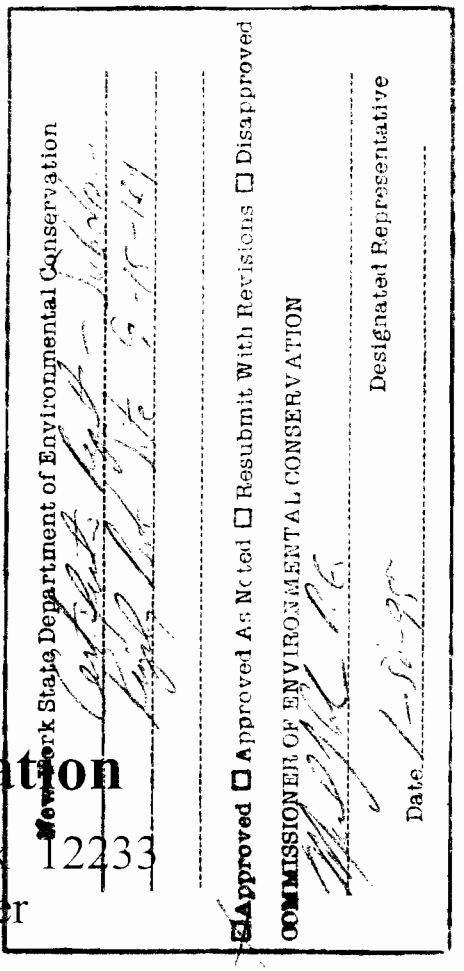
CONSTRUCTION CERTIFICATION REPORT 915124

NY STATE SUPERFUND STANDBY CONTRACT
DIARSENOL COMPANY - KINGSLEY PARK SITE
City of Buffalo, Erie County

WORK ASSIGNMENT NO. D002478-28
SITE NO. 9-15-124

PREPARED FOR



New York State Department of Environmental Conservation

50 Wolf Road, Albany, New York 12233
Langdon Marsh, Commissioner

Division of Hazardous Waste Remediation

Michael J. O'Toole, Jr., P.E., Director

PREPARED BY

ES

ENGINEERING-SCIENCE
Liverpool, New York

JANUARY 1995

Mi:graphics 726035 26035cvr1.ds-

CONSTRUCTION CERTIFICATION REPORT

FOR

INSTALLATION OF A SUBSURFACE GROUNDWATER COLLECTION TRENCH

AT

DIARSENOL COMPANY, KINGSLEY PARK SITE
(SITE NO. 9-15-124)

BUFFALO, NEW YORK

SUBMITTED TO:

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

ALBANY, NEW YORK

PREPARED BY:

ENGINEERING-SCIENCE, INC.
290 ELWOOD DAVIS ROAD
LIVERPOOL, NEW YORK 13088

JANUARY 1995

TABLE OF CONTENTS

CONSTRUCTION CERTIFICATION REPORT

DIARSENOL COMPANY, KINGSLEY PARK (SITE NO. 9-14-124)

1.0 INTRODUCTION

The purpose of this Certification Report is to document that the installation of a subsurface groundwater collection trench at the Diarsenol Company, Kingsley Park Site, Buffalo, NY (Site No. 9-15-124) was conducted in conformance with the New York State Department of Environmental Conservation (NYSDEC) approved subcontract documents dated October 1994. Certification efforts by Engineering-Science, Inc. (ES) consisted of full-time inspection including verification of site activities, construction techniques, horizontal and vertical survey control, waste manifesting procedures, and construction materials.

2.0. PROJECT BACKGROUND

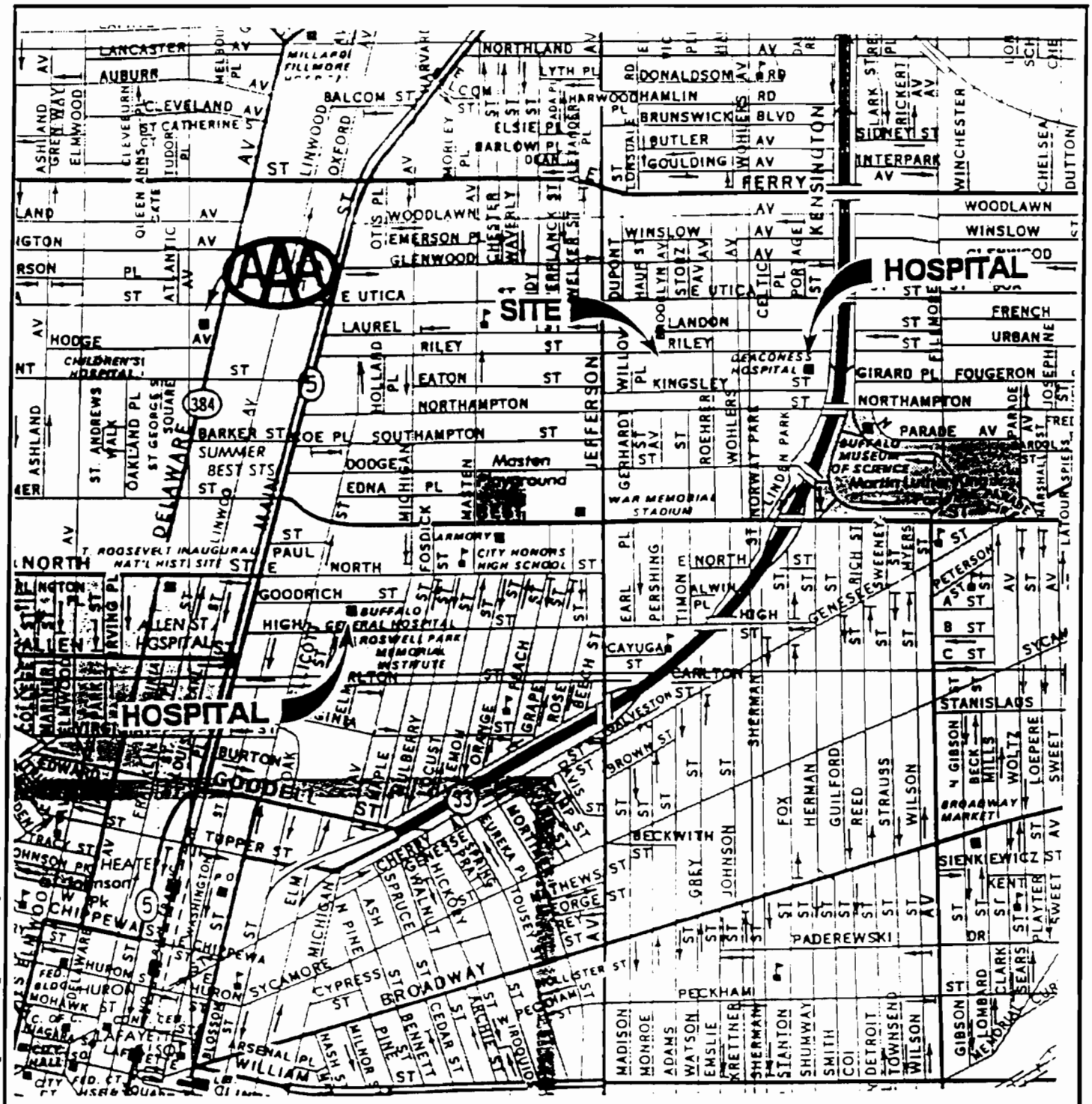
The Diarsenol Company, Kingsley Park Site is an Inactive Hazardous Waste site (No. 9-15-124) located in the City of Buffalo, Erie County, New York (Figure 1.1). The site is situated in an urban residential neighborhood and is bounded by Kingsley Street on the south, Riley Street on the north, and is east of Jefferson Avenue and west of Roehrer Avenue. Homes are located in close proximity to the Park along both Riley Street and Kingsley Street. The site is approximately 2 acres in size. There are no nearby bodies of water and the site is flat with no more than one to two feet of local topographic relief.

The Diarsenol Company was a pharmaceutical manufacturer which produced an arsenic based medication consisting of up to 31 percent arsenic. The company 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.

During soil sampling conducted in the mid-1980s, 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 ranging from background, which was determined to be 10-20 parts per million (ppm), to 7,090 ppm.

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. It is also possible that at the time of building demolition, material inside the structure was released to the environment and moved around during grading activities.

Figure 1.1



ENGINEERING-SCIENCE

SITE LOCATION MAP

DIARSENOL COMPANY
KINGSLEY PARK SITE
BUFFALO, NEW YORK

An Interim Remedial Measure (IRM) was conducted at the park by the NYSDEC from September 1991 to June 1992. The IRM consisted of the excavation and removal of soils containing elevated levels of arsenic from the park and surrounding properties, backfilling and restoration, and the installation of four groundwater monitoring wells. During the IRM, a total of 11,549 tons of arsenic contaminated soil were removed from the site. Of this total, 1,981 tons of soil were disposed of as hazardous waste and 9,568 tons as non-hazardous waste.

Following completion of the IRM, the new wells were sampled and arsenic was detected at levels exceeding groundwater standards. Two additional rounds of groundwater sampling were conducted by ES in 1992 at the Kingsley Park site. Arsenic was detected at levels exceeding groundwater standards in three of the five site wells. In order to address this contamination, the NYSDEC issued a work assignment to ES in June 1993 to conduct a Supplemental Remedial Investigation/Feasibility Study (RI/FS). ES completed the field investigation in December 1993, and a final report was issued in February 1994. Nine groundwater monitoring wells remain at the site to assess groundwater quality beneath properties surrounding the park.

A Record of Decision (ROD) was signed on March 31, 1994 which calls for the installation 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 sanitary sewer system for disposal. The ROD also calls for continued monitoring of groundwater quality for one to five years.

3.0. PROJECT STAFF AND RESPONSIBILITIES

3.01 NYSDEC Staff

Mr. Michael Cruden, P.E. was Project Manager responsible for reviewing the ES subcontracting while Mr. David Locey performed as the NYSDEC Representative during site visits.

3.02 ES Staff

The subcontracting was conducted by ES with NYSDEC consultation. ES also provided remedial construction management to ensure that construction procedures were in accordance with the project documents. ES personnel were present daily during all phases of construction. The construction services personnel provided by ES are listed herein with an explanation of their responsibilities.

The ES Project Manager, Weidong Xia, P.E., was responsible for maintaining the work schedule, keeping the ES project within budget, ensuring the technical adequacy of the work performed, and coordinating preparation of the Construction Certification Report. The responsibilities of the ES field inspectors, David Brown, and Dale Dolph included:

- Verifying compliance with the contract documents, including the NYSDEC approved Work Plan.
- Maintaining written daily records of work completed and quantities of unit price bid items completed.

- Identifying any defective work and advising on corrective actions.
- Preparing photographic documentation of the project.
- Maintaining a set of record drawings showing any changes due to field conditions encountered during construction.
- Maintaining a log of shipping manifests for waste material transported off the Kingsley Park site.
- Preparing the Construction Certification Letter Report.

3.03 Subcontractor

The subcontractor, SLC Consultants/Constructors, Inc. (SLC), also had a full-time staff on site. A list of the key members of their staff and their responsibilities are presented herein. The SLC Field Supervisor, Anthony Zendano, was responsible for all field activities including health and safety at the site. The SLC Project Manager, Donald Nizialek, was responsible for project coordination including arrangement of disposal facilities, transportation, ordering of supplies and equipment, and hiring of SLC subcontractors. Mr. Nitialek also acted as a liaison between medical, safety, and site personnel as well as ES.

4.0 DESCRIPTION OF WORK

The construction phase for the Diarsenol Company, Kingsley Park site began on November 14, 1994 and ended on November 29, 1994. Final site restoration consisting of seeding and mulching of disturbed site areas is scheduled for May 1995 to accommodate weather conditions.

The work consisted of the installation of a shallow subdrain trench in the vicinity of MW-1, MW-2 and MW-3 (Drawing No. 1, Appendix A). The collection system utilizes the relatively high permeability fill placed throughout the site during the IRM to work as a blanket drain to collect the contaminated groundwater. Collected groundwater discharges to the sanitary sewer system under Riley Street.

This construction involved excavating a shallow (6' to 7') trench, installing drainage materials, and backfilling and restoring the excavated area. Construction started with site preparation including dismantling sections of the site fence, stockpiling supplies, staking out the location and depth of excavation, and installing temporary orange plastic fencing around the construction areas to exclude random trespassing.

Work began with the tie-in of the conduit pipe to the sanitary sewer located approximately 7 feet below grade in the center of the Riley Street. The tie-in was made at the top of the sewer which is constructed of vitrified clay pipe (Drawing No. 2, Appendix A). The excavation from the sewer tie-in to edge of street (curb) was backfilled with crushed gravel to 8 inches below grade. During the stone placement, the stone was compacted with the bucket of the excavation backhoe. Two 4-inch layers of concrete were then placed above the gravel to complete the street pavement restoration in accordance with the City of Buffalo requirements.

The subdrain and conduit portions of the trench were excavated to approximately seven feet deep and three feet wide with a backhoe. Trench shoring consisting of a 34"

wide trench box was utilized to prevent cave-ins and to minimize the size of the excavation. The existing topsoil and clean fill placed during the IRM were removed and segregated from the subsoil prior to excavating further into the ground. The clean fill was easily recognized based on its sandy appearance and light brownish color. The topsoil and clean fill were later reused as backfill and topsoil, respectively.

After removal of the topsoil and clean fill, additional excavation continued to achieve the required trench depth. This additional excavated soil was stockpiled on plastic sheeting separately from the clean fill removed earlier. At the end of each work day, the excavated soil was covered with plastic which was secured in place with sand bags.

The conduit section of the trench, excavated mostly outside the fence, was used to install a 4-inch diameter solid pipe to form a conduit line to conduct groundwater collected by the subdrain to the sanitary sewer. It was backfilled with crushed gravel bedding and excavated soil as shown on Drawing No. 2, Appendix A. The initial soil backfill was placed in approximately 12" lifts and compacted with the backhoe bucket. The upper 4-feet of backfill was placed in 8" lifts and compacted with two passes per lift of a vibratory double drum roller.

The subdrain section of the trench, excavated within the current site fence, was filled with drainage materials to construct a subdrain as shown on Drawing No. 2, Appendix A. The subdrain consists of a 4-inch diameter perforated pipe backfilled with NYSDOT #4 ballast stone enclosed in filter fabric. The pipe was sloped approximately 0.8% towards the discharge direction to provide drainage and self-cleaning. The depth of the trench and the thickness of the crushed stone vary slightly due to the slope. The stone was compacted with a vibratory double drum roller on the surface.

Upon completion of the subdrain system installation, there was excess excavated soil left from the construction. This soil, presumed to contain low level arsenic and lead contamination, was weighed nearby at the Weber's Certified Public Scale before disposal at the Lakeview Landfill in Erie, Pennsylvania.

Real-time dust monitoring was performed continuously along the fence line in the vicinity of MW-8 and MW-9 (downwind location) during all intrusive work activities. The downwind location was selected based on the location of the nearest off-site receptor, residences, and the local prevailing wind direction. Total particulates were measured using a MINIRAM Aerosol Monitor Model PDM-3 manufactured by MIE, Inc. The level of dust never exceeded the health and safety limit of 150 $\mu g/m^2$ at the monitoring locations.

Prior to demobilization from the site, the disturbed work areas were rough graded. Most of the restoration work including fence reinstallation, repaving of disturbed street pavement, and street sweeping has been completed. Due to Winter weather conditions, fine grading, seeding and mulching were postponed until May 1995.

5.0 SUMMARY AND CERTIFICATION

The construction consisted of the excavation and installation of an approximately 385 feet long and 7 feet deep subsurface groundwater collection trench at the Diarsenol Company, Kingsley Park site to control arsenic contaminated groundwater. A summary of important project dates, quantities and costs is presented in Table 1. Record drawings and select project photographs are presented in Appendix A and B, respectively. This report has been prepared by an engineer licensed to practice in the State of New York. A certification statement signed by the ES technical director, project manager, and construction inspector is included as part of this Section.

TABLE 1

SUBCONTRACT SUMMARY

Item Description	Date	Unit	Bid Unit Price	Bid Quantity	Bid Value	Actual Quantity	Actual Value
Award Subcontract	11/1/94	NA	NA	NA	NA	NA	NA
Mobilization/Site Preparation	11/14/94	Lump Sum	$10,900	1	$10,900	1	$10,900
Trench Excavation	Completed 11/25/94	Cubic Yard	$24.70	380	$9,386	288	$ 7,114
Spoil Disposal	Completed 11/28/94	Ton	$51.50	310	$15,965	368	$18,952
Crushed Stone	Completed 11/25/94	Cubic Yard	$58.20	210	$12,222	176	$10,243
Filter Fabric	Completed 11/25/94	Square Yard	$1.30	600	$780	496	$ 645
4" Perforated PVC Pipe	Completed 11/25/94	Linear Foot	$4.40	230	$1,012	235	$ 1,034
4" Solid PVC Pipe	Completed 11/25/94	Linear Foot	$3.60	135	$486.00	150	$ 540
Seeding & Mulching	Scheduled May 1995	1,000 sq.feet	$330	15	$4,950	15*	$ 4,950*
Tie-In to Sewer	Completed 11/16/94	Lump Sum	$3,100	1	$3,100	1	$ 3,100
Sampling Port	Completed 11/25/94	Lump Sum	$475	1	$475	1	$ 475
Soil Backfilling & Compaction	Completed 11/29/94	Lump Sum	$1,700	1	$1,700	1	$ 1,700
Sewer Cleanout	Completed 11/19/94	Each	NA	NA	NA	1	$167
Substantial Completion	12/07/94	NA	NA	NA	NA	NA	NA
Final Inspection	Scheduled May 1995	NA	NA	NA	NA	NA	NA
Total Initial Subcontract Price	NA	NA	NA	NA	$60,976	NA	NA
Change Order	NA	NA	NA	NA	($ 1,156)	NA	NA
Total Revised Subcontract Price	NA	NA	NA	NA	$59,820	NA	$59,820

* Assume no change orders for Spring restoration.

DIARSENOL COMPANY, KINGSLEY PARK SITE

CONSTRUCTION CERTIFICATION

Construction was completed in accordance with the September 1994 Sub-contract Documents for NY State Superfund Standby Contract, Diarsenol Company, Kingsley Park Site, prepared by Engineering-Science and approved by NYSDEC.

Signature: _____ Date: 12/22/94

John P. McAuliffe, P.E.
Technical Director

Signature: _____ Date: 12/22/94

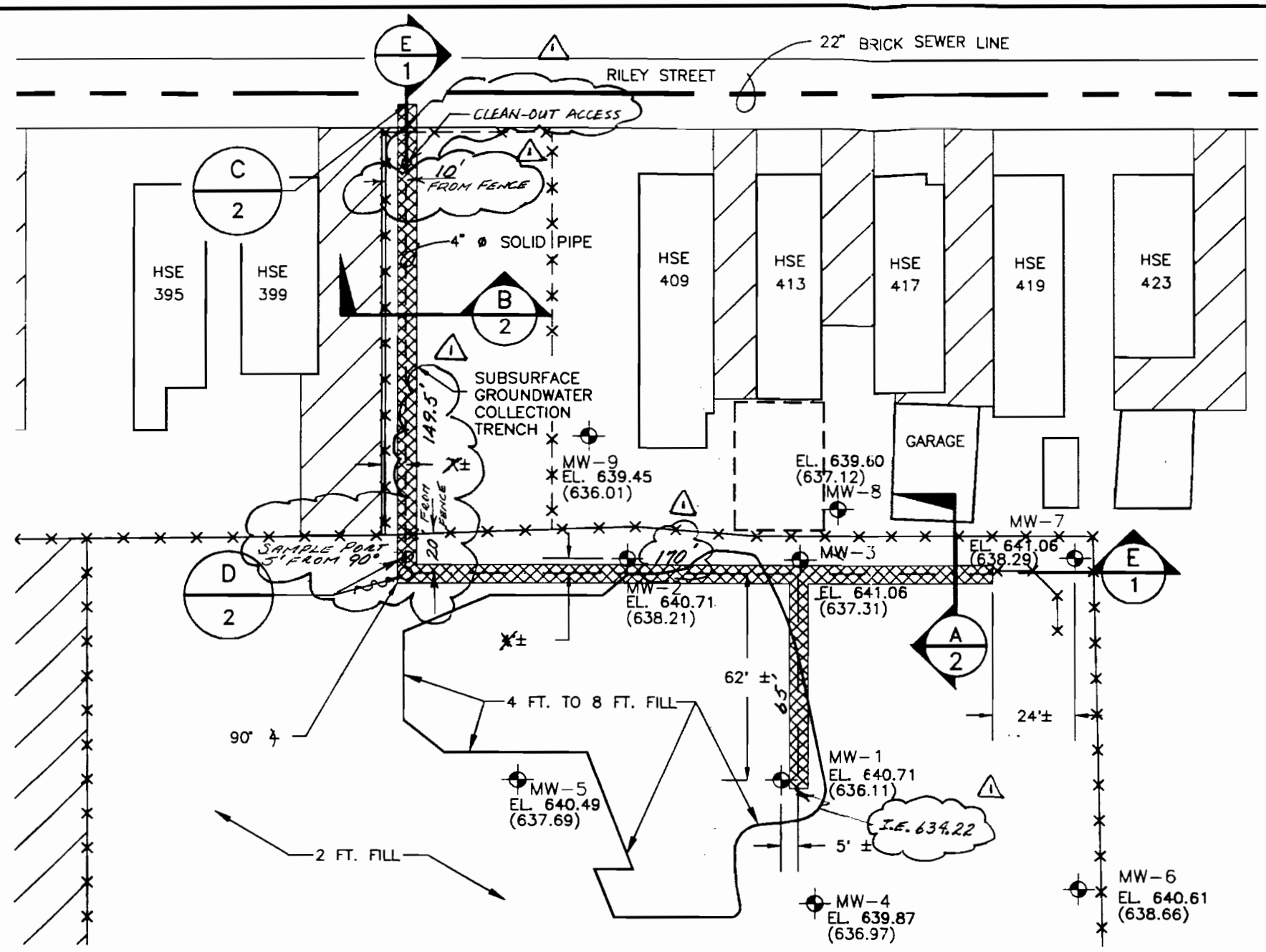
Weidong Xia
Project Manager

Signature: _____ Date: 23 Dec 94

David A. Brown
Construction Inspector

APPENDIX A

RECORD DRAWINGS

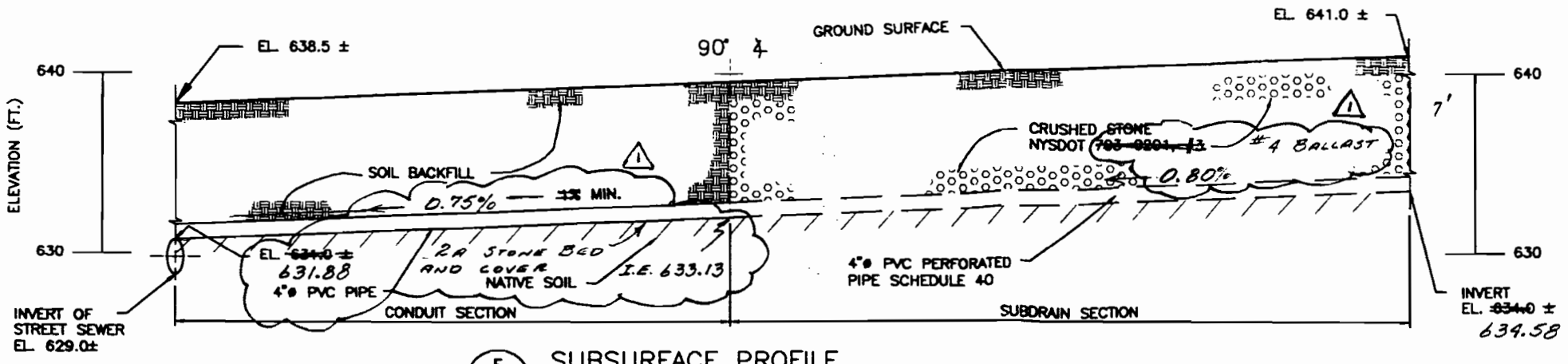


LEGEND:

EL. 640.95	TOP OF PVC CASING ELEVATION.
(636.97)	GROUND WATER ELEVATION ON DEC. 28 & 29, 1993.
	FENCE
	PAVED AREA
MW-1	MONITORING WELL LOCATION
	SUGGESTED TEMPORARY FENCE LOCATION

NOTES:

1. THE SUBCONTRACTOR SHALL CONTACT THE CITY OF BUFFALO TO ARRANGE FOR TRAFFIC CONTROL, STREET PAVEMENT DISTURBANCE AND RESTORATION, UNDERGROUND UTILITY IDENTIFICATION, AND PROTECTION AND TEMPORARY CLOSURE OF THE PARK DURING THE CONSTRUCTION. THE SUBCONTRACTOR SHALL SECURE ANY NECESSARY PERMITS FROM THE CITY.
2. CLEARING, GRUBBING AND OTHER SITE DISTURBANCE SHALL BE MINIMIZED TO AREAS NECESSARY FOR THE CONSTRUCTION.
3. DRAINAGE PIPE INSTALLATION SHALL START FROM THE SEWER ON RILEY STREET.
4. TRENCH BACKFILL MATERIALS SHALL BE COMPACTED IN LIFTS OF LOOSE THICKNESS OF NOT MORE THAN ONE FOOT, WITH APPROPRIATE EQUIPMENT AND EFFORT, APPROVED BY THE INSPECTOR.
5. UPON COMPLETION OF THE CONSTRUCTION, THE SITE SHALL BE RESTORED TO ITS ORIGINAL CONDITIONS.



E/1 SUBSURFACE PROFILE

NOT TO SCALE

STATE OF NEW YORK
JOHN PATRICK McAULIFFE
LICENSED PROFESSIONAL ENGINEER
062655

40' 20' 0 40'

Approximate Scale in Feet

1 12-21-94 As Built Information

DRAWING No. 1

DIARSENSOL– KINGSLEY PARK SITE

~~PROPOSED~~

SUBSURFACE GROUNDWATER COLLECTION TRENCH LOCATION PLAN AND PROFILE

ENGINEERING–SCIENCE
DESIGN • RESEARCH • PLANNING
SYRACUSE, NEW YORK

ES

DATE: 9/20/94
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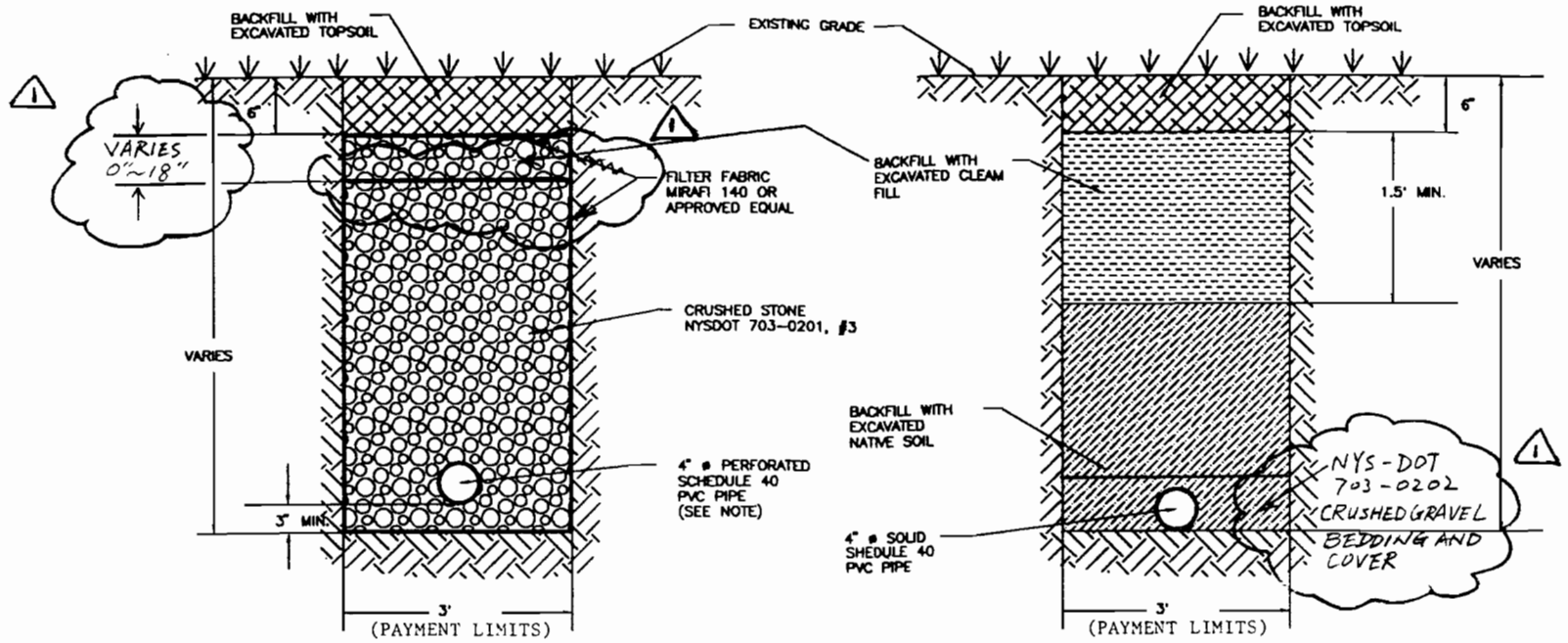
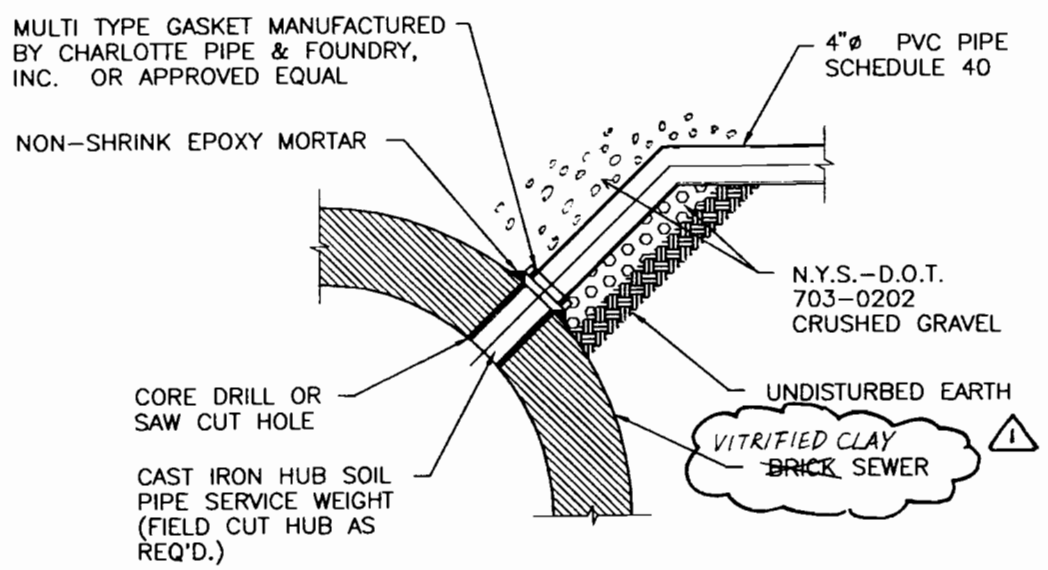


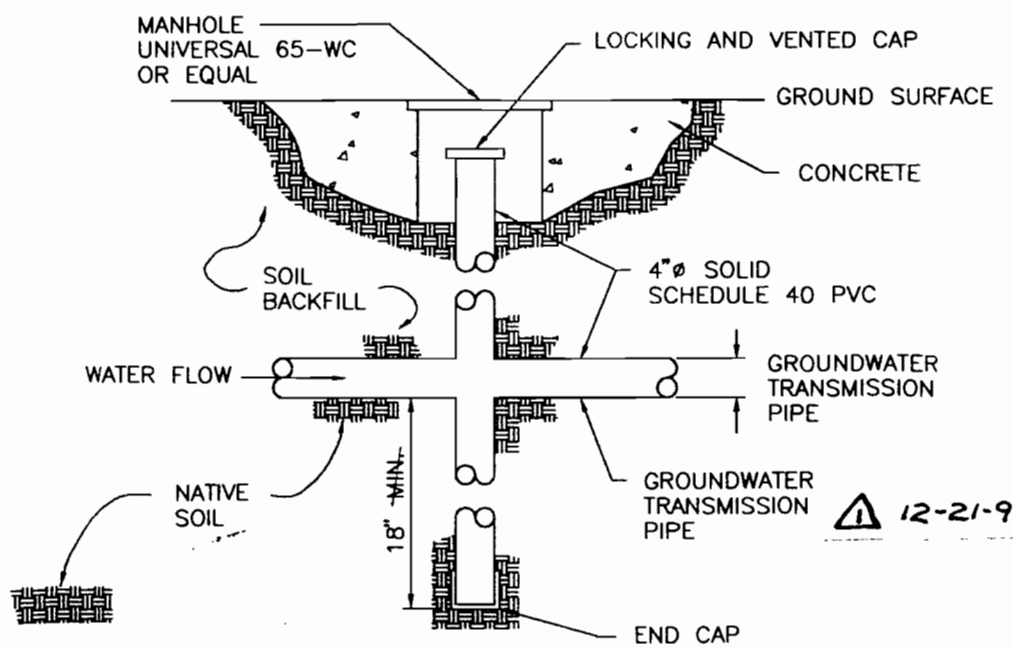
A/1 SUBDRAIN SECTION
NOT TO SCALE

B/1 CONDUIT SECTION
NOT TO SCALE

NOTE: THE UPGRADIENT END OF THE PIPE SHALL BE CLOSED WITH AN END CAP.



C/1 SEWER CONNECTION ELEVATION DETAIL
NOT TO SCALE



D/1 GROUNDWATER SAMPLING PORT DETAIL
NOT TO SCALE

STATE OF NEW YORK JOHN PATRICK McAULIFFE LICENSED PROFESSIONAL ENGINEER 062655

1 12-21-94 AS BUILT INFORMATION

DRAWING No. 2

DIARSENOL- KINGSLEY PARK SITE

~~PROPOSED~~
SUBSURFACE GROUNDWATER COLLECTION TRENCH DETAILS

ENGINEERING-SCIENCE
DESIGN • RESEARCH • PLANNING
SYRACUSE, NEW YORK

ES

DATE: 9/20/94
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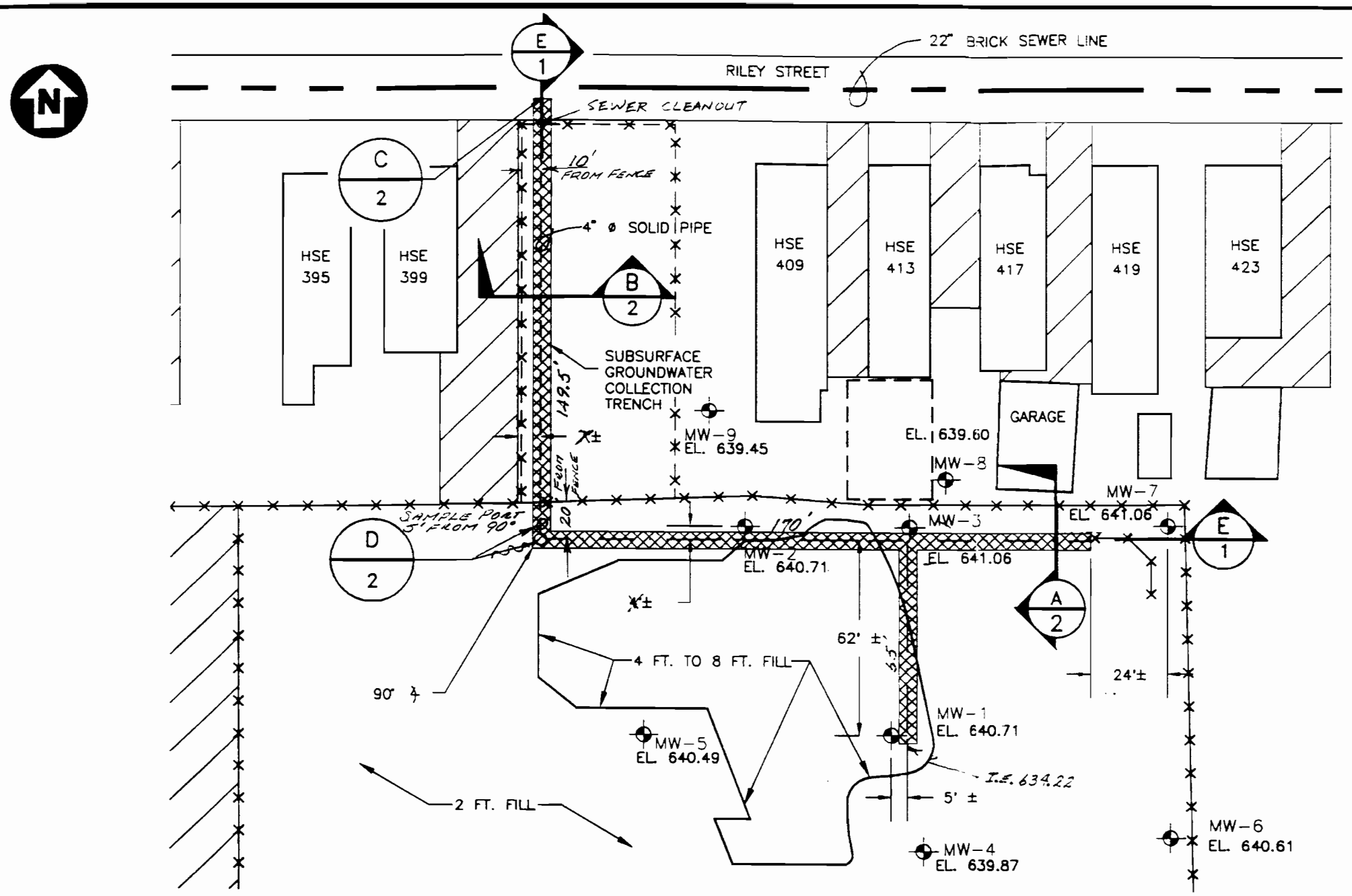

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PAVED AREA

MW-1 MONITORING WELL LOCATION

SUGGESTED TEMPORARY FENCE LOCATION

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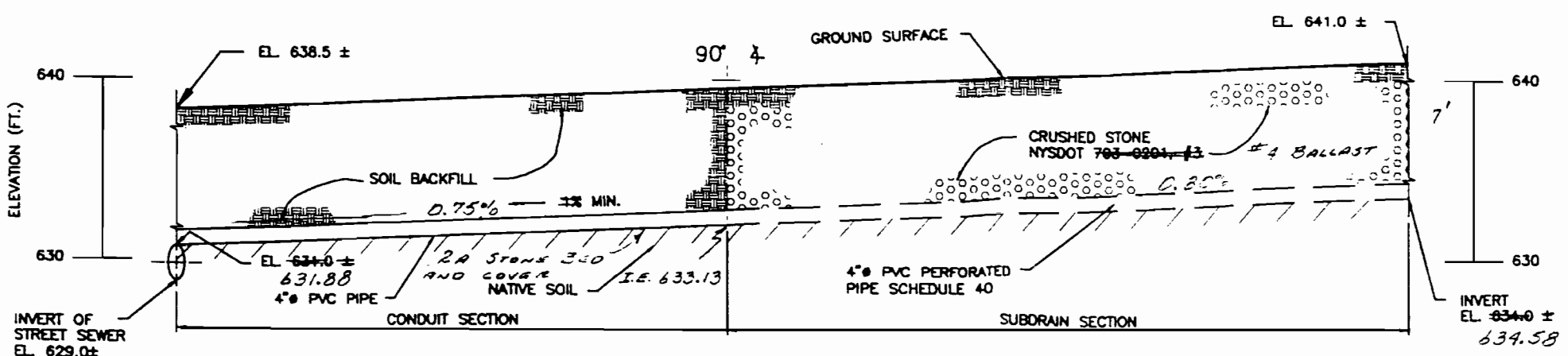

E/1 SUBSURFACE PROFILE

NOT TO SCALE

40' 20' 0 40'

Approximate Scale in Feet

As Built Information

DRAWING No. 1

DIARSENSOL– KINGSLEY PARK SITE

SUBSURFACE GROUNDWATER COLLECTION TRENCH LOCATION PLAN AND PROFILE

ENGINEERING–SCIENCE
DESIGN • RESEARCH • PLANNING
SYRACUSE, NEW YORK

ES

DATE: 9/20/94
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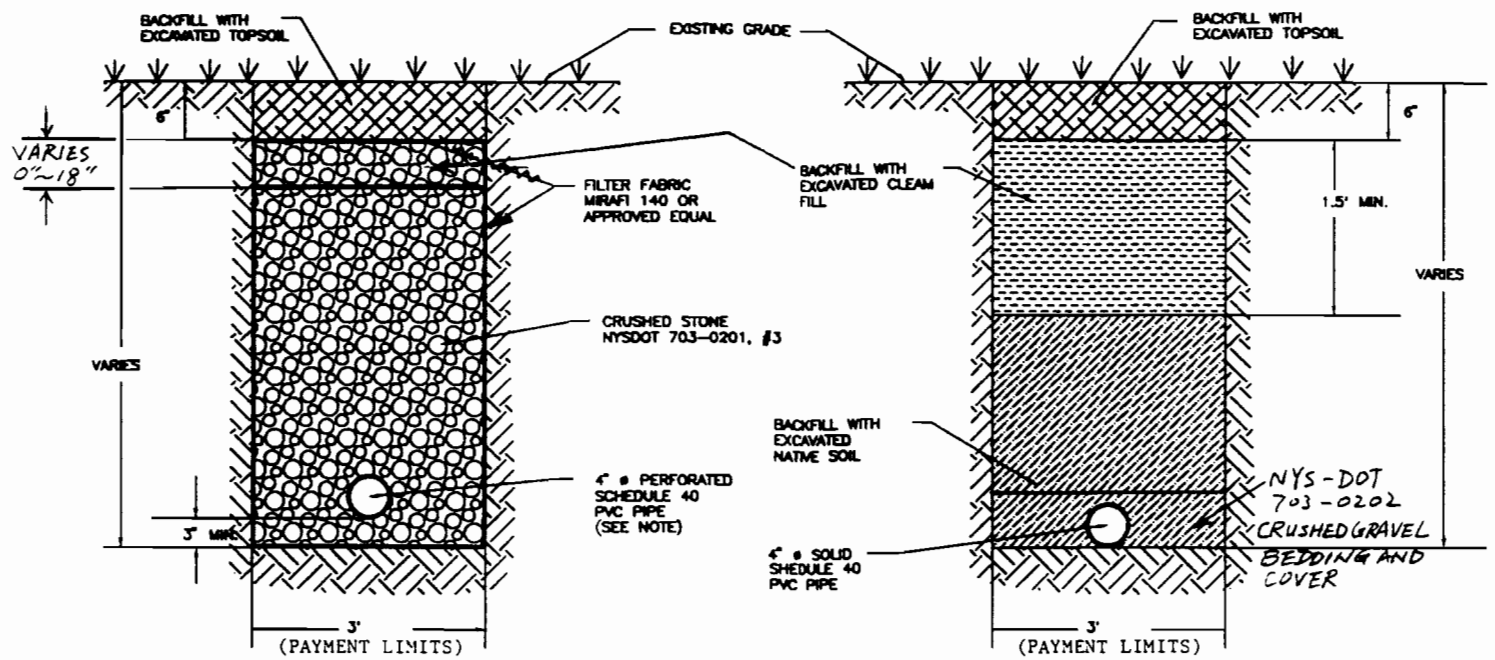
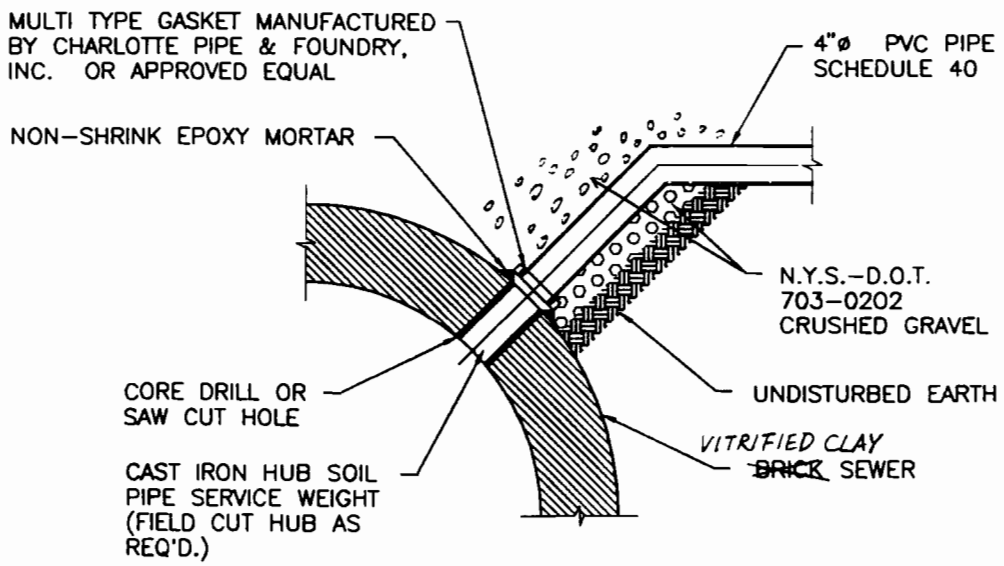


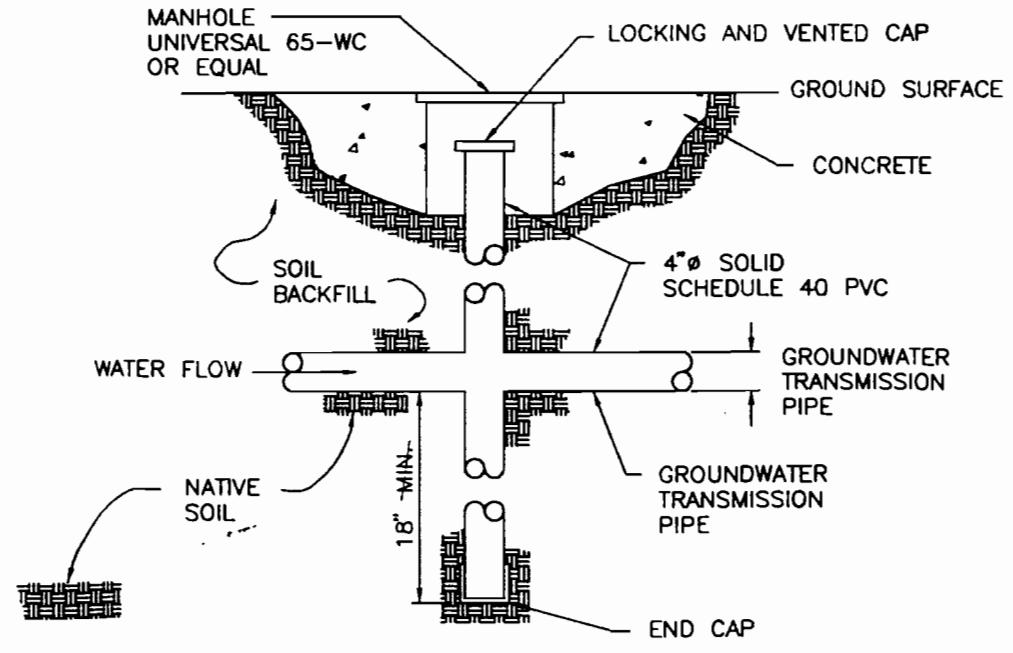
A/1 SUBDRAIN SECTION
NOT TO SCALE

B/1 CONDUIT SECTION
NOT TO SCALE

NOTE: THE UPGRADIENT END OF THE PIPE SHALL BE CLOSED WITH AN END CAP.



C/1 SEWER CONNECTION ELEVATION DETAIL
NOT TO SCALE



D/1 GROUNDWATER SAMPLING PORT DETAIL
NOT TO SCALE

AS BUILT INFORMATION

DRAWING No. 2

DIARSENOL- KINGSLEY PARK SITE

SUBSURFACE GROUNDWATER COLLECTION TRENCH DETAILS

ENGINEERING-SCIENCE
DESIGN • RESEARCH • PLANNING
SYRACUSE, NEW YORK
ES

DATE: 9/20/94
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APPENDIX B

SELECTED PROJECT PHOTOGRAPHS

PHOTOGRAPHIC LOG
ENGINEERING-SCIENCE, INC.

PROJECT: Diarsenol Subdrain Installation
LOCATION:
NUMBER: 726035.04
CLIENT: Diarsenol

Date: 11/15/94
Description: 22-inch sewer main in Riley St. used for subdrain discharge. Pipe was vitrified clay pipe.

Photo By: DRD-ES

Date: 11/15/94
Description: Crushed gravel backfill in

Photo By: DRD-ES

PHOTOGRAPHIC LOG
ENGINEERING–SCIENCE, INC.

PROJECT: Diarsenol Subdrain Installation
LOCATION:
NUMBER: 726035.04
CLIENT: Diarsenol

Date: 11/16/94
Description: Plumbing crew replacing road surfac

Photo By: DRD–ES

Date: 11/16/94
Description: Subdrain conduit discharge pipe and clean–out access pipe near Riley St.

Photo By: DRD–ES

PHOTOGRAPHIC LOG
ENGINEERING–SCIENCE, INC.

PROJECT: Diarsenol Subdrain Installation
LOCATION:
NUMBER: 726035.04
CLIENT: Diarsenol

Date: 11/16/94
Description: Crew member installing conduit pipe inside trench box (34" O.D.)

Photo By: DRD–ES

Date: 11/16/94
Description: Initial backfilling with crushed gravel Pipe bedded 4" over to with #1A stone

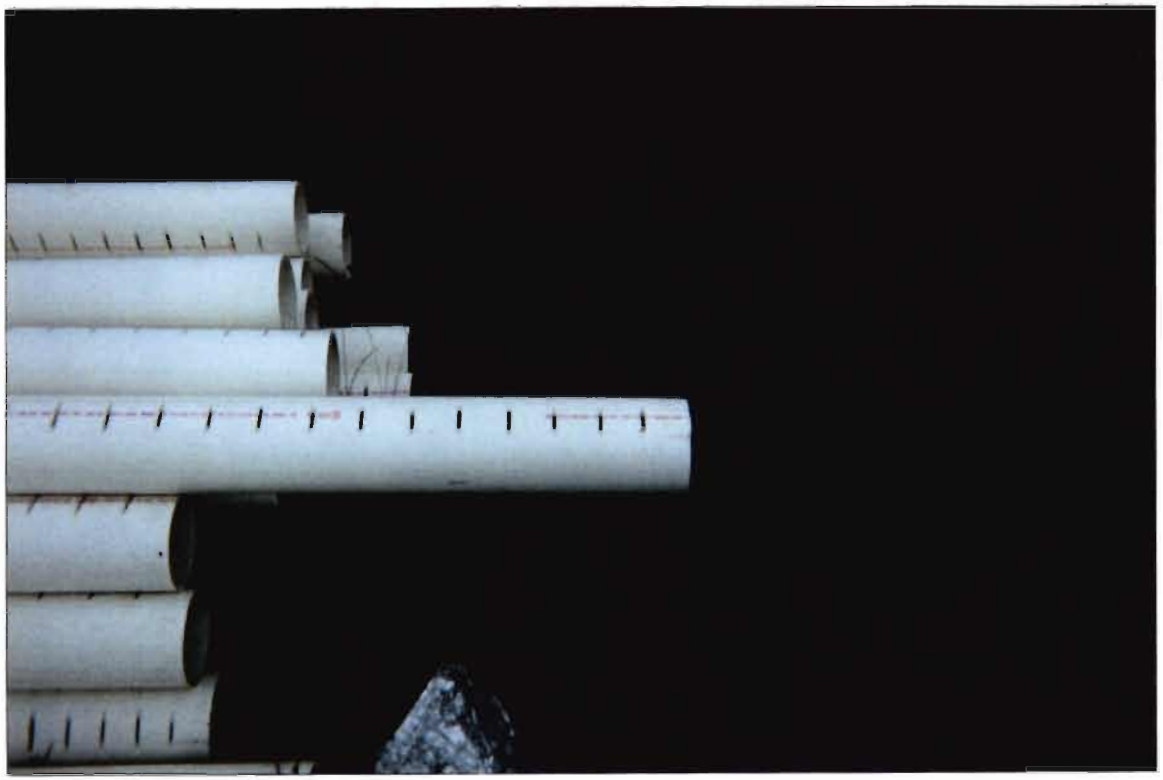
Photo By: DRD–ES

PHOTOGRAPHIC LOG
ENGINEERING–SCIENCE, INC.

PROJECT: Diarsenol Subdrain Installation
LOCATION:
NUMBER: 726035.04
CLIENT: Diarsenol

Date: 11/17/94
Description: View of sampling sump prior to

Photo By: DRD–ES



Date: 11/17/94
Description: Schedule 40 slotted PVC for subdrain piping. Perforations made with a circular saw.

Photo By: DRD–ES

PHOTOGRAPHIC LOG

ENGINEERING–SCIENCE, INC.

PROJECT: Diarsenol Subdrain Installation

LOCATION:

NUMBER: 726035.04

CLIENT: Diarsenol

Date: 11/22/94

Description: Crew working on subdrain pipe installation. Sides of trench pulled back to prevent cave in during trenchbox movement

Photo By: DRD–ES

Date: 11/22/94

Description: Laser transit used for setting pipe elevation.

Photo By: DRD–ES

PHOTOGRAPHIC LOG
ENGINEERING–SCIENCE, INC.

PROJECT: Diarsenol Subdrain Installation
LOCATION:
NUMBER: 726035.04
CLIENT: Diarsenol

Date: 11/22/94
Description: Crew member checking pipe elevation with lazer transit.

Photo By: DRD–ES

Date: 11/22/94
Description: Subdrain backfilled with NYSDOT #4 ballast stone wrapped in mirait 140 fabric

Photo By: DRD–ES

APPENDIX C

WASTE SOIL MANIFESTS

NON-HAZARDOUS WASTE SOIL MANIFESTS

DIARSENOL COMPANY, KINGSLEY PARK SITE

Manifest #	Truck #	Date	Final Destination	WT (Tons)
2427	1212	11/25/94	Lakeview Landfill Erie, PA	25.40
2428	R-10	11/25/94	Lakeview Landfill Erie, PA	24.13
2429	03	11/25/94	Lakeview Landfill Erie, PA	21.89
2430	02	11/25/94	Lakeview Landfill Erie, PA	23.29
2431	06	11/25/94	Lakeview Landfill Erie, PA	23.04
2432	07	11/25/94	Lakeview Landfill Erie, PA	22.46
2433	03	11/23/94	Lakeview Landfill Erie, PA	22.05
2434	02	11/23/94	Lakeview Landfill Erie, PA	23.05
2435	07	11/23/94	Lakeview Landfill Erie, PA	22.48
2436	R-14	11/23/94	Lakeview Landfill Erie, PA	26.19
2437	06	11/23/94	Lakeview Landfill Erie, PA	23.55
2438	R-28	11/23/94	Lakeview Landfill Erie, PA	25.35
2439	06	11/23/94	Lakeview Landfill Erie, PA	19.38
2349	03	11/23/94	Lakeview Landfill Erie, PA	21.52
2348	07	11/23/94	Lakeview Landfill Erie, PA	21.81
0646	02	11/23/94	Lakeview Landfill Erie, PA	22.25
		Total Non-Hazardous Waste Soil	=	367.84