Occidental Chemical Corporation

TAM SEWER SAMPLING PROGRAM

Tam Ceramics Inc.
Hyde Park Remedial Program

October 1988
Ref. No. 1069

CONESTOGA-ROVERS & ASSOCIATES

LIST OF TABLES

LIST OF FIGURES

1.0 INTRODUCTION

On January 19, 1981, a "Stipulation and Judgment Approving Settlement Agreement" (Settlement Agreement) was entered into between the United States Environmental Protection Agency (USEPA) and the State of New York and Occidental Chemical Corporation (OCC) outlining studies and remedial programs for the Hyde Park Landfill. Item B(4) on Page I-8 of the Settlement Agreement requires OCC to undertake a utility trench investigation to identify any routes of chemical migration from the Hyde Park Landfill.

The Settlement Agreement outlines two particular sewer lines to be sampled for both bedding soils and accumulated sediment. These sewer lines are:

1. TAM Ceramics Sewers
2. Town of Lewiston - Bloody Run Area

The investigation of the Town of Lewiston - Bloody Run Area sewer line is ongoing and will be reported upon when completed. This report will deal exclusively with sewer lines on the TAM Ceramics property.

2.0 PROGRAM DESCRIPTION

The investigation of the TAM Ceramics sewers is divided into two segments. The first segment describes the collection and analysis of bedding material samples from the sanitary sewer line at two locations; one at the eastern edge of the TAM buildings and one at the monitoring station adjacent to Hyde Park Boulevard. The second segment describes the collection and analysis of a sediment sample from within the sanitary sewer at the point of discharge to the City sewer system (the monitoring station adjacent to Hyde Park Boulevard). The locations of the areas investigated are presented in Figure 1.

The sewer bedding material was investigated by drilling boreholes immediately adjacent to the sewer lines on September 3, 1987.

Later review of construction information concerning the sewer line revealed that the sewer bedding initially sampled adjacent to the northern monitoring station was not the deepest installation in the area. It was therefore necessary to return to the Site in March 1988 to collect an additional sample from the bedding of the main sanitary sewer line exiting TAM Ceramics property. In order to install a borehole along this sewer line, it was necessary to move to the west side of the monitoring station since this is the only accessible drilling location where the alignment of the sewer is accurately defined.

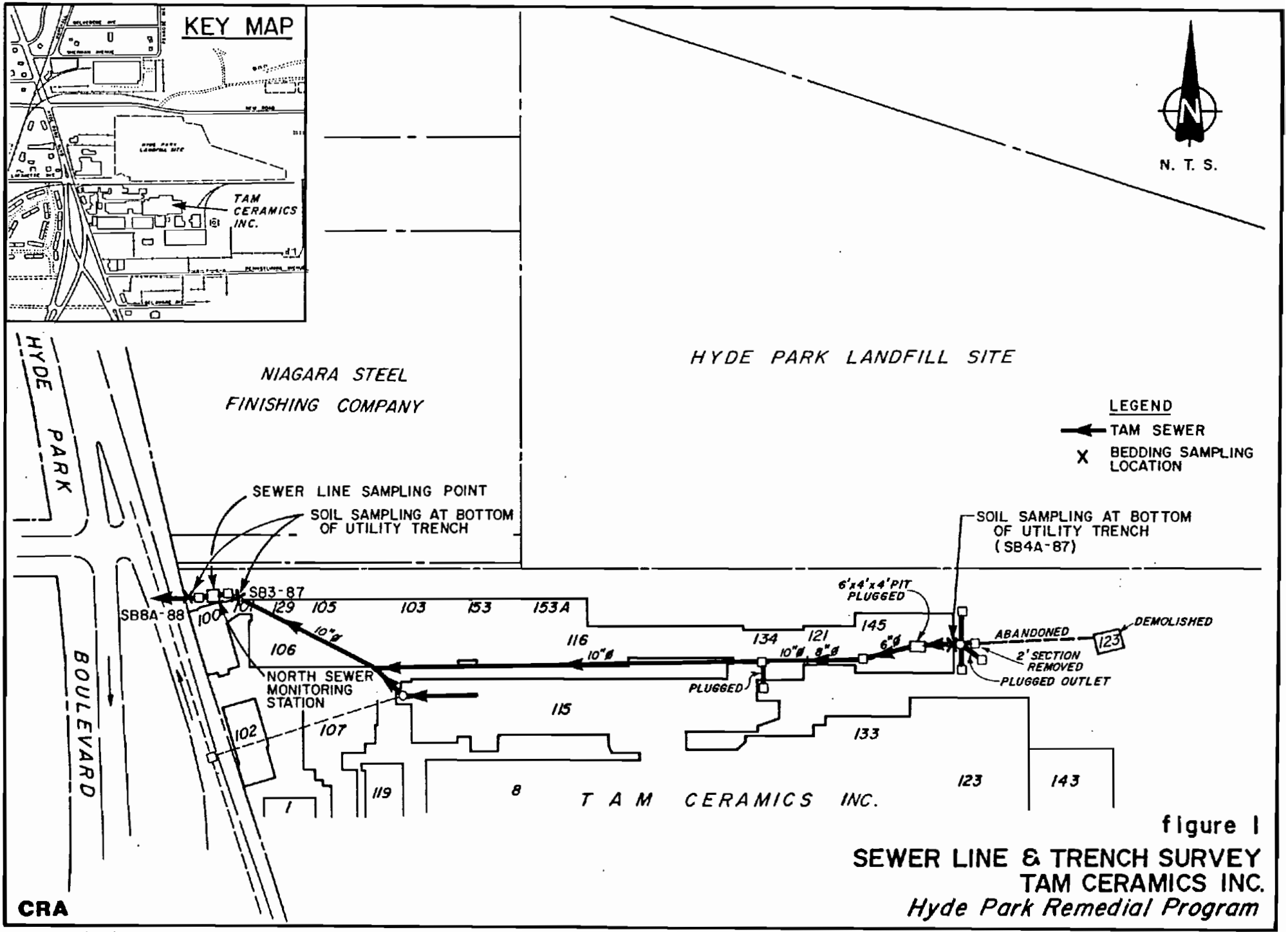

figure 1

SEWER LINE & TRENCH SURVEY
TAM CERAMICS INC.
Hyde Park Remedial Program

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Two attempts were required to reach the bedding material at the north sewer monitoring station location. The first borehole (SB8-88) encountered native material at 4 feet below grade and was therefore determined not to be in the trench originally excavated to install the sewer. The second borehole (SB8A-88) was installed approximately 4 feet further north and was determined to be in the trench. A sample of the deepest fill material was collected for analysis. A duplicate sample (SB9-88) was also collected at this location.

The specific locations for each of the boreholes drilled under the Sewer Bedding Program at TAM Ceramics are presented in Appendix A.

3.0 DRILLING AND SAMPLING PROCEDURES

3.1 DRILLING PROCEDURES

The boreholes undertaken in this program were drilled using a truck-mounted CME-55 drill rig supplied by Rochester Drilling Company of Rochester, NY. The boreholes were advanced through the overburden using 4 1/4-inch ID hollow stem augers. Sampling was completed within the auger annulus. The boreholes were extended through the overburden and backfill material surrounding the sewer pipe and into the native soil underlying the sewer bedding as determined by the OCC Field Representative. In all cases, continuous split spoon samples of the overburden materials penetrated were collected in advance of augering for geologic identification.

Following completion of each borehole, the borehole annulus was filled to within 1 foot of the ground surface with cement grout containing 3 percent bentonite by volume. The surface was restored to its original condition following hardening of the grout. A typical borehole completion is illustrated on Figure 2.

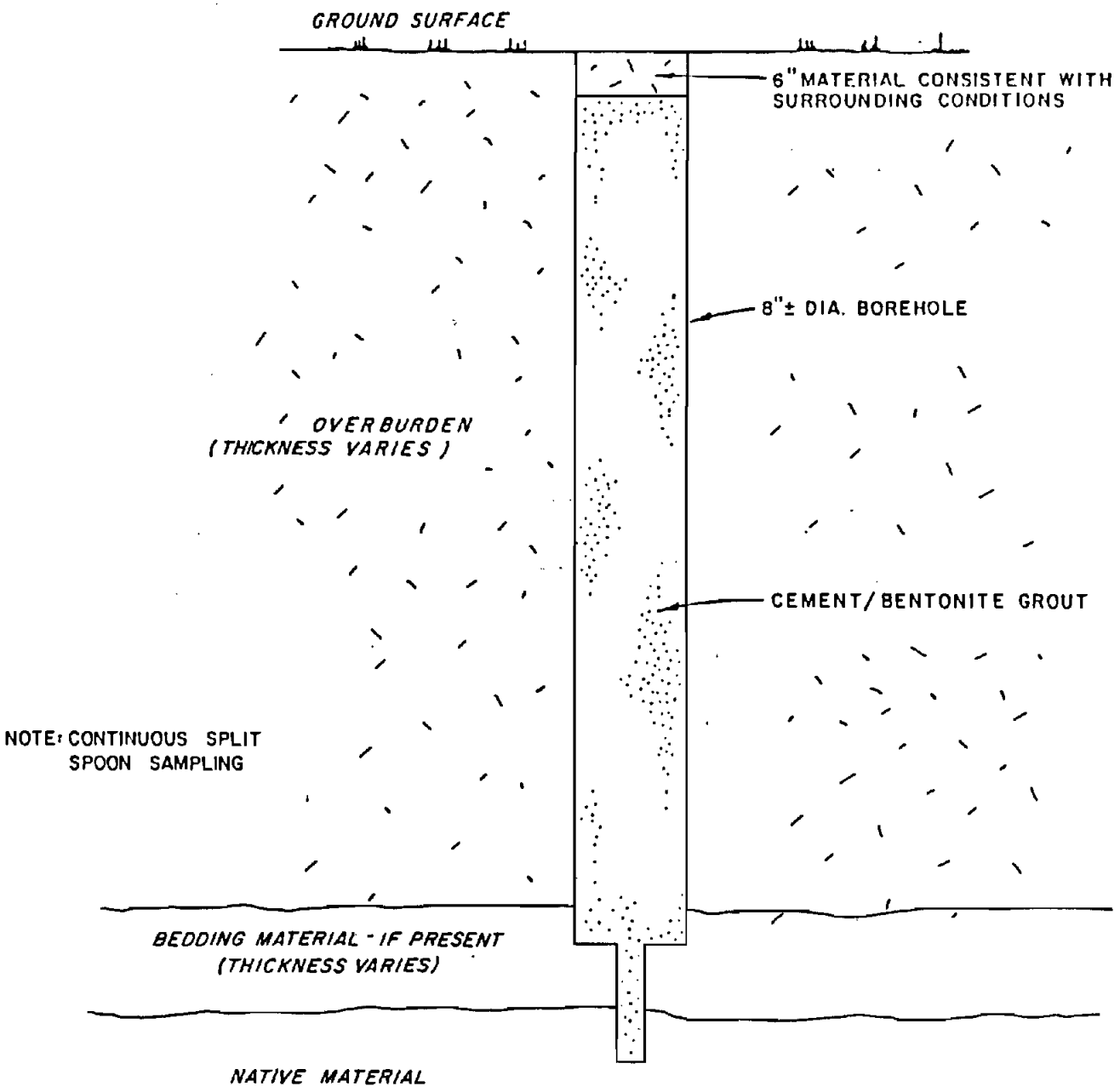

figure 2

TYPICAL SEWER BEDDING BOREHOLE
TAM CERAMICS INC.
Hyde Park Remedial Program

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Each drilling site was designated as a Survey Site during drilling activities. This was achieved by spreading a polyethylene ground sheet which was subsequently covered with plywood sheets over the active work area and erecting a temporary fence around the perimeter of the work area. All activities within this zone required health and safety provisions as per the "Environmental Health and Safety Plan for Survey Activities".

All waste material generated at each drill site, including soil cuttings, fluids and used health and safety equipment, was segregated and placed in 55-gallon steel drums. These drums were then stored in a special drum storage area at the Hyde Park Landfill and have subsequently been disposed in the Hyde Park Landfill.

The elevations of all boreholes have been determined by level survey.

3.2 SAMPLING PROCEDURES

3.2.1 Soil Bedding

Continuous split spoon samples of the overburden materials encountered during the bedding investigation were collected in each borehole. Soil samples were examined for visual and olfactory evidence of NAPL, described in terms of geologic stratigraphy, color and textural properties, and stored in glass containers for future reference.

One soil sample from the deepest interval of each sewer bedding borehole was submitted to Recra Research for chemical analysis. Descriptions of the samples submitted for chemical analysis are presented on Table 1. Each of these samples was collected from the deepest split spoon sample of fill material (bedding) encountered immediately adjacent to the sewer pipe.

These soil samples were analyzed for the Hyde Park Soil Survey Indicator Parameters which are as follows:

Parameters	Survey Level
Monochlorobenzene (MCB)	10 ug/kg
Monochlorotoluene (MCT)	10 ug/kg
2,4,5-Trichlorophenol (TCP)	100 ug/kg
Hexachlorobenzene (HCB)	100 ug/kg

3.2.2 Sediment

In addition to the sampling of the bedding material around the exterior of the sewer pipe, one sample of the sediment contained within the sewer pipe was also collected. The sediment sample was collected from within the north sewer monitoring station which is located in the northwest corner of TAM Ceramic property as shown in Figure 1. The sample was collected from accumulated sediment within the sewer line using a stainless steel trowel.

TABLE 1
SEWER BEDDING BOREHOLE DETAILS
TAM CERAMICS
HYDE PARK REMEDIAL PROGRAM

Borehole Designation	Date Completed	Ground Elevation (ft. AMSL)	Total Depth (ft. BGS)	Bottom Elevation (ft. AMSL)	Sample Depth (feet)	Bedding Material Recovery (inches)	Composition
SB-3-87	09/03/87	595.2	4.0	591.2	2.0-3.0	5	FILL. Fine to coarse sandy gravel, silty, trace clay, red-brick, gray-brown, moist.
SB-4A-87	09/03/87	600.1	8.0	592.1	6.0-6.4	4	FILL. Clayey sand with gravel, silty, brown, moist.
*SB-4B-87	09/03/87	600.1	8.0	592.1	No Sample	-	--
SB-8-88	03/16/88	596.1	10.0	586.1	No Sample	-	--
SB-8A-88	03/16/88	596.1	8.0	588.1	6.0-8.02	12	FILL. Silt, angular gravel, wet. Native. Clayey silt, silt seams, moist-wet.

Note: All samples were sieved to #4 mesh upon receipt at Recra Laboratories.

The sediment sample was also submitted to Recra Research for analysis of the Hyde Park Soil Survey Parameters.

3.3 EQUIPMENT CLEANING

All equipment used in the drilling and sampling operations was cleaned prior to use and removal from the Site. The drill rig and downhole equipment were also cleaned between each successive borehole using the following procedure:

- water wash equipment and wire brush to remove soil materials and rinse with clean water and

- steam wash followed by a series of rinses of acetone, hexane and acetone solutions and another steam wash.

All fluids generated during the cleaning operations were discharged into the Hyde Park Lagoons.

The soil sampling equipment was cleaned prior to each use utilizing the following procedure:

- disassemble all equipment and water wash to remove all visible foreign material and

- subject to a series of rinses of acetone, hexane, acetone and distilled water.

All sampling equipment was inspected and sealed in aluminum foil following cleaning. Spent rinsing fluids were collected and disposed as described above.

4.0 DISCUSSION OF RESULTS

NAPL was not identified during the drilling of the sewer bedding boreholes or the sampling of the sewer sediment on TAM Ceramics property. Consequently, Figure 3 which presents the areal limits of NAPL migration from the Hyde Park Landfill Site through the overburden is not affected by the observations made during the sewer study and the figure is correct as originally presented in the report "APL/NAPL Plume Refinement in the Overburden", February 1988.

The analytical results from the bedding and sediment samples collected are presented in Appendix B. The results indicate that the Soil Survey Indicator Parameters were not present in any of the sewer bedding locations sampled along the TAM sewers. These analytical results do not affect the refined areal extent of APL migration through the overburden (see Figure 4) and are consistent with the hydrogeologic factors and geochemical interactions that control APL migration.

The nature of the bedding materials placed around the TAM sewer line suggests that the sewer bedding would not provide a preferential pathway for chemical migration. The bedding materials encountered during the drilling program were principally composed of sand, silt and gravel with some clay and appears to be the material

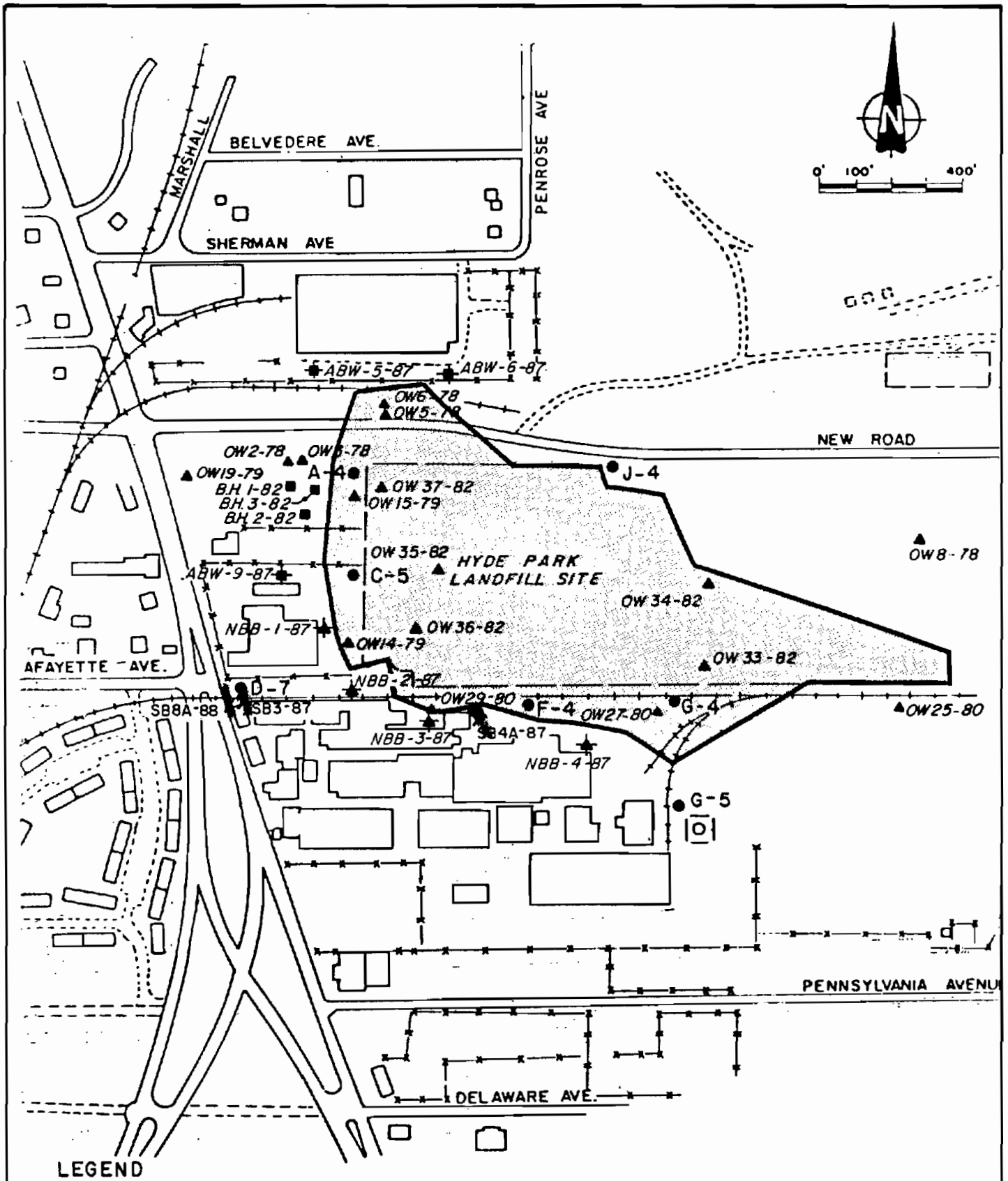

figure 3

NAPL PLUME BOUNDARY
TAM CERAMICS INC.
Hyde Park Remedial Program

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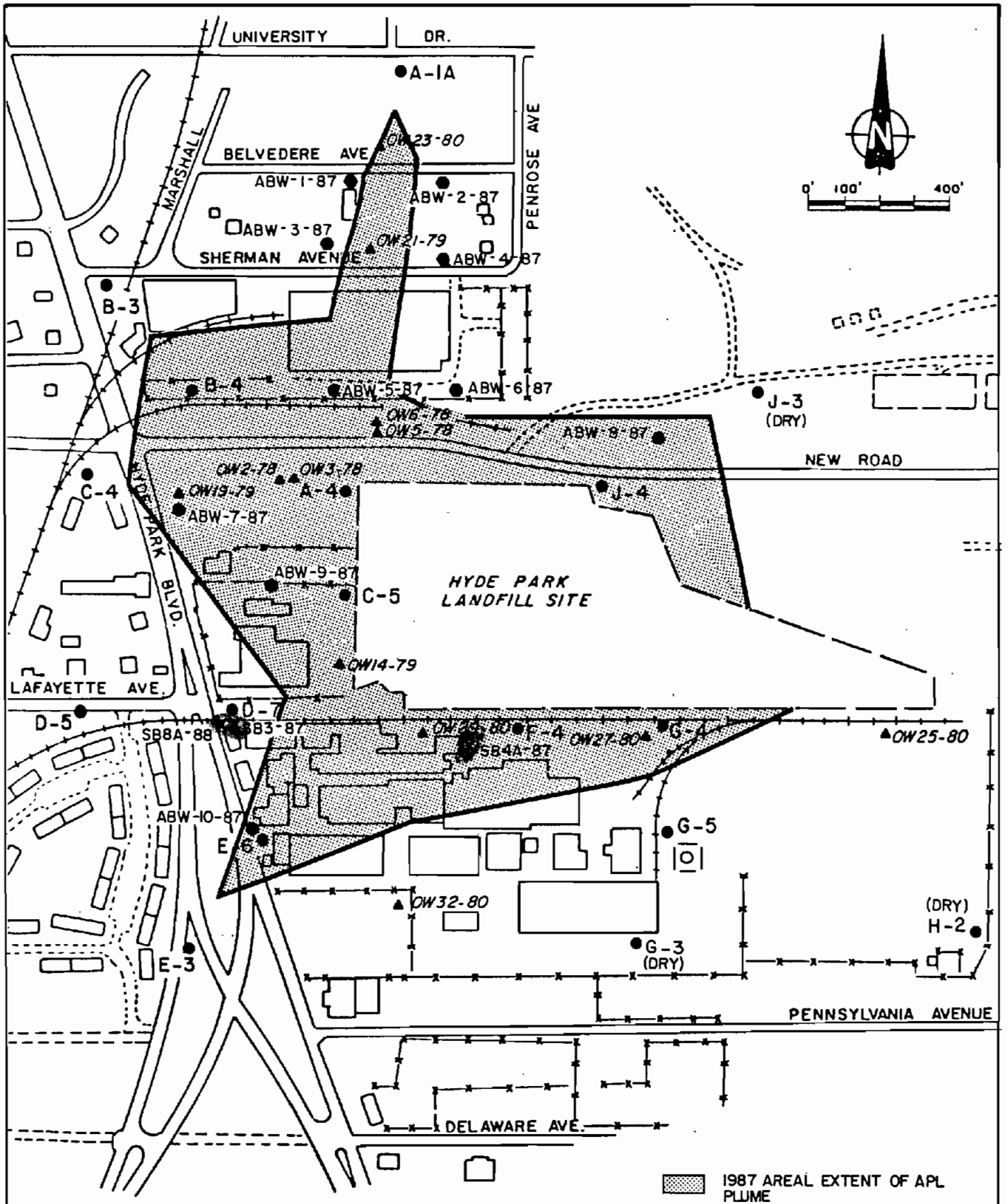

LEGEND

- ▲ SURVEY WELLS INSTALLED PRIOR TO 1983
- ● SURVEY WELLS INSTALLED IN 1983
- ⬢ APL PLUME BOUNDARY REFINEMENT WELL (1987)

figure 4

APL PLUME BOUNDARY
TAM CERAMICS INC.
Hyde Park Remedial Program

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1069-22/08/88-95-D-1

excavated from the trench at the time of sewer installation. The original material excavated would have included native clay and any overlying fill material from the area which would have included the gravel roadways, etc. Imported pipe bedding material was not used.

Since this bedding material is reasonably consistent with the surrounding overburden materials there is no reason to believe that it would be a preferential pathway for the migration of chemicals when compared to the soils surrounding the trench. The absence of NAPL or Soil Survey Parameters in the TAM sewer bedding materials confirms that the sewer bedding does not provide a preferential pathway for chemical migration.

The sediment sample collected from within the north sewer monitoring station was identified to contain Hyde Park Soil Survey Parameters at the following concentrations:

MCB	-	73 ug/kg
MCT	-	4,140 ug/kg
HCB	-	1,830 ug/kg
2,4,5-TCP	-	282 ug/kg

The point of entry of these Hyde Park Parameters into the TAM sewer system is not known. However, an RRT study will be undertaken as required in the Settlement Agreement to investigation this chemical presence in the sewer sediment.

5.0 CONCLUSIONS AND RECOMMENDATIONS

Based upon the results of the study completed, the following conclusions and recommendations have been formulated:

- NAPL is not present in the bedding of the sewers at the locations studied.

- The bedding material in the trench adjacent to the sewer pipes does not contain any Hyde Park survey parameters and consequently, the bedding is not acting as a preferential pathway for APL migration from the Landfill.

- Hyde Park Survey Parameters are present in the sediment at the north sewer monitoring station although the point of entry is not known.

- An RRT Study will be undertaken to determine what measures, if any, need be implemented to address the presence of Hyde Park Soil Survey Parameters in the Tam sewer sediment.

APPENDIX A

SEWER BEDDING BOREHOLE LOCATIONS AND LOGS

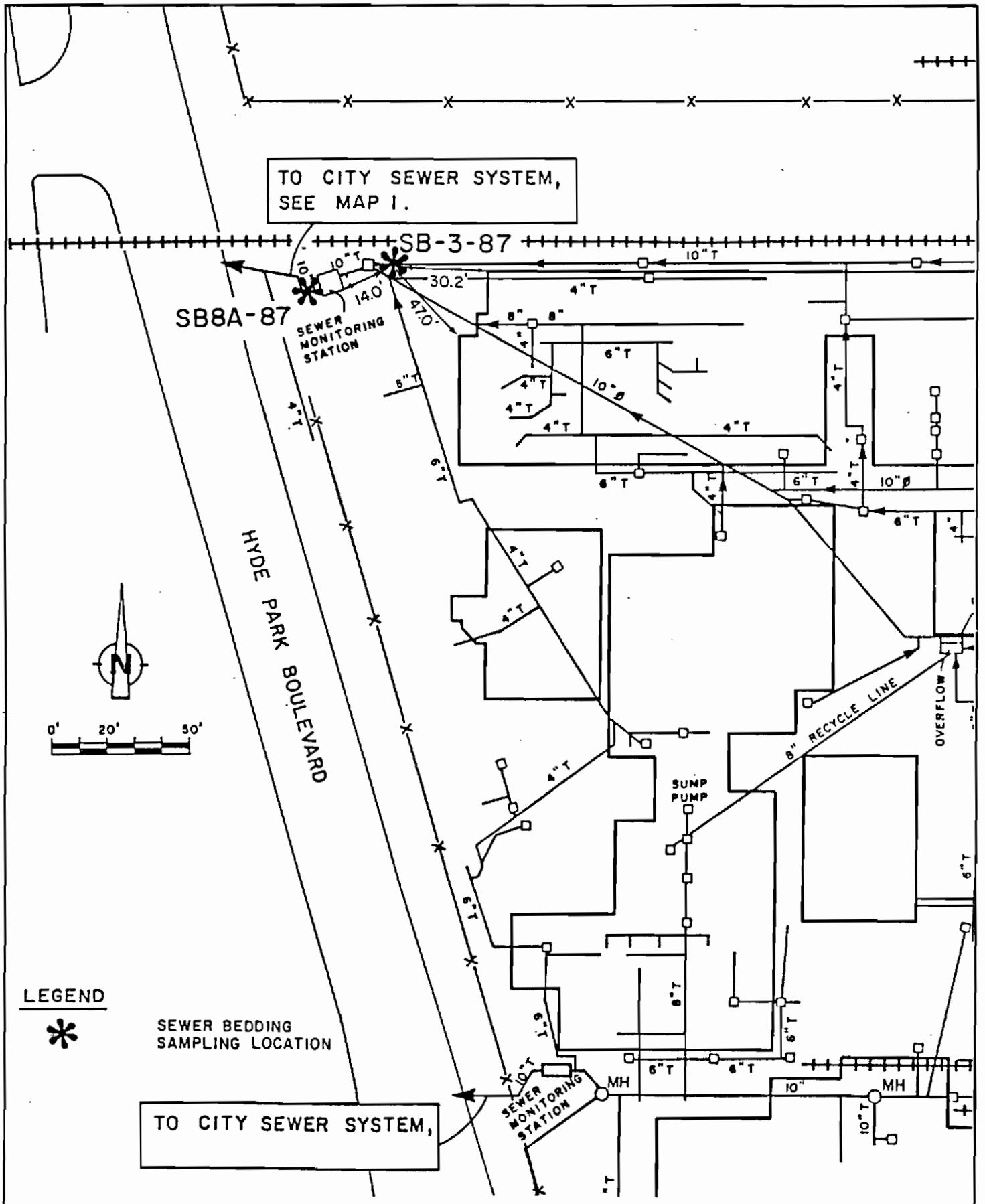

figure A-1

SEWER BEDDING SAMPLING LOCATIONS
TAM CERAMICS INC.
Hyde Park Remedial Program

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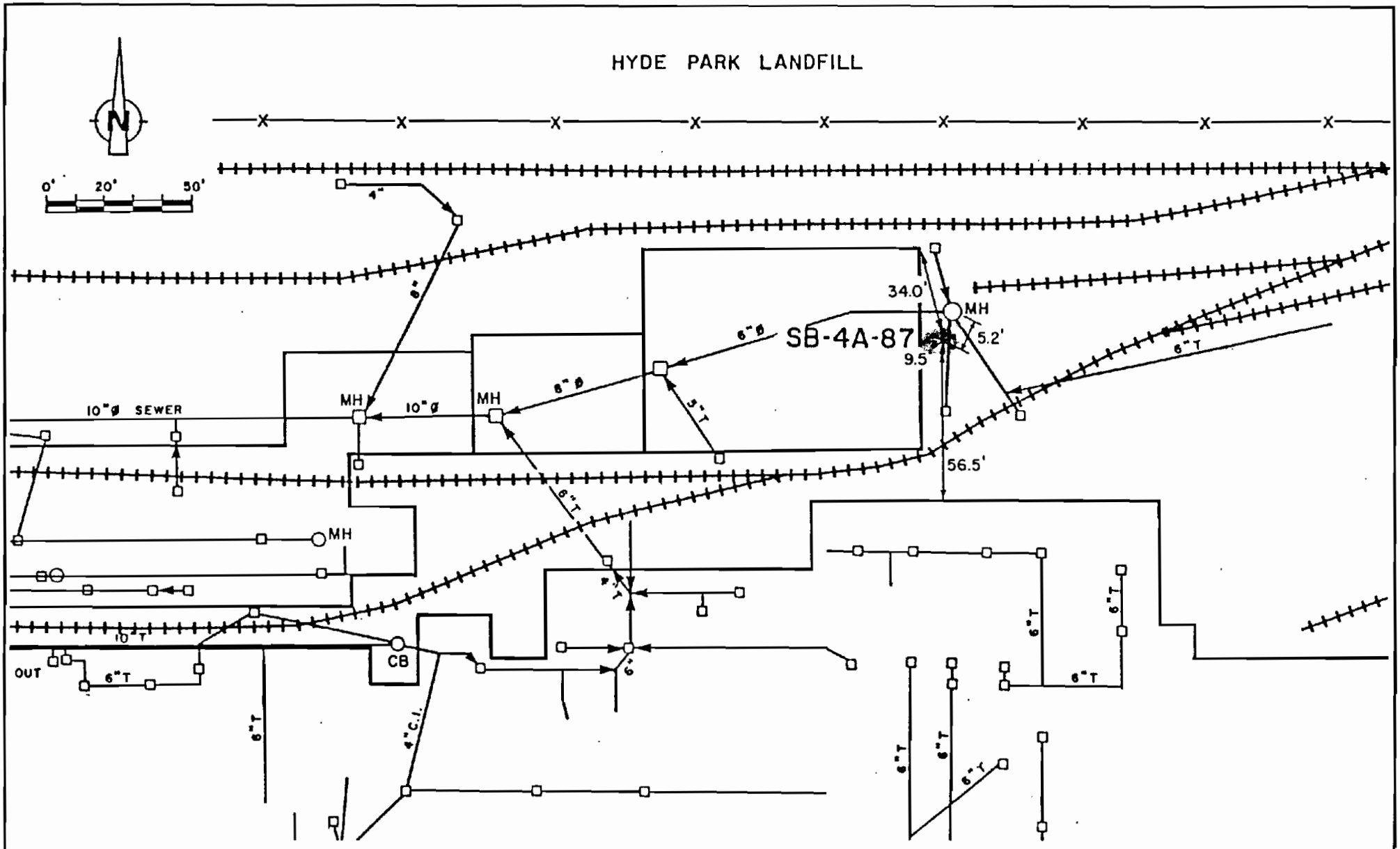

LEGEND

* SEWER BEDDING SAMPLING LOCATION

figure A-2

SEWER BEDDING SAMPLING LOCATIONS
TAM CERAMICS INC.
Hyde Park Remedial Program

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1069-22/08/88-95-D-0

STRATIGRAPHIC AND INSTRUMENTATION LOG
(OVERBURDEN)

PROJECT NAME: HYDE PARK RRT
HOLE DESIGNATION: SB-3-87

PROJECT NO.: 1069
DATE COMPLETED: 9/3/87

CLIENT: OCCIDENTAL
DRILLING METHOD: H.S.A. 8.0" OD

LOCATION: NORTHWEST CORNER OF TAM, EAST OF CATCH BASIN
CRA SUPERVISOR: C. AHRENS

DEPTH ft BG	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEVATION ft AMSL	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE STATE	SAMPLE 'N' VALUE
	GROUND ELEVATION	595.2				
2	Fill – Gray Brown Sandy fine to coarse angular Gravel, Silty, moist trace Clay, brick		8" ϕ BOREHOLE	1SS		11
	Red Brown Clayey Silt and Gray Silt, thinly bedded, moist, native	592.2 591.2	CEMENT/ BENTONITE GROUT	2SS		6C
4	END OF HOLE AT 4.0ft BGS					
6	At completion borehole was grouted to ground surface					
8	C – sample submitted for chemical analysis					
10						
12						
14						
16						
18						
20						
22						
24						
26						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

GRAIN SIZE ANALYSIS ⬭ WATER FOUND ▽ STATIC WATER LEVEL ▼

STRATIGRAPHIC AND INSTRUMENTATION LOG
(OVERBURDEN)

PROJECT NAME: HYDE PARK RRT
PROJECT NO.: 1069
CLIENT: OCCIDENTAL
LOCATION: TAM CERAMICS

HOLE DESIGNATION: SB-4A-87
DATE COMPLETED: 9/3/87
DRILLING METHOD: H.S.A. 8.0" OD
CRA SUPERVISOR: C. AHRENS

DEPTH ft BG	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEVATION ft AMSL	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE STATE	SAMPLE 'N' VALUE
	GROUND ELEVATION	600.1				
	Fill – Black and Brown Silty fine to medium Sand, Gravelly, troce Clay, moist	598.8		1SS		12
2	Fill – Brown to light Red Brown Gravelly Sand with Clayey Silt	596.7	8" ø BOREHOLE	2SS		9
4	Fill – Red Brown Silt, some Clay, trace fine Sand, moist	596.1		3SS		24
6	Fill – Brown Silty fine to medium Sand to Clayey Sand, Gravelly, moist	593.7	CEMENT/ BENTONITE GROUT	4SS		13C
8	Red Brown Silt with trace Clay and fine Gravel, moist, native	592.1				
	END OF HOLE AT 8.0ft BGS					
10	At completion borehole was grouted to ground surface					
12	C – sample submitted for chemical analysis					
14						
16						
18						
20						
22						
24						
26						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

GRAIN SIZE ANALYSIS ⬭ WATER FOUND ▽ STATIC WATER LEVEL ▼

STRATIGRAPHIC AND INSTRUMENTATION LOG
(OVERBURDEN)

PROJECT NAME: HYDE PARK RRT
PROJECT NO.: 1069
CLIENT: OCCIDENTAL
LOCATION: TAM CERAMICS

HOLE DESIGNATION: SB-4B-87
DATE COMPLETED: 9/3/87
DRILLING METHOD: H.S.A. 8.0" OD
CRA SUPERVISOR: C. AHRENS

DEPTH ft BG	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEVATION ft AMSL	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE STATE	SAMPLE 'N' VALUE
	GROUND ELEVATION	600.1				
2	Fill – Brown and Black Silty fine to medium Sand, Gravel, brick, moist		8" ø BOREHOLE	1SS		11
4	Fill – Red Brown fine Sandy Silt, trace Clay, moist			2SS		5
6				3SS		3
8	Silty Clay concrete piping encountered	594.1 592.1	CEMENT/ BENTONITE GROUT	4SS		3
10	END OF HOLE AT 8.0ft BGS Borehole was grouted to ground surface after encountering pipe					
12						
14						
16						
18						
20						
22						
24						
26						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

GRAIN SIZE ANALYSIS ⬭ WATER FOUND ▽ STATIC WATER LEVEL ▼

STRATIGRAPHIC AND INSTRUMENTATION LOG
(OVERBURDEN)

PROJECT NAME: HYDE PARK RRT
HOLE DESIGNATION: SB8–88

PROJECT NO.: 1069
DATE COMPLETED: 3/16/88

CLIENT: OCCIDENTAL CHEMICAL CORPORATION
DRILLING METHOD: HSA 8.0"ø

LOCATION: INTERSECTION OF LAFAYETTE AVENUE AND HYDE PARK BOULEVARD
CRA SUPERVISOR: D.L. TARNOWSKI

DEPTH ft BG	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEVATION ft AMSL	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE STATE	SAMPLE 'N' VALUE
	REFERENCE ELEVATION GROUND ELEVATION	596.1				
	Fill – dark Brown Silt and Silty Clay, vegetation, moist	595.8	8.0"ø BOREHOLE	1SS		5
2	Fill – Brown Silty Clay, trace fine Gravel, moist	594.1	CEMENT/BENTONITE GROUT	2SS		17
	same, with trace Brown Silty Clay					
4	Red Brown Clayey Silt, trace Gravel, dry to moist, native	592.1		3SS		21
6	same, except no gravel, moist			4SS		35
8	Red Brown, Gray and Olive Green Silty Clay, trace Silt seams, moist, native	588.1		5SS		33
10	END OF HOLE AT 10.0 ft. BGS	586.1				
	At completion borehole was grouted to surface.					
12						
14						
16						
18						
20						
22						
24						
26						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

GRAIN SIZE ANALYSIS ⬭ WATER FOUND ▽ STATIC WATER LEVEL ▼

STRATIGRAPHIC AND INSTRUMENTATION LOG
(OVERBURDEN)

PROJECT NAME: HYDE PARK RRT
HOLE DESIGNATION: SB8A–88

PROJECT NO.: 1069
DATE COMPLETED: 3/16/88

CLIENT: OCCIDENTAL CHEMICAL CORPORATION
DRILLING METHOD: HSA 8.0"ø

LOCATION: 4.0 FEET NORTH OF SB8–88
CRA SUPERVISOR: D.L. TARNOWSKI

DEPTH ft BG	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEVATION ft AMSL	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE STATE	SAMPLE 'N' VALUE
	REFERENCE ELEVATION GROUND ELEVATION	596.1				
	Fill – Brown Silt, wood fragments, moist	595.8	8.0"ø BOREHOLE			
	Fill – Brown Silty Clay, trace Gravel, moist			1SS		6
2		593.9	CEMENT/ BENTONITE GROUT			
	Fill – Gray Brown Silt, Gray angular Gravel, dry to moist			2SS		11
4	same, except moist					
				3SS		8
6	same, except wet					
		589.1		4SS*		17
	Red Brown, Gray and Olive Green Clayey Silt, trace Silt seams, moist to wet, native					
8		588.1				
	END OF HOLE AT 8.0 ft. BGS					
10						
	At completian borehole was grouted to surface.					
12						
	* – Sample submitted for chemical analysis.					
14						
16						
18						
20						
22						
24						
26						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

GRAIN SIZE ANALYSIS ⬭ WATER FOUND ▽ STATIC WATER LEVEL ▼

APPENDIX B

ANALYTICAL RESULTS - SEWER BEDDING AND SEDIMENT

Occidental Chemical Corporation
Hyde Park
TAM Sewer and Bedding Samples

	Sample Date:		9/03/87	9/03/87	9/03/87	3/16/88	3/16/88
	Sample Description:		SB3	SB4A	SMS1 (SWR MNTR STA)	SB9-88	SB8A-88
Analytes	Units	Survey Limits					
Chlorobenzene	ug/Kg	10	ND	ND	73	ND	ND
Monochlorotoluenes	ug/Kg	10	ND	ND	4,140	ND	ND
Hexachlorobenzene	ug/Kg	100	ND	ND	1,830	ND	ND
2,4,5-Trichlorophenol	ug/Kg	100	ND	ND	282	ND	ND