park mailing list, and turnout for prior meetings, we anticipated that we would not be able to effectively serve community needs in that forum.

Health Related Questions

A number of questions involving health related issues were raised during the public comment period. Of particular concern were the potential health effects due to exposures to site contaminants which may have occurred prior to the soil removal IRM conducted in 1991. Although important, these questions do not bear upon whether or not it is appropriate to construct and operate a groundwater collection/disposal system as proposed in the PRAP. To ensure that the State's responses to these health issues are well considered, they will be addressed in a separate document currently being prepared by the State Health Department. Upon its completion, this document will be made available to the public.

The questions and comments in this Responsiveness Summary were compiled from a number of sources including the following:

1) Verbal comments from the public collected by NYSDEC representatives during the February 14, 1994 Public Meeting.

2) Written comments collected from members of the public attending the above meeting.

3) Fax transmission (3/21/94) from Bill Nowak, Buffalo City Council, to Michael DiPietro, NYSDEC, consisting of a Common Council resolution authored by Councilpersons James Pitts and David Collins.

4) Fax transmission (3/21/94) from Mr. James Smith, City of Buffalo, Division of Planning, to Andrew English, NYSDEC.

APPENDIX B

Diarsenol Company, Kingsley Park
Administrative Record

1.	8/90	Phase II Investigation Report (Ecology & Environment)
2.	9/90	Remedial Investigation Work Plan (Engineering-Science)
3.	2/91	Final Interim Remedial Investigation Report (Engineering-Science)
4.	10/92	Construction Certification Report (Engineering-Science)
5.	7/93	ATSDR Petitioned Public Health Assessment
6.	9/93	Supplemental Remedial Investigation/Feasibility Study (RI/FS) Workplan (Engineering-Science)
7.	1/26/94	Letter from G. Anders Carlson (NYS DOH) to Michael O'Toole (NYSDEC)
8.	2/94	Final Supplemental RI/FS Report (Engineering-Science)

STATE OF NEW YORK
DEPARTMENT OF HEALTH
Center for Environmental Health 2 University Place Albany, New York 12203-3399

HEALTH CONCERNS RESPONSIVENESS SUMMARY DIARSENOL COMPANY, KINGSLEY PARK INACTIVE HAZARDOUS WASTE SITE

September 1994

On February 14, 1994 a public meeting was held to discuss the Proposed Remedial Action Plan (PRAP) for the Diarsenol Company, Kingsley Park Inactive Hazardous Waste Site in Buffalo. In addition to the public meeting, the public was given thirty days to submit written comments on the PRAP. After the comment period ended and comments received were considered, the New York State Department of Environmental Conservation (NYSDEC) issued a Record of Decision (ROD) that outlined the chosen clean-up plan for the site. Included in the ROD was a Responsiveness Summary that provided answers to environmental questions raised at the public meeting. The New York State Department of Health (NYSDOH) developed this document to provide responses to health concerns voiced at the public meeting and in a City of Buffalo Common Council Resolution regarding the site. Some comments were consolidated or grouped together to incorporate similar concerns raised by more than one person.

1.) A comprehensive study of health effects from contamination at Kingsley Park is needed. The NYSDOH should initiate an epidemiological study to document health impacts from the site. A door-to-door survey should be performed to document community information about suspected health impacts and associated medical information, and the whereabouts of former residents.

The type of health-related follow-up or study selected for each site is determined by the type of contaminants found at the site, the levels at which they are found, and the potential for human exposure. If there is reason to believe that people may have come into contact with site contaminants, biological monitoring or testing can be used to determine the extent of exposure. Biological monitoring involves measuring chemicals in biological materials (blood, urine, breath, etc.) to estimate exposure to a certain substance. There is a readily available biological monitoring method for both arsenic, the main contaminant at the Kingsley Park site, and lead, which has been found at high levels in soil near the site due to paint peeling from adjacent residential buildings and past use of leaded gasoline in automobiles. In 1990 the Erie County Health Department (ECHD) conducted two rounds of urinary arsenic screening, testing more than 300 residents of the Kingsley Park area. Arsenic was not detected in urine at levels that are a health concern, therefore additional monitoring for arsenic was not recommended.

Local residents were also tested for blood lead levels. The blood lead screening was also conducted by the ECHD and consisted of two rounds of testing. More than 300 people were tested. Because of the presence of lead paint in area housing, it is recognized that lead exposure is a continuing concern.

An added benefit of the screening was that it was able to detect persons with low levels of iron in their blood. Several cases of anemia were detected, which alerted the ECHD to the need for nutrition education in this area. Low iron levels are not related to exposure to Kingsley park site contaminants.

More details on these screening results can be found on page 20 of the Agency for Toxic Substances and Disease Registry (ATSDR) Public Health Assessment for Kingsley Park. (This document is available for public review in the document repositories listed at the end of this document.)

The biological monitoring indicated that there is no current exposure problem related to site contamination. Because the potential for past exposures to arsenic existed at the site, and because arsenic is a carcinogen, NYSDOH decided to perform a type of epidemiological study called a cancer incidence study. This study is described in more detail in the answer to question 2.

Additionally, because the biological monitoring did not indicate exposure to levels of site-related contamination (arsenic) that is a health concern, a door-to-door survey to document suspected health impacts and other information would not be useful. If people are concerned that they may be experiencing health effects that could be related to exposures at the site, they can contact NYSDOH by calling toll-free 1-800-458-1158, extension 402. NYSDOH has doctors and nurses on staff who are trained in environmental and occupational medicine who can speak to people with these types of concerns.

2.) The cancer incidence study should be geographically focused to give an accurate picture of cancers that could be related to Kingsley Park. A zip code is too large an area to study. When will the results of the cancer study be released?

A cancer incidence study uses information from the New York State Cancer Registry. Hospitals are required to report to the Registry any cancerous tumor diagnosed in New York State. The Registry information includes the address of each patient at the time of their diagnosis. Information on the population of the study area must be obtained from data from the U.S. census. Information that is needed to complete the study, such as sex and age information about the population, is available for census tracts or zip codes. For each study done, an area that most closely corresponds to the area of concern is selected. In this case, census tracts were used.

Different types of cancer can be expected to be found at certain rates within any population. Knowing these rates, researchers can calculate the number of cancer cases that you could expect to find within a population. During the cancer incidence study, the expected number of newly-diagnosed cancer cases, by sex and location of cancer in the body, is calculated based on the age and sex distribution of the persons in the study area. The actual number of newly diagnosed cancer cases, by sex and location in the body, is counted from the New York State Cancer Registry records. It is then determined if a significant increase of cancers has occurred in the study area.

The cancer incidence study for the Kingsley Park neighborhood is expected to be released in September 1994.

3.) A registry to record health impacts from the Kingsley Park site should be established.

The NYSDOH does not normally establish registries to record possible health impacts associated with exposure to environmental contaminants. In general, registries are developed in situations where a group of people have been exposed to a substance for which there is not enough scientific information about long-term health effects from exposure to that substance. There is already scientific information available about potential long-term health effects that can be caused by exposure to arsenic and lead. Additionally, the tests performed on area residents indicate that exposure of residents to the site contaminants has been minimal. Therefore, at this time a registry to document health effects would not be useful.

4.) A long-term medical testing program is needed for residents who may experience medical problems that could be associated with exposure to site contaminants.

When people may have been exposed to arsenic and lead, biological monitoring is performed to determine the extent of the exposure. The biological testing performed by the ECHD did not reveal urinary arsenic concentrations that are a health concern. Remediation of the site and off-site soils should eliminate the source of arsenic exposure, and therefore additional urinary arsenic testing would not be useful. Because of the presence of lead paint in housing, blood lead screening of children in the neighborhood continues to be needed and is being given a high priority by NYSDOH and ECHD. NYSDOH is not recommending any other additional medical testing for arsenic and lead exposure for residents living near Kingsley Park. Residents in the area should continue to consult their local health care providers for general medical care. NYSDOH physicians trained in environmental and occupational medicine are available for consultation in cases where illness is suspected to have resulted from exposure to contaminants at a hazardous waste site. A request for a medical consultation can be made through the Health Liaison Program (HeLP) by calling toll-free 1-800-458-1158, extension 402.

5.) Local health care providers should be educated about Kingsley Park contaminants, as was recommended in the Agency for Toxic Substances and Disease Registry (ATSDR) Public Health Assessment for the Kingsley Park site. The State should also commit to implementing ATSDR's other recommendations, including providing community education programs for lead and arsenic and providing information to residents interested in assessment of biological indicators of exposure (ie. blood and urine testing). Additionally, a community outreach program is needed to educate the community about the site.

New York State concurs with the recommendations made in the ATSDR Public Health Assessment. ATSDR's Division of Health Education will be conducting an environmental health education program that will be directed at all health care givers (doctors, nurses, etc.) in the area. The program will educate them about the nature and possible consequences of exposure to site contaminants. NYSDOH will make

available to ATSDR any information about the Kingsley Park site that may be of assistance in this program.

The ECHD and the NYSDOH will continue to offer environmental health education to the Kingsley Park community. ECHD provides information on preventing lead poisoning in children through its lead screening and education program. ECHD will also continue to provide nutrition education to prevent anemia. The NYSDOH will continue to keep interested residents up-to-date on site-related health issues and activities through its Health Liaison Program (HeLP), which has sponsored public meetings and produced fact sheets about this site in the past.

If the City of Buffalo has a formal opening ceremony or other event when Kingsley Park is officially reopened, NYSDOH and NYSDEC would be happy to provide representatives to attend the functions who would be available to answer people's questions about the site.

6.) Can NYSDOH or ATSDR provide funding for lead education and abatement programs in the Kingsley Park area? Can existing program funds be supplemented?

Lead in the urban environment can be present from many sources such as lead-based paint used on buildings and the past use of leaded gasoline in automobile engines. Programs and funding to deal with lead in the environment are constantly evolving and expanding.

The ECHD conducts a Childhood Lead Poisoning Prevention Program for lead screening, education and environmental investigation efforts on a county-wide basis. The NYSDOH funds a substantial portion of that program. The ECHD has focused a considerable amount of program time on the Kingsley Park neighborhood in the form of educational activities and the biological monitoring discussed in the response to question 1 of this document. Additionally, as part of an expanded statewide media campaign, the NYSDOH has made available to the county several brochures, a video on lead poisoning prevention and other materials to increase awareness of the issue. The ECHD will continue its education efforts. However, additional funding for this program is not available at this time.

The ATSDR is a federal agency that was created to prevent or mitigate adverse human health effects and diminished quality of life resulting from exposure to hazardous substances in the environment. NYSDOH is not aware of any funding available through ATSDR specifically for lead abatement programs. However, ATSDR has committed in its Public Health Assessment for the Diarsenol Company-Kingsley Park site to conduct an environmental health education program for the local public health professionals and the local medical community. Additionally, the ECHD and the NYSDOH will continue to offer environmental health education to the Kingsley Park community through existing programs.

For More Information

Documents related to the Diarsenol-Kingsley Park site are available for public review and copying at the following document repositories:

Buffalo and Erie Co. Library
Branch - Area 7
Lafayette Square
Buffalo, New York 14203
(716)858-8900

North Jefferson Branch Central Library
332 East Utica Street
Buffalo, NY 14208
(716)883-4418

Documents are also available for review by appointment at the NYSDEC Region 9 office.

If you have any health-related questions, please contact:

Cameron O'Connor
Western Region Office
NYS Dept. of Health
584 Delaware Ave.
Buffalo, NY 14202
(716)847-4502

Meaghan Boice-Green
Health Liaison Program
NYS Dept. of Health
2 University Place Room 240
Albany, NY 12203-3399
(800)458-1158 ext. 402

For more information about environmental activities at the Kingsley Park site, please contact:

Michael DiPietro
NYS DEC
Div. of Haz. Waste Remediation
50 Wolf Rd.
Albany, NY 12233-7010
(518)457-0315

Patricia Nelson or David Locey
NYS DEC Region 9
270 Michigan Avenue
Buffalo, New York 14203-2999
(716)851-7220

NYSDEC personnel may also be reached by calling, toll free, (800)342-9296. Please leave your name, phone number, and the name of the site about which you are calling, and someone will get back to you as soon as possible.