DOL-16

SUMMARY REPORT

BUILDING 88
TANK 050/88 - 058/88
GM-CLCD NORTH
NAO FLINT OPERATIONS
FLINT, MICHIGAN

FACILITY ID: 0-002763

CONFIRMED RELEASE NO.: C-324-89

August 22, 1997

Prepared by:

Global Environmental Engineering, Inc.
5467 Hill 23 Drive, Ste. B
Flint, Michigan 48507
(810) 238-9190

Global Environmental Engineering Inc.

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TABLE OF CONTENTS

ATTACHMENTS

1.0 UNDERGROUND STORAGE TANK

Nine underground storage tanks were associated with the Building 88 Tank Farm.

1.1 Location

Eight of the USTs were formerly located on the north side of Building 88 adjacent to the railroad tracks, and one was located to the west of Building 88. Building 88 has been removed. See Attachment 1.

1.2 UST Contents

The identification number, size, and contents of the USTs, detailed on the Buick Motor Division Storage Tank layout drawing number 42361-M dated 1973, are summarized as follows:

050/88	12,000-gallon	Oleum
051/88	12,000-gallon	Oleum
052/88	12,000-gallon	S-7 Quench
053/88	12,000-gallon	S-7 Quench
054/88	12,000-gallon	Used Oil
055/88	12,000-gallon	LSC 110
056/88	12,000-gallon	LCO 231
057/88	12,000-gallon	LK 402
058/88	3,000-gallon	Regular Gas

1.3 Installation and Removal Dates

The USTs were installed in 1936, and removal activities began in June, 1989. Due to the presence of the railroad spur, tanks 050/88, 053/88, 054/88 were closed in place. A release was identified on July 12, 1989. The confirmed release number assigned to this tank farm is C-324-89.

2.0 INVESTIGATION ACTIVITIES

According to information contained in internal General Motors Corporation files, the UST removal activities began in June, 1989. The backfill surrounding the USTs consisted of foundry sand which emanated from the foundry formerly operated on site until 1981. Groundwater was encountered at 13 feet below ground surface during tank removal activities. The documentation noted obvious corrosion on each of the USTs. Sample analysis indicated soil contamination in the area of Tank 58 in July, 1989.

Based on the file review, Global Environmental Engineering, Inc., recommended collecting soil and groundwater samples to establish the condition of impacted media.

2.1 Summary of Investigation Activities

On July 22, 1996, Global personnel supervised the advancement of soil borings to investigate the presence of impacted soil and/or groundwater related to the former USTs. Four of the five scheduled soil borings could be completed (88-1 through 88-4). Two soil samples were collected from each boring and submitted for laboratory analysis. Water samples were collected from each of the four soil borings.

On November 7, 1996, Global supervised the installation of four groundwater monitoring wells (MW-1 through MW-4). Two soil samples were collected from each boring and submitted for laboratory analysis. On November 12, 1996, water samples were collected from the four monitoring wells and one additional Geoprobe boring (88-6) was advanced in the area of Tank 058/58. Two soil samples and one water sample were collected from boring 88-6.

On June 2, 1997, Global returned to the site to install two additional monitoring wells (MW-5 and MW-6), in borings SB-5 and SB-6, respectively. Two soil samples were collected from each boring and submitted for laboratory analysis. On June 9, 1997, MW-5 and MW-6 were sampled. The screened intervals and soil types for the monitoring wells are listed below. Soil boring logs are included as Attachment 6 and Monitoring Well Logs are included as Attachment 10.

Well ID	Screened Interval (feet bgs)	Soil Type
MW-1	12 - 17	Silt
MW-2	11 - 16	Sand
MW-3	10 - 15	Sand
MW-4	7 - 12	Sand
MW-5	7 - 12	Sand
MW-6	7 - 12	Sand

2.1.1 Sample Collection and Analysis

A minimum of two soil samples were collected for laboratory analysis from each soil boring based on the highest organic vapor analyzer reading (OVA) and/or the groundwater water interface, and the

bottom-of-bore. Soil samples were collected from depths ranging from 4 to 21 feet below ground surface. Actual sample depths are given in Attachment 3. OVA results can be found on the soil boring logs, Attachment 6.

Each of the soil samples collected was placed into an unpreserved four-ounce container and transported at four degrees Celsius (4°C) using chain-of-custody procedures to Fire & Environmental Consulting Laboratories, Inc., in East Lansing, Michigan. Samples were analyzed in accordance with recommendations contained in *Environmental Response Division Operation Memorandum #6, Revision #4*, dated September 13, 1995.

A groundwater sample was collected from the Geoprobe boring using a screen point sampler attachment. The screen point sampler was driven to the desired sampling depth and an inner core, consisting of stainless steel wire screen, was pushed into the borehole allowing water to collect in the sampler. Monitoring wells were developed prior to sampling using a stainless steel bailer until water clarity stabilized. Approximately 48 hours following development, the monitoring wells were sampled. At the time of sampling, the monitoring wells were purged a minimum of three well volumes to ensure sample clarity.

Each of the groundwater samples collected for laboratory analysis was placed in laboratory-prepared glass bottles. Samples to be analyzed for dissolved lead were filtered in the field and preserved with nitric acid. Samples to be analyzed for volatile organics were preserved with hydrochloric acid. Each sample was transported at 4°C using chain-of-custody procedures to Fire & Environmental Consulting Laboratories, Inc., in East Lansing, Michigan. Samples were analyzed in accordance with recommendations contained in *Environmental Response Division Operational Memorandum #6, Revision #4*, dated September 13, 1995.

2.2 Summary of Geological Information

There are four basic rock formations comprising the bedrock of Genesee County: the Coldwater, Marshall, Michigan, and Saginaw formations. The Coldwater formation consists of sandy shale, and is a poor water producer. The Marshall formation consists of white to gray sandstone of varying grain size in the lower portion, and Napoleon Sandstone and Marshall Sandstone in the upper portion; and yields high quality groundwater. The Michigan

formation consists of a gray shale and some thick dolostone layers, and is not a principal water bearing formation. The Saginaw formation is the youngest formation, and consists of sandstone, shale, sandy shale, limestone, and coal layers. Groundwater may be obtained from the sandstone layers within the Saginaw formation. Glacial drift material overlies the bedrock.

2.3 Summary of Hydrogeological Information

2.3.1 Depth to usable aquifer

The City of Flint is on a municipal water system. Most of the potable water wells within Genesee County are located beneath the glacial drift in the Saginaw Formation. The depth to the Saginaw Formation varies throughout the county, but is located roughly 300 feet below ground surface.

2.3.2 Local Groundwater Flow Direction

Based on static water level measurements obtained from the groundwater monitoring wells, groundwater flow is to the east. See Attachment 11.

2.3.3 Hydraulic Gradient

The average hydraulic gradient, also based on static water level measurements of on-site wells, was estimated to be to be 0.06 ft/ft.

2.3.4 Hydraulic Conductivity

Slug test data obtained using a Hermit 2000© and analyzed using Aqtesolv© software indicated an average hydraulic conductivity of 0.002 ft/min. See Attachment 12.

2.3.5 Natural Groundwater Velocity (Seepage Velocity)

The monitoring wells were screened in fine to medium sand. The effective porosity of this water bearing unit is assumed to be 30% based on recommendations contained in MDEQ *Operational Memorandum No. 10, Attachment 2*, dated November 6, 1996. Based on the hydraulic conductivity, the hydraulic gradient, and the effective porosity, the natural groundwater velocity was estimated to be approximately 0.0004 ft/min or 210 ft/yr.

3.0 SOIL SAMPLE ANALYTICAL RESULTS

Soil samples were submitted to Fire & Environmental Consulting Laboratories, Inc., located in East Lansing, Michigan for analysis. Based on the former UST contents, the following analytical parameters were chosen: benzene, toluene, ethylbenzene, and xylenes (BTEX), polynuclear aromatic hydrocarbons (PNAs), polychlorinated biphenyls (PCBs), halogenated hydrocarbons, total lead, total cadmium, and total chromium. Analysis indicated the presence of the following constituents in concentrations exceeding the Tier I Soil Leaching to Groundwater Risk-Based Screening Levels (RBSLs): ethylbenzene, xylenes, total chromium, and total lead. Additional constituents were detected in concentrations that did not exceed the RBSLs. No exceedances of the Tier I Direct Contact RBSLs were noted. See Attachment 3 for a summary of soil analytical results, Attachment 4 for a Tier I comparison table, and Attachment 5 for soil concentration maps.

4.0 GROUNDWATER SAMPLE ANALYTICAL RESULTS

Groundwater samples were submitted to Fire & Environmental Consulting Laboratories, Inc., located in East Lansing, Michigan for analysis. Based on the former UST contents, the samples were analyzed for benzene, toluene, ethylbenzene, and xylenes (BTEX), polynuclear aromatic hydrocarbons (PNAs), polychlorinated biphenyls (PCBs), halogenated hydrocarbons, dissolved lead, dissolved cadmium, and dissolved chromium. Analysis indicated the presence of the following constituents in concentrations exceeding the Tier I Residential Health-Based Drinking Water and/or the Groundwater-Surface Water Interface RBSLs: benzene, ethylbenzene, trichloroethylene, and vinyl chloride. Additional constituents were detected in concentrations that did not exceed RBSLs. No exceedances of the Tier I Direct Contact RBSLs were noted. See Attachment 7 for a summary of groundwater analytical results, Attachment 8 for a Tier I comparison table, and Attachment 9 for groundwater concentration maps.

5.0 CONCLUSION

Soil concentrations exceeding the Tier I Soil Leaching to Groundwater RBSLs are present; however, the concentrations do not exceed the Tier I Direct Contact RBSLs. As the site is under pavement, exposure to impacted soil is not expected.

Groundwater concentrations exceeding the Tier I Residential Health-Based Drinking Water and Groundwater Surface Water Interface RBSLs are noted.

5.1 Sensitive Receptors

The Flint River is located greater than 3000 feet east of the former tank farm. See Attachment 1. Current data indicates it is unlikely that impacted groundwater emanating from the former tank farm has or will reach the river.

The City of Flint is on a municipal water system. Most of the potable water wells within Genesee County are located beneath the glacial drift in the Saginaw Formation. The depth to the Saginaw Formation varies throughout the county, but is located roughly 300 feet below ground surface. It is unlikely that impacted groundwater will reach this aquifer.

5.2 Delineation

According to MDEQ Guidelines as established in the Memorandum dated January 19, 1996, the extent of contamination both horizontally and vertically must be delineated to below the Tier I residential unrestricted values.

Soil impacted with BTEX constituents is not delineated horizontally or vertically at boring 88-6 located on the west side of the former tank farm. Soil impacted with chromium is not delineated at boring 88-3, located on the south side of the former Building 88, and lead is not delineated vertically at boring 88-4 or 88-6, or horizontally to the east and west at boring SB-2/MW-2 and 88-6, respectively. See Attachments 5a, 5d, and 5f.

Groundwater impacted with BTEX constituents is not delineated to the north, east, or west. Halogenated hydrocarbons are not delineated to the north and south. See Attachment 9a and 9g.

5.3 Closure Potential

The site cannot be closed at this time. The site has not yet been fully delineated with respect to soil or groundwater, and closure potential cannot yet be thoroughly evaluated.

5.4 Future Work

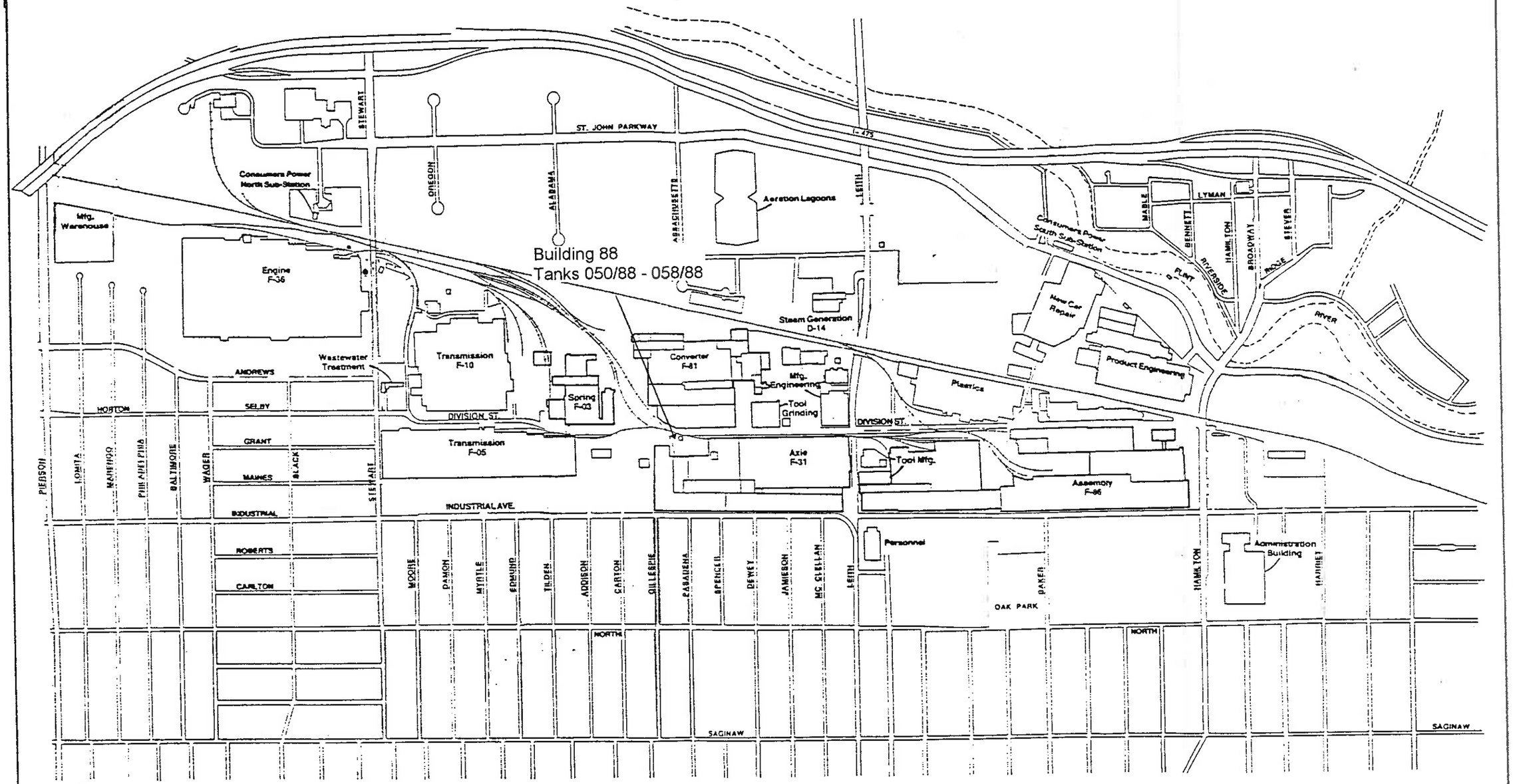
Global recommends the following activities:

1. Complete the horizontal delineation of impacted soil at borings 88-6 and SB-2/MW-2.

2. Complete the vertical delineation of impacted soil at borings 88-3, 88-4, and 88-6.
3. Complete the horizontal delineation of impacted groundwater to the north, south, east, and west of the former tank farm.

These recommendations may change based on negotiations with the MDEQ and the development of the site-wide remedial action plan.

ATTACHMENT 1



LEGEND

F-36	Factory Number
D-14	Division Number
□	Hazardous Waste Storage Area
38	Building Number
—	Property Line
■	Gate House
●	Pedestrian Entrance
-x-x-	Fence

0 400 800 1200
Scale in Feet

Adapted from

EDI Engineering & Science

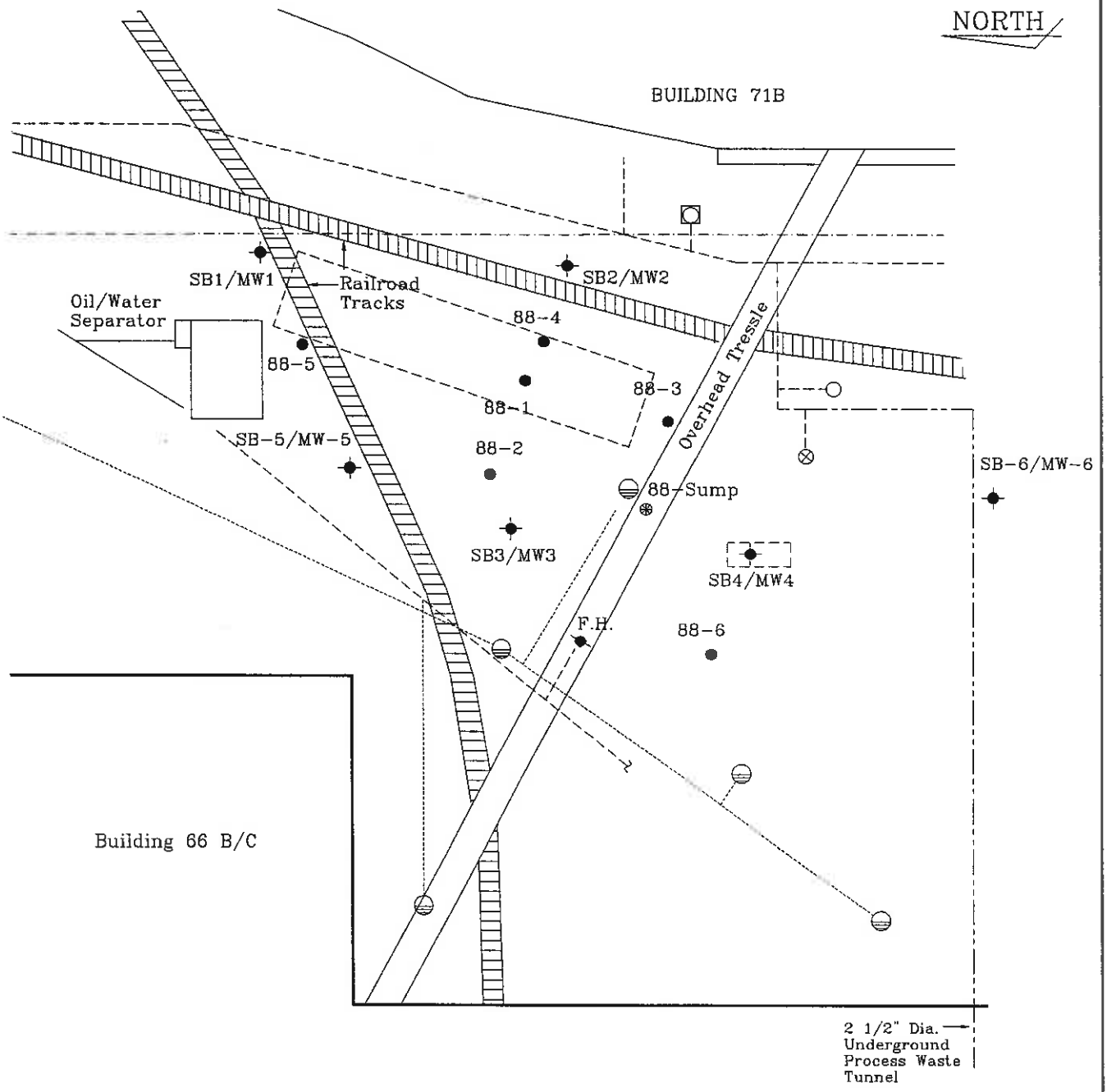
BOC FLINT OPERATIONS (BUICK SITE)

TANK FARM LOCATION/SITE DIAGRAM
ATTACHMENT 1

June, 1989

21080

ATTACHMENT 2



LEGEND:

- Monitoring Well/Soil Boring
- Geoprobe Sample Locations
- Fire Protection Line
- Storm Sewer Line
- City Water Line
- Fire Hydrant
- Former UST Locations

GM-CLCD NORTH

TITLE: PRINCIPAL/PHYSICAL FEATURES AND SAMPLE LOCATIONS BUILDING 88 - TANKS 050/88 - 058/88

SCALE: 1"=40'	DATE: 4/29/97
Global Environmental Engineering Inc.	APPROVED BY: A.L.K.
	PREPARED BY: C.G.S.
	ATTACHMENT NUMBER: 2
	PROJECT NUMBER: F174

ATTACHMENT 3

BUILDING 88/TANKS 050/88 - 058/88
SUMMARY REPORT (Continued)

LABORATORY RESULTS SOIL
FACILITY NAME: NAO FLINT OPERATIONS (BLDG 88/TANKS 050/88 - 058/88)
FACILITY NUMBER: 0-002763

VOLATILES										
Sample ID	Bldg 88-1 (7-8')		Bldg 88-2 (7-9')		Bldg 88-2 (15-17')		Bldg 88-3 (7-9')		Bldg 88-3 (13-15')	
Sample Depth (feet BGS)	7-8		7-9		15-17		7-9		13-15	
Date Collected	07/22/96		07/22/96		07/22/96		07/22/96		07/22/96	
Date Extracted	07/25/96		07/25/96		07/25/96		07/25/96		07/25/96	
Date Analyzed	07/25/96		07/25/96		07/25/96		07/25/96		07/25/96	
Analytical Method No.	8020		8020		8020		8020		8020	
Collection Method*	GP		GP		GP		GP		GP	
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Benzene	ND	10	ND	10	ND	10	ND	10	ND	10
☐ Toluene	ND	10	ND	10	ND	10	ND	10	ND	10
☐ Ethylbenzene	ND	10	ND	10	ND	10	ND	10	ND	10
☐ Total Xylenes	ND	10	ND	10	ND	10	ND	10	ND	10
☐ MTBE										
POLYNUCLEAR AROMATICS (PNAs)										
Sample ID										
Sample Depth (feet BGS)										
Date Collected										
Date Extracted										
Date Analyzed										
Analytical Method No.										
Collection Method*										
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Acenaphthene										
☐ Acenaphthylene										
☐ Anthracene										
☐ Benzo(a)anthracene										
☐ Benzo(a)pyrene										
☐ Benzo(b)fluoranthene										
☐ Benzo(g,h,i)perylene										
☐ Benzo(k)fluoranthene										

BGS=Below Ground Surface
*Collection Method Codes (list all that apply); Grab Sample (GS), Split Spoon(SS), Hand Auger(HA), Geoprobe(GP), Continuous Corer (CC), Soil Gas (SG), Cone Penetrometer (CP), Hydropunch(HP)
*If Other (OT), Specify here:*_____
MDL= Method Detection Limit

LABORATORY RESULTS SOIL
FACILITY NAME: NAO FLINT OPERATIONS (BLDG 88/TANKS 050/88 - 058/88)
FACILITY NUMBER: 0-002763

POLYNUCLEAR AROMATICS (PNAs)										
Sample ID										
Sample Depth (feet BGS)										
Date Collected										
Date Extracted										
Date Analyzed										
Analytical Method No.										
Collection Method*										
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Chrysene										
☐ Dibenzo(a,h)anthracene										
☐ Fluoranthene										
☐ Fluorene										
☐ Indeno(1,2,3- cd)pyrene										
☐ Naphthalene										
☐ Phenanthrene										
☐ Pyrene										
☐ 2-Methylnaphthalene										
METALS										
Sample ID	Bldg 88-1 (7-8')		Bldg 88-2 (7-9')		Bldg 88-2 (15-17')		Bldg 88-3 (7-9')		Bldg 88-3 (13-15')	
Sample Depth (feet BGS)	7-8		7-9		15-17		7-9		13-15	
Date Collected	07/22/96		07/22/96		07/22/96		07/22/96		07/22/96	
Date Extracted	07/29/96		07/25/96		07/25/96		07/25/96		07/25/96	
Date Analyzed	07/29/96		07/25/96		07/25/96		07/25/96		07/25/96	
Analytical Method No.	6020		6020		6020		6020		6020	
Collection Method*	GP		GP		GP		GP		GP	
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Cadmium	ND	50	970	50	130	50	ND	50	ND	50
☐ Total Chromium	1900	1000	1900	1000	3500	1000	1700	1000	4500	1000
☐ Total Lead	2400	1000	4200	1000	4700	1000	1900	1000	5700	1000

BGS=Below Ground Surface
*Collection Method Codes (list all that apply); Grab Sample (GS), Split Spoon(SS), Hand Auger(HA), Geoprobe(GP), Continuous Corer (CC), Soil Gas (SG), Cone Penetrometer (CP), Hydropunch(HP)
*If Other (OT), Specify here:*_____
MDL= Method Detection Limit

LABORATORY RESULTS SOIL
FACILITY NAME: NAO FLINT OPERATIONS (BLDG 88/TANKS 050/88 - 058/88)
FACILITY NUMBER: 0-002763

PCBs										
Sample ID	Bldg 88-1 (7-8')		Bldg 88-2 (7-9')		Bldg 88-2 (15-17')		Bldg 88-3 (7-9')		Bldg 88-3 (13-15')	
Sample Depth (feet BGS)	7-8		7-9		15-17		7-9		13-15	
Date Collected	07/22/96		07/22/96		07/22/96		07/22/96		07/22/96	
Date Extracted	07/24/96		07/24/96		07/24/96		07/24/96		07/24/96	
Date Analyzed	07/25/96		07/25/96		07/25/96		07/25/96		07/25/96	
Analytical Method No.	8081		8081		8081		8081		8081	
Collection Method*	GP		GP		GP		GP		GP	
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Aroclor 1016	ND	330	ND	330	ND	330	ND	330	ND	330
☐ Aroclor 1221	ND	330	ND	330	ND	330	ND	330	ND	330
☐ Aroclor 1232	ND	330	ND	330	ND	330	ND	330	ND	330
☐ Aroclor 1242	ND	330	ND	330	ND	330	ND	330	ND	330
☐ Aroclor 1248	ND	330	ND	330	ND	330	ND	330	ND	330
☐ Aroclor 1254	ND	330	ND	330	ND	330	ND	330	ND	330
☐ Aroclor 1280	ND	330	ND	330	ND	330	ND	330	ND	330
HALOGENATED HYDROCARBONS										
Sample ID	Bldg 88-1 (7-8')		Bldg 88-2 (7-9')		Bldg 88-2 (15-17')		Bldg 88-3 (7-9')		Bldg 88-3 (13-15')	
Sample Depth (feet BGS)	7-8		7-9		15-17		7-9		13-15	
Date Collected	07/22/96		07/22/96		07/22/96		07/22/96		07/22/96	
Date Extracted	07/26/96		07/26/96		07/26/96		07/26/96		07/26/96	
Date Analyzed	07/26/96		07/26/96		07/26/96		07/26/96		07/26/96	
Analytical Method No.	8010		8010		8010		8010		8010	
Collection Method*	GP		GP		GP		GP		GP	
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Carbon Tetrachloride	ND	10	ND	10	ND	10	ND	10	ND	10
☐ 1,1-Dichloroethane	ND	10	ND	10	ND	10	ND	10	ND	10
☐ 1,2-Dichloroethane	ND	10	ND	10	ND	10	ND	10	ND	10
☐ 1,1-Dichloroethylene	ND	10	ND	10	ND	10	ND	10	ND	10

BGS=Below Ground Surface
*Collection Method Codes (list all that apply); Grab Sample (GS), Split Spoon(SS), Hand Auger(HA), Geoprobe(GP), Continuous Corer (CC), Soil Gas (SG), Cone Penetrometer (CP), Hydropunch(HP)
*If Other (OT), Specify here:*_____
MDL= Method Detection Limit

LABORATORY RESULTS SOIL
FACILITY NAME: NAO FLINT OPERATIONS (BLDG 88/TANKS 050/88 - 058/88)
FACILITY NUMBER: 0-002763

HALOGENATED HYDROCARBONS (Cont.)										
Sample ID	Bldg 88-1 (7-8')		Bldg 88-2 (7-9')		Bldg 88-2 (15-17')		Bldg 88-3 (7-9')		Bldg 88-3 (13-15')	
Sample Depth (feet BGS)	7-8		7-9		15-17		7-9		13-15	
Date Collected	07/22/96		07/22/96		07/22/96		07/22/96		07/22/96	
Date Extracted	07/26/96		07/26/96		07/26/96		07/26/96		07/26/96	
Date Analyzed	07/26/96		07/26/96		07/26/96		07/26/96		07/26/96	
Analytical Method No.	8010		8010		8010		8010		8010	
Collection Method*	GP		GP		GP		GP		GP	
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ cis-1,2-Dichloroethylene	ND	10	ND	10	ND	10	ND	10	ND	10
☐ trans-1,2- Dichloroethylene	ND	10	ND	10	ND	10	ND	10	ND	10
☐ Tetrachloroethylene	ND	10	ND	10	ND	10	ND	10	ND	10
☐ 1,1,2-Trichloroethane	ND	10	ND	10	ND	10	ND	10	ND	10
OTHER *(Specify)*										
Sample ID										
Sample Depth (feet BGS)										
Date Collected										
Date Extracted										
Date Analyzed										
Analytical Method No.										
Collection Method*										
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐										
☐										
☐										
☐										
☐										
☐										
☐										

BGS=Below Ground Surface
*Collection Method Codes (list all that apply); Grab Sample (GS), Split Spoon(SS), Hand Auger(HA), Geoprobe(GP), Continuous Corer (CC), Soil Gas (SG), Cone Penetrometer (CP), Hydropunch(HP)
If Other (OT), Specify here: _____
MDL= Method Detection Limit

BUILDING 88/TANKS 050/88 - 058/88
SUMMARY REPORT (Continued)

LABORATORY RESULTS SOIL
FACILITY NAME: NAO FLINT OPERATIONS (BLDG 88/TANKS 050/88 - 058/88)
FACILITY NUMBER: 0-002763

VOLATILES										
Sample ID	Bldg 88-3 (19-21')		Bldg 88-4 (7-9')		Bldg 88-4 (11-13')		Bldg 88-6 (7-9')		Bldg 88-6 (11-13')	
Sample Depth (feet BGS)	19-21		7-9		11-13		7-9		11-13	
Date Collected	07/22/96		07/22/96		07/22/96		11/12/96		11/12/96	
Date Extracted	07/25/96		07/25/96		07/25/96		11/16/96		11/16/96	
Date Analyzed	07/25/96		07/25/96		07/25/96		11/16/96		11/16/96	
Analytical Method No.	8020		8020		8020		8020		8020	
Collection Method*	GP		GP		GP		GP		GP	
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Benzene	ND	10	ND	10	ND	10	ND	10	100	100
☐ Toluene	ND	10	ND	10	ND	10	ND	10	ND	100
☐ Ethylbenzene	ND	10	ND	10	700	10	ND	10	1600	100
☐ Total Xylenes	ND	10	7000	10	3400	10	ND	10	4400	100
☐ MTBE										
POLYNUCLEAR AROMATICS (PNAs)										
Sample ID							Bldg 88-6 (7-9')		Bldg 88-6 (11-13')	
Sample Depth (feet BGS)							7-9		11-13	
Date Collected							11/12/96		11/12/96	
Date Extracted							11/16/96		11/16/96	
Date Analyzed							11/16/96		11/16/96	
Analytical Method No.							8270		8270	
Collection Method*							GP		GP	
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Acenaphthene							ND	300	700	300
☐ Acenaphthylene							ND	300	ND	300
☐ Anthracene							ND	300	1400	300
☐ Benzo(a)anthracene							ND	300	2400	300
☐ Benzo(a)pyrene							ND	300	2300	300
☐ Benzo(b)fluoranthene							ND	300	2300	300
☐ Benzo(g,h,i)perylene							ND	300	1600	300
☐ Benzo(k)fluoranthene							ND	300	2200	300

BGS=Below Ground Surface
*Collection Method Codes (list all that apply); Grab Sample (GS), Split Spoon(SS), Hand Auger(HA), Geoprobe(GP), Continuous Corer (CC), Soil Gas (SG), Cone Penetrometer (CP), Hydropunch(HP)
*If Other (OT), Specify here:*_____
MDL= Method Detection Limit

LABORATORY RESULTS SOIL
FACILITY NAME: NAO FLINT OPERATIONS (BLDG 88/TANKS 050/88 - 058/88)
FACILITY NUMBER: 0-002763

POLYNUCLEAR AROMATICS (PNAs)										
Sample ID							Bldg 88-6 (7-9')		Bldg 88-6 (11-13')	
Sample Depth (feet BGS)							7-9		11-13	
Date Collected							11/12/96		11/12/96	
Date Extracted							11/16/96		11/16/96	
Date Analyzed							11/16/96		11/16/96	
Analytical Method No.							8270		8270	
Collection Method*							GP		GP	
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Chrysene							ND	300	2900	300
☐ Dibenzo(a,h)anthracene							ND	300	ND	300
☐ Fluoranthene							ND	300	3900	300
☐ Fluorene							ND	300	900	300
☐ Indeno(1,2,3- cd)pyrene							ND	300	ND	300
☐ Naphthalene							ND	300	2600	300
☐ 2-Methylnaphthalene							ND	300	4200	300
☐ Phenanthrene							ND	300	3800	300
☐ Pyrene							ND	330	9000	300
METALS										
Sample ID	Bldg 88-3 (19-21')		Bldg 88-4 (7-9')		Bldg 88-4 (11-13')		Bldg 88-6 (7-9')		Bldg 88-6 (11-13')	
Sample Depth (feet BGS)	19-21		7-9		11-13		7-9		11-13	
Date Collected	07/22/96		07/22/96		07/22/96		11/12/96		11/12/96	
Date Extracted	07/29/96		07/25/96		07/25/96		11/20/96		11/20/96	
Date Analyzed	07/29/96		07/25/96		07/25/96		11/20/96		11/20/96	
Analytical Method No.	6020		6020		6020		6020		6020	
Collection Method*	GP		GP		GP		GP		GP	
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Cadmium	100	50	ND	50	ND	50				
☐ Total Chromium	18,400	1000	1300	1000	1900	1000	1100	1000	4500	1000
☐ Total Lead	9500	1000	418,000	1000	89,900	1000	2100	1000	77,200	1000

BGS=Below Ground Surface
*Collection Method Codes (list all that apply); Grab Sample (GS), Split Spoon(SS), Hand Auger(HA), Geoprobe(GP), Continuous Corer (CC), Soil Gas (SG), Cone Penetrometer (CP), Hydropunch(HP)
If Other (OT), Specify here: _____
MDL= Method Detection Limit

LABORATORY RESULTS SOIL
FACILITY NAME: NAO FLINT OPERATIONS (BLDG 88/TANKS 050/88 - 058/88)
FACILITY NUMBER: 0-002763

PCBs										
Sample ID	Bldg 88-3 (19-21')		Bldg 88-4 (7-9')		Bldg 88-4 (11-13')					
Sample Depth (feet BGS)	19-21		7-9		11-13					
Date Collected	07/22/96		07/22/96		07/22/96					
Date Extracted	07/24/96		07/24/96		07/24/96					
Date Analyzed	07/25/96		07/25/96		07/25/96					
Analytical Method No.	8081		8081		8081					
Collection Method*	GP		GP		GP					
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Aroclor 1016	ND	330	ND	330	ND	330				
☐ Aroclor 1221	ND	330	ND	330	ND	330				
☐ Aroclor 1232	ND	330	ND	330	ND	330				
☐ Aroclor 1242	ND	330	ND	330	ND	330				
☐ Aroclor 1248	ND	330	ND	330	ND	330				
☐ Aroclor 1254	ND	330	ND	330	ND	330				
☐ Aroclor 1280	ND	330	ND	330	ND	330				
HALOGENATED HYDROCARBONS										
Sample ID	Bldg 88-3 (19-21')		Bldg 88-4 (7-9')		Bldg 88-4 (11-13')		Bldg 88-6 (7-9')		Bldg 88-6 (11-13')	
Sample Depth (feet BGS)	19-21		7-9		11-13		7-9		11-13	
Date Collected	07/22/96		07/22/96		07/22/96		11/12/96		11/12/96	
Date Extracted	07/26/96		07/26/96		07/26/96		11/16/96		11/16/96	
Date Analyzed	07/26/96		07/26/96		07/26/96		11/16/96		11/16/96	
Analytical Method No.	8010		8010		8010		8010		8010	
Collection Method*	GP		GP		GP		GP		GP	
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Carbon Tetrachloride	ND	10	ND	10	ND	10	ND	10	ND	10
☐ 1,1-Dichloroethane	ND	10	ND	10	ND	10	ND	10	ND	10
☐ 1,2-Dichloroethane	ND	10	ND	10	ND	10	ND	10	ND	10
☐ 1,1-Dichloroethylene	ND	10	ND	10	ND	10	ND	10	ND	10

BGS=Below Ground Surface
*Collection Method Codes (list all that apply); Grab Sample (GS), Split Spoon(SS), Hand Auger(HA), Geoprobe(GP), Continuous Corer (CC), Soil Gas (SG), Cone Penetrometer (CP), Hydropunch(HP)
*If Other (OT), Specify here:*_____
MDL= Method Detection Limit

LABORATORY RESULTS SOIL
FACILITY NAME: NAO FLINT OPERATIONS (BLDG 88/TANKS 050/88 - 058/88)
FACILITY NUMBER: 0-002763

HALOGENATED HYDROCARBONS										
Sample ID	Bldg 88-3 (19-21')		Bldg 88-4 (7-9')		Bldg 88-4 (11-13')		Bldg 88-6 (7-9')		Bldg 88-6 (11-13')	
Sample Depth (feet BGS)	19-21		7-9		11-13		7-9		11-13	
Date Collected	07/22/96		07/22/96		07/22/96		11/12/96		11/12/96	
Date Extracted	07/26/96		07/26/96		07/26/96		11/16/96		11/16/96	
Date Analyzed	07/26/96		07/26/96		07/26/96		11/16/96		11/16/96	
Analytical Method No.	8010		8010		8010		8010		8010	
Collection Method*	GP		GP		GP		GP		GP	
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ cis-1,2-Dichloroethylene	ND	10	ND	10	ND	10	ND	10	ND	10
☐ trans-1,2- Dichloroethylene	ND	10	ND	10	ND	10	ND	10	ND	10
☐ Tetrachloroethylene	ND	10	ND	10	ND	10	ND	10	ND	10
☐ 1,1,2-Trichloroethane	ND	10	ND	10	ND	10	ND	10	ND	10
OTHER *(Specify)*										
Sample ID										
Sample Depth (feet BGS)										
Date Collected										
Date Extracted										
Date Analyzed										
Analytical Method No.										
Collection Method*										
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐										
☐										
☐										
☐										
☐										
☐										
☐										

BGS=Below Ground Surface
*Collection Method Codes (list all that apply); Grab Sample (GS), Split Spoon(SS), Hand Auger(HA), Geoprobe(GP), Continuous Corer (CC), Soil Gas (SG), Cone Penetrometer (CP), Hydropunch(HP)
*If Other (OT), Specify here:*_____
MDL= Method Detection Limit

LABORATORY RESULTS SOIL
FACILITY NAME: NAO FLINT OPERATIONS (BLDG 88/TANKS 050/88 - 058/88)
FACILITY NUMBER: 0-002763

VOLATILES										
Sample ID	SB1/MW1 (5-7')		SB1/MW1 (13-15')		SB2/MW2 (4-6')		SB2/MW2 (14-16')		SB3/MW3 (4-6')	
Sample Depth (feet BGS)	5-7		13-15		4-6		14-16		4-6	
Date Collected	11/07/96		11/07/96		11/07/96		11/07/96		11/07/96	
Date Extracted	11/17/96		11/17/96		11/17/96		11/17/96		11/17/96	
Date Analyzed	11/17/96		11/17/96		11/17/96		11/17/96		11/17/96	
Analytical Method No.	8020		8020		8020		8020		8020	
Collection Method*	SS		SS		SS		SS		SS	
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Benzene	ND	10	ND	10	ND	10	ND	10	ND	100
☐ Toluene	ND	10	ND	10	ND	10	ND	10	ND	100
☐ Ethylbenzene	ND	10	ND	10	ND	10	ND	10	ND	100
☐ Total Xylenes	ND	10	ND	10	ND	10	ND	10	ND	100
☐ MTBE										
POLYNUCLEAR AROMATICS (PNAs)										
Sample ID	SB1/MW1 (5-7')		SB1/MW1 (13-15')		SB2/MW2 (4-6')		SB2/MW2 (14-16')		SB3/MW3 (4-6')	
Sample Depth (feet BGS)	5-7		13-15		4-6		14-16		4-6	
Date Collected	11/07/96		11/07/96		11/07/96		11/07/96		11/07/96	
Date Extracted	11/14/96		11/14/96		11/14/96		11/14/96		11/14/96	
Date Analyzed	11/26/96		11/26/96		11/26/96		11/26/96		11/26/96	
Analytical Method No.	8270		8270		8270		8270		8270	
Collection Method*	SS		SS		SS		SS		SS	
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Acenaphthene	ND	1200	ND	300	ND	300	ND	300	ND	300
☐ Acenaphthylene	ND	1200	ND	300	ND	300	ND	300	ND	300
☐ Anthracene	ND	1200	ND	300	ND	300	ND	300	ND	300
☐ Benzo(a)anthracene	ND	1200	ND	300	ND	300	ND	300	ND	300
☐ Benzo(a)pyrene	ND	1200	ND	300	ND	300	ND	300	ND	300
☐ Benzo(b)fluoranthene	ND	1200	ND	300	ND	300	ND	300	ND	300
☐ Benzo(g,h,i)perylene	ND	1200	ND	300	ND	300	ND	300	ND	300
☐ Benzo(k)fluoranthene	ND	1200	ND	300	ND	300	ND	300	ND	300

BGS=Below Ground Surface
*Collection Method Codes (list all that apply); Grab Sample (GS), Split Spoon(SS), Hand Auger(HA), Geoprobe(GP), Continuous Corer (CC), Soil Gas (SG), Cone Penetrometer (CP), Hydropunch(HP)
*If Other (OT), Specify here:*_____
MDL= Method Detection Limit

LABORATORY RESULTS SOIL
FACILITY NAME: NAO FLINT OPERATIONS (BLDG 88/TANKS 050/88 - 058/88)
FACILITY NUMBER: 0-002763

POLYNUCLEAR AROMATICS (PNAs)										
Sample ID	SB1/MW1 (5-7')		SB1/MW1 (13-15')		SB2/MW2 (4-6')		SB2/MW2 (14-16')		SB3/MW3 (4-6')	
Sample Depth (feet BGS)	5-7		13-15		4-6		14-16		4-6	
Date Collected	11/07/96		11/07/96		11/07/96		11/07/96		11/07/96	
Date Extracted	11/14/96		11/14/96		11/14/96		11/14/96		11/14/96	
Date Analyzed	11/26/96		11/26/96		11/26/96		11/26/96		11/26/96	
Analytical Method No.	8270		8270		8270		8270		8270	
Collection Method*	SS		SS		SS		SS		SS	
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Chrysene	ND	1200	ND	300	ND	300	ND	300	ND	300
☐ Dibenzo(a,h)anthracene	ND	1200	ND	300	ND	300	ND	300	ND	300
☐ Fluoranthene	ND	1200	ND	300	ND	300	ND	300	ND	300
☐ Fluorene	ND	1200	ND	300	ND	300	ND	300	ND	300
☐ Indeno(1,2,3- cd)pyrene	ND	1200	ND	300	ND	300	ND	300	ND	300
☐ Naphthalene	ND	1200	ND	300	ND	300	ND	300	ND	300
☐ 2-Methylnaphthalene	2100	1200	ND	300	ND	300	ND	300	ND	300
☐ Phenanthrene	ND	1200	ND	300	ND	300	ND	300	ND	300
☐ Pyrene	ND	1200	ND	300	ND	300	ND	330	ND	300
METALS										
Sample ID	SB1/MW1 (5-7')		SB1/MW1 (13-15')		SB2/MW2 (4-6')		SB2/MW2 (14-16')		SB3/MW3 (4-6')	
Sample Depth (feet BGS)	5-7		13-15		4-6		14-16		4-6	
Date Collected	11/07/96		11/07/96		11/07/96		11/07/96		11/07/96	
Date Extracted	11/20/96		11/20/96		11/20/96		11/20/96		11/20/96	
Date Analyzed	11/20/96		11/20/96		11/20/96		11/20/96		11/20/96	
Analytical Method No.	6020		6020		6020		6020		6020	
Collection Method*	SS		SS		SS		SS		SS	
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Cadmium										
☐ Total Chromium	4400	1000	10,300	1000	11,200	1000	2300	1000	1400	1000
☐ Total Lead	19,600	1000	7600	1000	69,800	1000	7800	1000	2400	1000

BGS=Below Ground Surface
*Collection Method Codes (list all that apply); Grab Sample (GS), Split Spoon(SS), Hand Auger(HA), Geoprobe(GP), Continuous Corer (CC), Soil Gas (SG), Cone Penetrometer (CP), Hydropunch(HP)
*If Other (OT), Specify here:*_____
MDL= Method Detection Limit

LABORATORY RESULTS SOIL
FACILITY NAME: NAO FLINT OPERATIONS (BLDG 88/TANKS 050/88 - 058/88)
FACILITY NUMBER: 0-002763

PCBs										
Sample ID										
Sample Depth (feet BGS)										
Date Collected										
Date Extracted										
Date Analyzed										
Analytical Method No.										
Collection Method*										
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Aroclor 1016										
☐ Aroclor 1221										
☐ Aroclor 1232										
☐ Aroclor 1242										
☐ Aroclor 1248										
☐ Aroclor 1254										
☐ Aroclor 1280										
HALOGENATED HYDROCARBONS										
Sample ID	SB1/MW1 (5-7')		SB1/MW1 (13-15')		SB2/MW2 (4-6')		SB2/MW2 (14-16')		SB3/MW3 (4-6')	
Sample Depth (feet BGS)	5-7		13-15		4-6		14-16		4-6	
Date Collected	11/07/96		11/07/96		11/07/96		11/07/96		11/07/96	
Date Extracted	11/17/96		11/17/96		11/17/96		11/17/96		11/17/96	
Date Analyzed	11/17/96		11/17/96		11/17/96		11/17/96		11/17/96	
Analytical Method No.	8010		8010		8010		8010		8010	
Collection Method*	SS		SS		SS		SS		SS	
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Carbon Tetrachloride	ND	10	ND	10	ND	10	ND	10	ND	10
☐ 1,1-Dichloroethane	ND	10	ND	10	ND	10	ND	10	ND	10
☐ 1,2-Dichloroethane	ND	10	ND	10	ND	10	ND	10	ND	10
☐ 1,1-Dichloroethylene	ND	10	ND	10	ND	10	ND	10	ND	10

BGS=Below Ground Surface
*Collection Method Codes (list all that apply); Grab Sample (GS), Split Spoon(SS), Hand Auger(HA), Geoprobe(GP), Continuous Corer (CC), Soil Gas (SG), Cone Penetrometer (CP), Hydropunch(HP)
*If Other (OT), Specify here:*_____
MDL= Method Detection Limit

LABORATORY RESULTS SOIL
FACILITY NAME: NAO FLINT OPERATIONS (BLDG 88/TANKS 050/88 - 058/88)
FACILITY NUMBER: 0-002763

HALOGENATED HYDROCARBONS										
Sample ID	SB1/MW1 (5-7')		SB1/MW1 (13-15')		SB2/MW2 (4-6')		SB2/MW2 (14-16')		SB3/MW3 (4-6')	
Sample Depth (feet BGS)	5-7		13-15		4-6		14-16		4-6	
Date Collected	11/07/96		11/07/96		11/07/96		11/07/96		11/07/96	
Date Extracted	11/17/96		11/17/96		11/17/96		11/17/96		11/17/96	
Date Analyzed	11/17/96		11/17/96		11/17/96		11/17/96		11/17/96	
Analytical Method No.	8010		8010		8010		8010		8010	
Collection Method*	SS		SS		SS		SS		SS	
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ cis-1,2-Dichloroethylene	ND	10	ND	10	ND	10	ND	10	ND	10
☐ trans-1,2- Dichloroethylene	ND	10	ND	10	ND	10	ND	10	ND	10
☐ Tetrachloroethylene	ND	10	ND	10	ND	10	ND	10	ND	10
☐ 1,1,2-Trichloroethane	ND	10	ND	10	ND	10	ND	10	ND	10
OTHER *(Specify)*										
Sample ID	SB1/MW1 (5-7')		SB1/MW1 (13-15')		SB2/MW2 (4-6')		SB2/MW2 (14-16')		SB3/MW3 (4-6')	
Sample Depth (feet BGS)	5-7		13-15		4-6		14-16		4-6	
Date Collected	11/07/96		11/07/96		11/07/96		11/07/96		11/07/96	
Date Extracted	11/17/96		11/17/96		11/17/96		11/17/96		11/17/96	
Date Analyzed	11/17/96		11/17/96		11/17/96		11/17/96		11/17/96	
Analytical Method No.	8010		8010		8010		8010		8010	
Collection Method*	SS		SS		SS		SS		SS	
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Bis(2-ethylhexyl)phthalate	ND	10	ND	10	1800	10	1100	10	600	10
☐										
☐										
☐										
☐										
☐										
☐										

BGS=Below Ground Surface
*Collection Method Codes (list all that apply); Grab Sample (GS), Split Spoon(SS), Hand Auger(HA), Geoprobe(GP), Continuous Corer (CC), Soil Gas (SG), Cone Penetrometer (CP), Hydropunch(HP)
*If Other (OT), Specify here:*_____
MDL= Method Detection Limit

LABORATORY RESULTS SOIL
FACILITY NAME: NAO FLINT OPERATIONS (BLDG 88/TANKS 050/88 - 058/88)
FACILITY NUMBER: 0-002763

VOLATILES										
Sample ID	SB3/MW3 (13-15')		SB4/MW4 (8-10')		SB4/MW4 (10-12')		SB5/MW5 (2-4')		SB5/MW5 (8-10')	
Sample Depth (feet BGS)	13-15		8-10		10-12		2-4		8-10	
Date Collected	11/07/96		11/07/96		11/07/96		6/2/97		6/2/97	
Date Extracted	11/17/96		11/17/96		11/17/96		6/10/97		6/10/97	
Date Analyzed	11/17/96		11/17/96		11/17/96		6/10/97		6/10/97	
Analytical Method No.	8020		8020		8020		8020		8020	
Collection Method*	SS		SS		SS		SS		SS	
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Benzene	ND	10	ND	10	ND	10	ND	10	ND	10
☐ Toluene	ND	10	ND	10	ND	10	ND	10	ND	10
☐ Ethylbenzene	ND	10	ND	10	ND	10	ND	10	ND	10
☐ Total Xylenes	ND	10	ND	10	ND	10	ND	10	ND	10
☐ MTBE										
POLYNUCLEAR AROMATICS (PNAs)										
Sample ID	SB3/MW3 (13-15')		SB4/MW4 (8-10')		SB4/MW4 (10-12')		SB5/MW5 (2-4')		SB5/MW5 (8-10')	
Sample Depth (feet BGS)	13-15		8-10		10-12		2-4		8-10	
Date Collected	11/07/96		11/07/96		11/07/96		6/2/97		6/2/97	
Date Extracted	11/14/96		11/14/96		11/14/96		6/5/97		6/5/97	
Date Analyzed	11/26/96		11/26/96		11/26/96		6/5/97		6/5/97	
Analytical Method No.	8270		8270		8270		8270		8270	
Collection Method*	SS		SS		SS		SS		SS	
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Acenaphthene	ND	300	ND	300	ND	300	ND	330	ND	330
☐ Acenaphthylene	ND	300	ND	300	ND	300	ND	330	ND	330
☐ Anthracene	ND	300	ND	300	ND	300	ND	330	ND	330
☐ Benzo(a)anthracene	ND	300	ND	300	ND	300	ND	330	ND	330
☐ Benzo(a)pyrene	ND	300	ND	300	ND	300	ND	330	ND	330
☐ Benzo(b)fluoranthene	ND	300	ND	300	ND	300	ND	330	ND	330
☐ Benzo(g,h,i)perylene	ND	300	ND	300	ND	300	ND	330	ND	330
☐ Benzo(k)fluoranthene	ND	300	ND	300	ND	300	ND	330	ND	330

BGS=Below Ground Surface
*Collection Method Codes (list all that apply); Grab Sample (GS), Split Spoon(SS), Hand Auger(HA), Geoprobe(GP), Continuous Corer (CC), Soil Gas (SG), Cone Penetrometer (CP), Hydropunch(HP)
*If Other (OT), Specify here:*_____
MDL= Method Detection Limit

LABORATORY RESULTS SOIL
FACILITY NAME: NAO FLINT OPERATIONS (BLDG 88/TANKS 050/88 - 058/88)
FACILITY NUMBER: 0-002763

POLYNUCLEAR AROMATICS (PNAs)										
Sample ID	SB3/MW3 (13-15')		SB4/MW4 (8-10')		SB4/MW4 (10-12')		SB5/MW5 (2-4')		SB5/MW5 (8-10')	
Sample Depth (feet BGS)	13-15		8-10		10-12		2-4		8-10	
Date Collected	11/07/96		11/07/96		11/07/96		6/2/97		6/2/97	
Date Extracted	11/14/96		11/14/96		11/14/96		6/10/97		6/5/97	
Date Analyzed	11/26/96		11/26/96		11/26/96		6/10/97		6/5/97	
Analytical Method No.	8270		8270		8270		8270		8270	
Collection Method*	SS		SS		SS		SS		SS	
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Chrysene	ND	300	ND	300	ND	300	ND	330	ND	330
☐ Dibenzo(a,h)anthracene	ND	300	ND	300	ND	300	ND	330	ND	330
☐ Fluoranthene	ND	300	ND	300	ND	300	ND	330	ND	330
☐ Fluorene	ND	300	ND	300	ND	300	ND	330	ND	330
☐ Indeno(1,2,3- cd)pyrene	ND	300	ND	300	ND	300	ND	330	ND	330
☐ Naphthalene	ND	300	ND	300	ND	300	ND	330	330	330
☐ 2-Methylnaphthalene	ND	300	ND	300	ND	300	ND	330	ND	330
☐ Phenanthrene	ND	300	ND	300	ND	300	ND	330	ND	330
☐ Pyrene	ND	300	ND	300	ND	300	ND	330	ND	330
METALS										
Sample ID	SB3/MW3 (13-15')		SB4/MW4 (8-10')		SB4/MW4 (10-12')		SB5/MW5 (2-4')		SB5/MW5 (8-10')	
Sample Depth (feet BGS)	13-15		8-10		10-12		2-4		8-10	
Date Collected	11/07/96		11/07/96		11/07/96		6./2/97		6./2/97	
Date Extracted	11/20/96		11/20/96		11/20/96		6/9/97		6/9/97	
Date Analyzed	11/20/96		11/20/96		11/20/96		6/9/97		6/9/97	
Analytical Method No.	6020		6020		6020		6020		6020	
Collection Method*	SS		SS		SS		SS		SS	
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Cadmium										
☐ Total Chromium	2500	1000	3800	1000	1800	1000	3700	1000	3900	1000
☐ Total Lead	3900	1000	5300	1000	3400	1000	15300	1000	4700	1000

BGS=Below Ground Surface
*Collection Method Codes (list all that apply); Grab Sample (GS), Split Spoon(SS), Hand Auger(HA), Geoprobe(GP), Continuous Corer (CC), Soil Gas (SG), Cone Penetrometer (CP), Hydropunch(HP)
*If Other (OT), Specify here:*_____
MDL= Method Detection Limit

LABORATORY RESULTS SOIL
FACILITY NAME: NAO FLINT OPERATIONS (BLDG 88/TANKS 050/88 - 058/88)
FACILITY NUMBER: 0-002763

PCBs										
Sample ID										
Sample Depth (feet BGS)										
Date Collected										
Date Extracted										
Date Analyzed										
Analytical Method No.										
Collection Method*										
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Aroclor 1016										
☐ Aroclor 1221										
☐ Aroclor 1232										
☐ Aroclor 1242										
☐ Aroclor 1248										
☐ Aroclor 1254										
☐ Aroclor 1280										
HALOGENATED HYDROCARBONS										
Sample ID	SB3/MW3 (13-15')		SB4/MW4 (8-10')		SB4/MW4 (10-12')		SB5/MW5 (2-4')		SB5/MW5 (8-10')	
Sample Depth (feet BGS)	13-15		8-10		10-12		2-4		8-10	
Date Collected	11/07/96		11/07/96		11/07/96		6/2/97		6/2/97	
Date Extracted	11/17/96		11/17/96		11/17/96		6/10/97		6/10/97	
Date Analyzed	11/17/96		11/17/96		11/17/96		6/10/97		6/10/97	
Analytical Method No.	8010		8010		8010		8010		8010	
Collection Method*	SS		SS		SS		SS		SS	
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Carbon Tetrachloride	ND	10	ND	10	ND	10	ND	10	ND	10
☐ 1,1-Dichloroethane	ND	10	ND	10	ND	10	ND	10	ND	10
☐ 1,2-Dichloroethane	ND	10	ND	10	ND	10	ND	10	ND	10
☐ 1,1-Dichloroethylene	ND	10	ND	10	ND	10	ND	10	ND	10

BGS=Below Ground Surface
*Collection Method Codes (list all that apply); Grab Sample (GS), Split Spoon(SS), Hand Auger(HA), Geoprobe(GP), Continuous Corer (CC), **Soil Gas (SG), Cone Penetrometer (CP), Hydropunch(HP)**
If Other (OT), Specify here: _____
MDL= Method Detection Limit

LABORATORY RESULTS SOIL
FACILITY NAME: NAO FLINT OPERATIONS (BLDG 88/TANKS 050/88 - 058/88)
FACILITY NUMBER: 0-002763

HALOGENATED HYDROCARBONS										
Sample ID	SB3/MW3 (13-15')		SB4/MW4 (8-10')		SB4/MW4 (10-12')		SB5/MW5 (2-4')		SB5/MW5 (8-10')	
Sample Depth (feet BGS)	13-15		8-10		10-12		2-4		8-10	
Date Collected	11/07/96		11/07/96		11/07/96		6/2/97		6/2/97	
Date Extracted	11/17/96		11/17/96		11/17/96		6/10/97		6/10/97	
Date Analyzed	11/17/96		11/17/96		11/17/96		6/10/97		6/10/97	
Analytical Method No.	8010		8010		8010		8010		8010	
Collection Method*	SS		SS		SS		SS		SS	
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ cis-1,2-Dichloroethylene	ND	10	ND	10	ND	10	ND	10	ND	10
☐ trans-1,2- Dichloroethylene	ND	10	ND	10	ND	10	ND	10	ND	10
☐ Tetrachloroethylene	ND	10	ND	10	ND	10	ND	10	ND	10
☐ 1,1,2-Trichloroethane	ND	10	ND	10	ND	10	ND	10	ND	10
OTHER *(Specify)*										
Sample ID	SB3/MW3 (13-15')		SB4/MW4 (8-10')		SB4/MW4 (10-12')					
Sample Depth (feet BGS)	13-15		8-10		10-12					
Date Collected	11/07/96		11/07/96		11/07/96					
Date Extracted	11/17/96		11/17/96		11/17/96					
Date Analyzed	11/17/96		11/17/96		11/17/96					
Analytical Method No.	8010		8010		8010					
Collection Method*	SS		SS		SS					
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Bis(2-ethylhexyl)phthalate	ND	10	ND	10	ND	10				
☐										
☐										
☐										
☐										
☐										
☐										

BGS=Below Ground Surface
*Collection Method Codes (list all that apply); Grab Sample (GS), Split Spoon(SS), Hand Auger(HA), Geoprobe(GP), Continuous Corer (CC), Soil Gas (SG), Cone Penetrometer (CP), Hydropunch(HP)
If Other (OT), Specify here: _____
MDL= Method Detection Limit

LABORATORY RESULTS SOIL
FACILITY NAME: NAO FLINT OPERATIONS (BLDG 88/TANKS 050/88 - 058/88)
FACILITY NUMBER: 0-002763

VOLATILES										
Sample ID	SB6/MW6 (7-9')		SB6/MW6 (9-11')							
Sample Depth (feet BGS)	7-9		9-11							
Date Collected	6/2/97		6/2/97							
Date Extracted	6/10/97		6/10/97							
Date Analyzed	6/10/97		6/10/97							
Analytical Method No.	8020		8020							
Collection Method*	SS		SS							
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Benzene	ND	10	ND	10						
☐ Toluene	ND	10	ND	10						
☐ Ethylbenzene	ND	10	ND	10						
☐ Total Xylenes	ND	10	ND	10						
☐ MTBE	ND	10	ND	10						
POLYNUCLEAR AROMATICS (PNAs)										
Sample ID	SB6/MW6 (7-9')		SB6/MW6 (9-11')							
Sample Depth (feet BGS)	7-9		9-11							
Date Collected	6/2/97		6/2/97							
Date Extracted	6/5/97		6/5/97							
Date Analyzed	6/5/97		6/5/97							
Analytical Method No.	8270		8270							
Collection Method*	SS		SS							
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Acenaphthene	ND	330	ND	330						
☐ Acenaphthylene	ND	330	ND	330						
☐ Anthracene	ND	330	ND	330						
☐ Benzo(a)anthracene	ND	330	ND	330						
☐ Benzo(a)pyrene	ND	330	ND	330						
☐ Benzo(b)fluoranthene	ND	330	ND	330						
☐ Benzo(g,h,i)perylene	ND	330	ND	330						
☐ Benzo(k)fluoranthene	ND	330	ND	330						

BGS=Below Ground Surface
*Collection Method Codes (list all that apply); Grab Sample (GS), Split Spoon(SS), Hand Auger(HA), Geoprobe(GP), Continuous Corer (CC), Soil Gas (SG), Cone Penetrometer (CP), Hydropunch(HP)
*If Other (OT), Specify here:*_____
MDL= Method Detection Limit

LABORATORY RESULTS SOIL
FACILITY NAME: NAO FLINT OPERATIONS (BLDG 88/TANKS 050/88 - 058/88)
FACILITY NUMBER: 0-002763

POLYNUCLEAR AROMATICS (PNAs)										
Sample ID	SB6/MW6 (7-9')		SB6/MW6 (9-11')							
Sample Depth (feet BGS)	7-9		9-11							
Date Collected	6/2/97		6/2/97							
Date Extracted	6/5/97		6/5/97							
Date Analyzed	6/5/97		6/5/97							
Analytical Method No.	8270		8270							
Collection Method*	SS		SS							
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Chrysene	ND	10	ND	10						
☐ Dibenzo(a,h)anthracene	ND	10	ND	10						
☐ Fluoranthene	ND	10	ND	10						
☐ Fluorene	ND	10	ND	10						
☐ Indeno(1,2,3- cd)pyrene	ND	10	ND	10						
☐ Naphthalene	ND	10	ND	10						
☐ 2-Methylnaphthalene	ND	10	ND	10						
☐ Phenanthrene	ND	10	ND	10						
☐ Pyrene	ND	10	ND	10						
METALS										
Sample ID	SB6/MW6 (7-9')		SB6/MW6 (9-11')							
Sample Depth (feet BGS)	7-9		9-11							
Date Collected	6/2/97		6/2/97							
Date Extracted	6/9/97		6/9/97							
Date Analyzed	6/9/97		6/9/97							
Analytical Method No.	6020		6020							
Collection Method*	SS		SS							
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Cadmium										
☐ Total Chromium	3900	1000	2500	1000						
☐ Total Lead	4700	1000	3000	1000						

BGS=Below Ground Surface
*Collection Method Codes (list all that apply); Grab Sample (GS), Split Spoon(SS), Hand Auger(HA), Geoprobe(GP), Continuous Corer (CC), Soil Gas (SG), Cone Penetrometer (CP), Hydropunch(HP)
If Other (OT), Specify here: _____
MDL= Method Detection Limit

LABORATORY RESULTS SOIL
FACILITY NAME: NAO FLINT OPERATIONS (BLDG 88/TANKS 050/88 - 058/88)
FACILITY NUMBER: 0-002763

PCBs										
Sample ID										
Sample Depth (feet BGS)										
Date Collected										
Date Extracted										
Date Analyzed										
Analytical Method No.										
Collection Method*										
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Aroclor 1016										
☐ Aroclor 1221										
☐ Aroclor 1232										
☐ Aroclor 1242										
☐ Aroclor 1248										
☐ Aroclor 1254										
☐ Aroclor 1280										
HALOGENATED HYDROCARBONS										
Sample ID	SB6/MW6 (7-9')		SB6/MW6 (9-11')							
Sample Depth (feet BGS)	7-9		9-11							
Date Collected	6/2/97		6/2/97							
Date Extracted	6/10/97		6/9/97							
Date Analyzed	6/10/97		6/9/97							
Analytical Method No.	8010		8010							
Collection Method*	SS		SS							
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Carbon Tetrachloride	ND	10	ND	10						
☐ 1,1-Dichloroethane	ND	10	ND	10						
☐ 1,2-Dichloroethane	ND	10	ND	10						
☐ 1,1-Dichloroethylene	ND	10	ND	10						

BGS=Below Ground Surface
*Collection Method Codes (list all that apply); Grab Sample (GS), Split Spoon(SS), Hand Auger(HA), Geoprobe(GP), Continuous Corer (CC), Soil Gas (SG), Cone Penetrometer (CP), Hydropunch(HP)
*If Other (OT), Specify here:*_____
MDL= Method Detection Limit

(Continued page 4 of 4)
LABORATORY RESULTS SOIL
FACILITY NAME: NAO FLINT OPERATIONS (BLDG 88/TANKS 050/88 - 058/88)
FACILITY NUMBER: 0-002763

HALOGENATED HYDROCARBONS										
Sample ID	SB6/MW6 (7-9')		SB6/MW6 (9-11')							
Sample Depth (feet BGS)	7-9		9-11							
Date Collected	6/2/97		6/2/97							
Date Extracted	6/10/97		6/9/97							
Date Analyzed	6/10/97		6/9/97							
Analytical Method No.	8010		8010							
Collection Method*	SS		SS							
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ cis-1,2-Dichloroethylene	ND	10	ND	10						
☐ trans-1,2- Dichloroethylene	ND	10	ND	10						
☐ Tetrachloroethylene	ND	10	ND	10						
☐ 1,1,2-Trichloroethane	ND	10	ND	10						
OTHER *(Specify)*										
Sample ID										
Sample Depth (feet BGS)										
Date Collected										
Date Extracted										
Date Analyzed										
Analytical Method No.										
Collection Method*										
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐										
☐										
☐										
☐										
☐										
☐										
☐										

BGS=Below Ground Surface
*Collection Method Codes (list all that apply); Grab Sample (GS), Split Spoon(SS), Hand Auger(HA), Geoprobe(GP), Continuous Corer (CC), Soil Gas (SG), Cone Penetrometer (CP), Hydropunch(HP)
If Other (OT), Specify here: _____
MDL= Method Detection Limit

ATTACHMENT 4

BUILDING 88/TANKS 050/88 - 058/88
SUMMARY REPORT (Continued)

ATTACHMENT NO. 4
TIER I RBSL/TIER II OR TIER III SSTL COMPARISON TABLE FOR SOILS
FACILITY NAME: NAO FLINT OPERATIONS (BLDG 88/TANKS 050/88 - 058/88)
FACILITY NUMBER: 0-002763

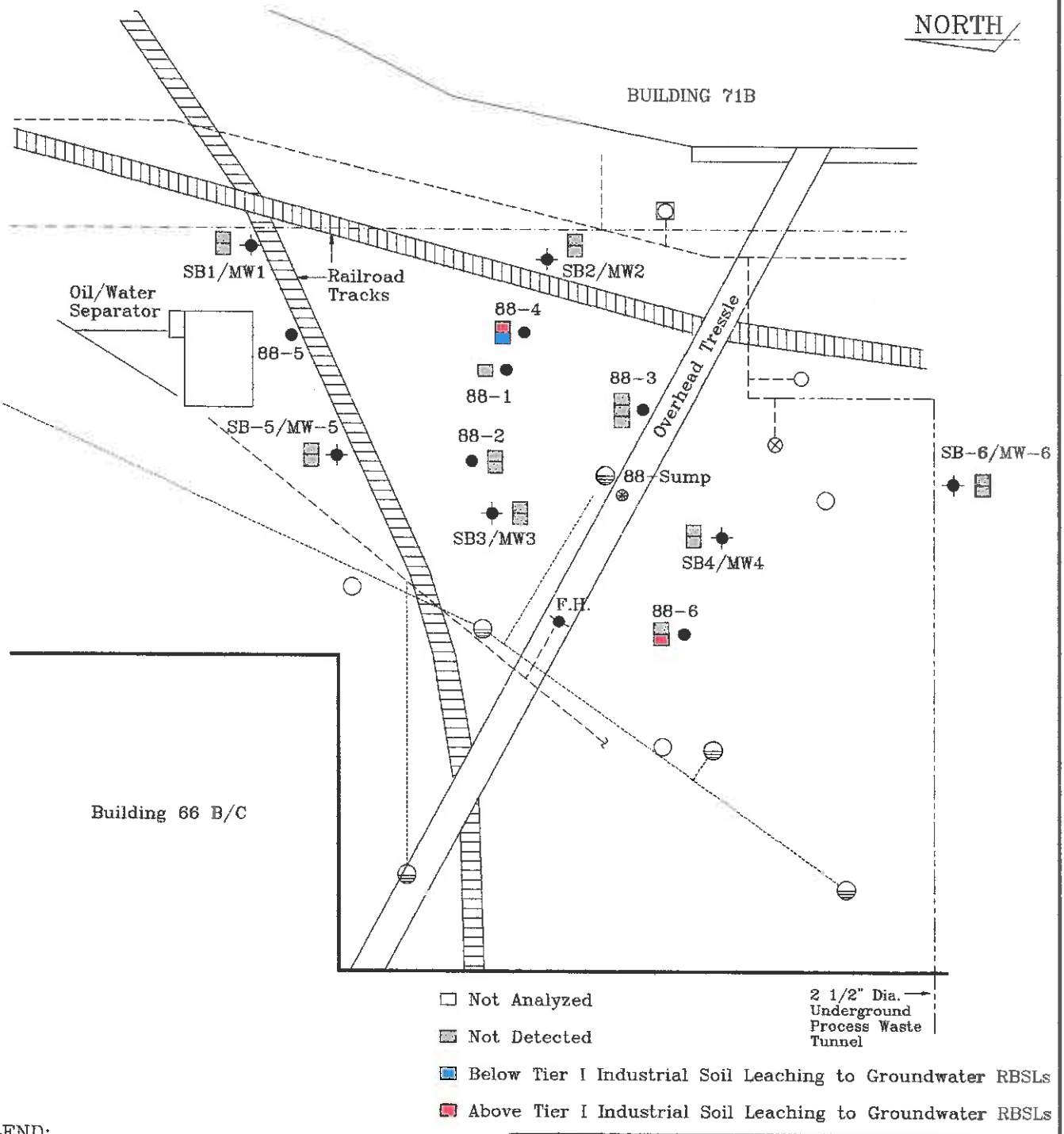
☑ **Residential** ☐ **Commercial III** ☐ **Commercial IV** ☑ **Industrial**
Exposure Codes

Contaminant	Sample ID with Maximum Detected Concentration	Corresponding Sample Date	Maximum Detected Concentration (ug/kg)	Applicable Criterion (ug/kg)		
				Tier I Soil Leaching to Groundwater	**Tier I Residential Direct Contact**	**Tier I Residential Infinite Source VSIC**
VOLATILES						
☐ Benzene	Bldg 88-6 (11-13')	11/12/96	100	100	88,000	9600
☐ Toluene			ND	16,000	>620,000	2E+6
☐ Ethylbenzene	Bldg 88-6 (11-13')	11/12/96	1600	1500	>380,000	6.7E+6
☐ Total Xylenes	Bldg 88-4 (7-9')	11/12/96	7000	5600	>400,000	3.2E+7
☐ MTBE						
POLYNUCLEAR AROMATICS						
☐ Acenaphthene	Bldg 88-6 (11-13')	11/12/96	700	300,000	76,000	5.7E+7
☐ Acenaphthylene			ND	520	1,500,000	ID
☐ Anthracene	Bldg 88-6 (11-13')	11/12/96	1400	6,900,000	420,000,000	9.8E+8
☐ Benzo(a)anthracene	Bldg 88-6 (11-13')	11/12/96	2400	E	14,000	ID
☐ Benzo(a)pyrene	Bldg 88-6 (11-13')	11/12/96	2300	E	1400	ID
☐ Benzo(b)fluoranthene	Bldg 88-6 (11-13')	11/12/96	2300	E	14,000	ID
☐ Benzo(g,h,i)perylene	Bldg 88-6 (11-13')	11/12/96	1600	E	1,500,000	ID
☐ Benzo(k)fluoranthene	Bldg 88-6 (11-13')	11/12/96	2200	E	140,000	ID
☐ Chrysene	Bldg 88-6 (11-13')	11/12/96	2900	E	1,400,000	ID
☐ Dibenzo-(a,h)anthracene			ND	E	1400	ID
☐ Fluoranthene	Bldg 88-6 (11-13')	11/12/96	3900	3,000,000	51,000,000	5.3E+8
☐ Fluorene	Bldg 88-6 (11-13')	11/12/96	900	390,000	51,000,000	8.9E+7
☐ Indeno(1,2,3- cd)pyrene			ND	E	14,000	ID
☐ Naphthalene	Bldg 88-6 (11-13')	11/12/96	2600	17,000	15,000,000	9.8E+6
☐ Phenanthrene	Bldg 88-6 (11-13')	11/12/96	3800	12,000	1,500,000	ID
☐ Pyrene	Bldg 88-6 (11-13')	11/12/96	9000	1,800,000	32,000,000	4.7E+8
☐ 2-Methylnaphthalene	Bldg 88-6 (11-13')	11/12/96	4200	5200	15,000,000	ID

ATTACHMENT NO. 4 (Continued Page 2 of 2
TIER I RBSL/TIER II OR TIER III SSTL COMPARISON TABLE FOR SOILS
FACILITY NAME: NAO FLINT OPERATIONS (BLDG 88/TANKS 050/88 - 058/88)
FACILITY NUMBER: 0-002763

Contaminant	Sample ID with Maximum Detected Concentration	Corresponding Sample Date	Maximum Detected Concentration (ug/kg)	Applicable Criterion (ug/kg)		
				Tier I Soil Leaching to Groundwater	Tier I Residential Direct Contact	Tier I Residential Infinite Source VSIC
METALS						
☐ Cadmium	Bldg 88-2 (15-17')	7/22/96	130	1200	210,000	ID
☐ Total Chromium	Bldg 88-3 (19-21')	7/22/96	18,400	18,000	2,000,000	ID
☐ Total Lead	Bldg 88-4 (7-9')	7/22/96	418,000	21,000	400,000	ID
PCBs						
☐ Aroclor 1016			ND			
☐ Aroclor 1221			ND			
☐ Aroclor 1232			ND			
☐ Aroclor 1242			ND			
☐ Aroclor 1248			ND			
☐ Aroclor 1254			ND			
☐ Aroclor 1280			ND			
HALOGENATED HYDROCARBONS						
☐ Carbon Tetrachloride			ND	100	20,000	2600
☐ 1,1-Dichloroethane			ND	18,000	>1,100,000	2.2E+7
☐ 1,2-Dichloroethane			ND	100	28,000	4400
☐ 1,1-Dichloroethylene			ND	140	110,000	830
☐ cis-1,2-Dichloroethylene			ND	1400	>1,000,000	2.9E+7
☐ trans-1,2-Dichloroethylene			ND	2000	1,900,000	2.0E+5
☐ Tetrachloroethylene			ND	100	50,000	1.3E+5
☐ 1,1,2-Trichloroethane			ND	100	45,000	5.2E+7
OTHER*						
☐ Bis (2-ethylhexyl)phthalate	SB2/MW2 (4-6')	11/7/96	1800	E	700,000	1.4E+9
☐						
☐						

ATTACHMENT 5

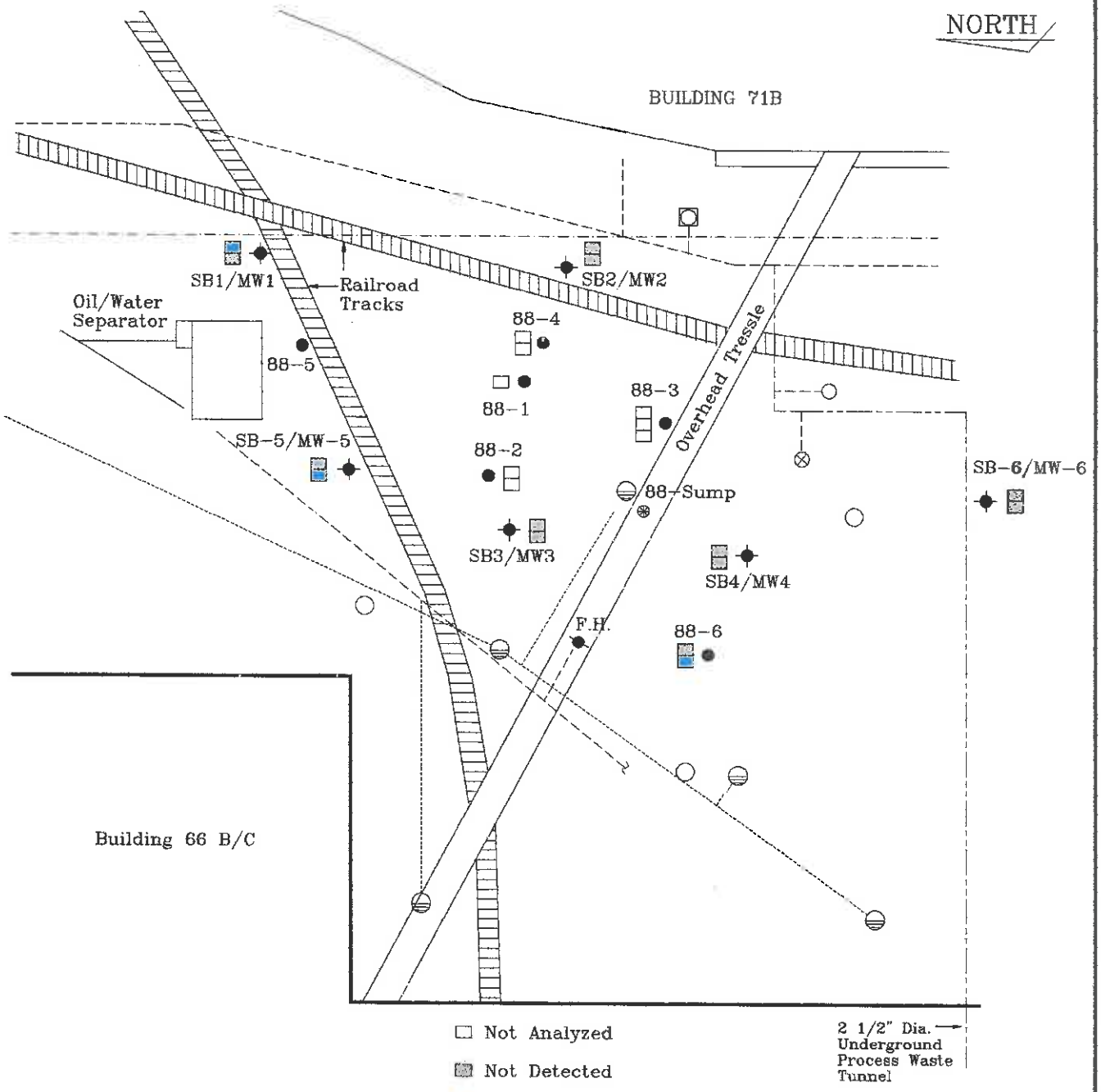


LEGEND:

- Monitoring Well/Soil Boring
- Geoprobe Sample Locations
- Fire Protection Line
- Storm Sewer Line
- City Water Line
- Fire Hydrant

GM-CLCD NORTH

TITLE: SOIL CONCENTRATION MAP: BTEX BUILDING 88 TANKS 050/88 - 058/88	
SCALE: 1"=40'	DATE: 4/29/97
Global Environmental Engineering Inc.	APPROVED BY: A.L.K.
	PREPARED BY: C.G.S.
	ATTACHMENT NUMBER: 5a
	PROJECT NUMBER: F174

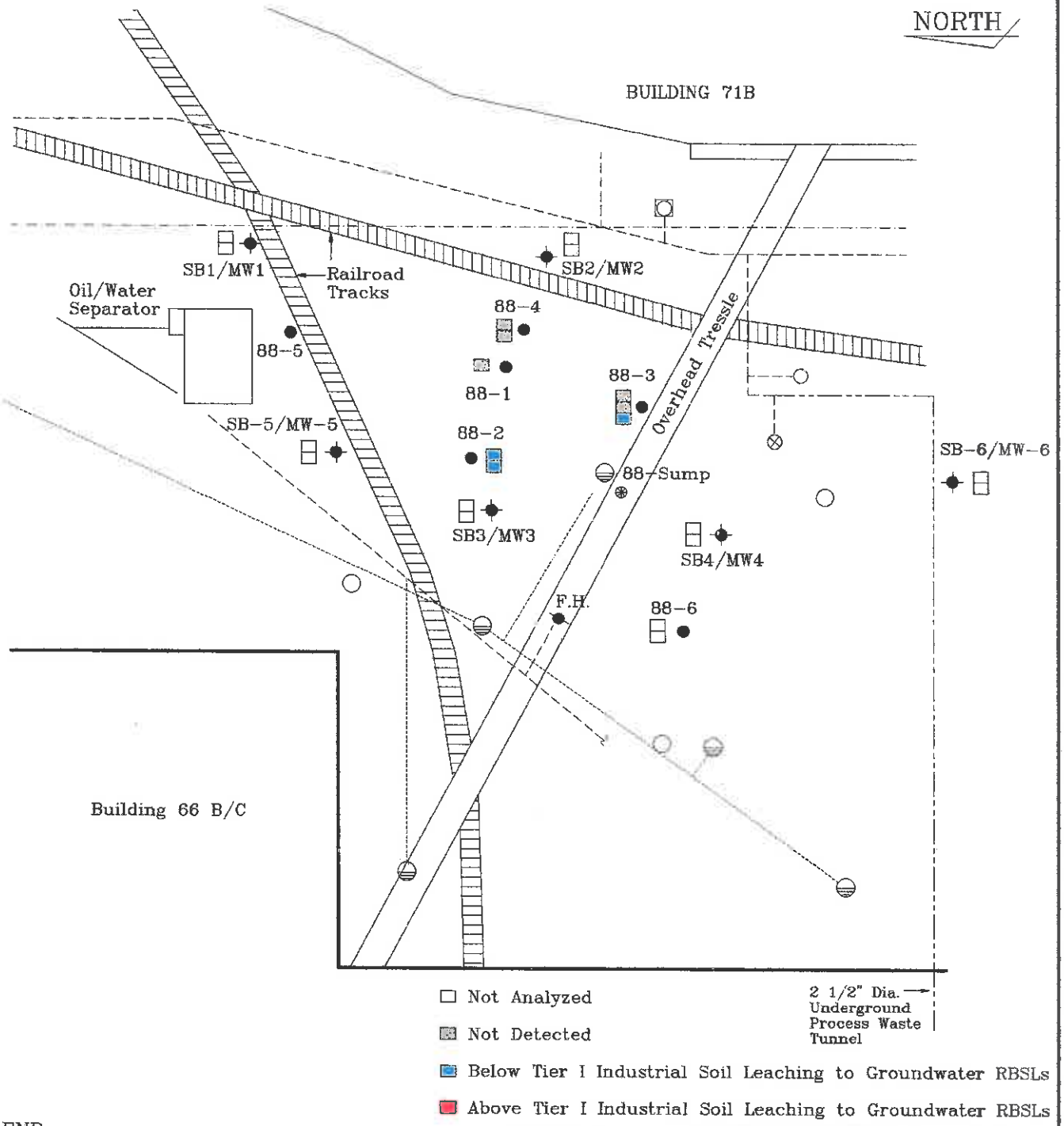


LEGEND:

- Monitoring Well/Soil Boring
- Geoprobe Sample Locations
- Fire Protection Line
- Storm Sewer Line
- City Water Line
- Fire Hydrant

GM-CLCD NORTH

TITLE: SOIL CONCENTRATION MAP: PNAHs BUILDING 88 TANKS 050/88 - 058/88	
SCALE: 1"=40'	DATE: 4/29/97
Global Environmental Engineering Inc.	APPROVED BY: A.L.K.
	PREPARED BY: C.G.S.
	ATTACHMENT NUMBER: 5b
	PROJECT NUMBER: F174



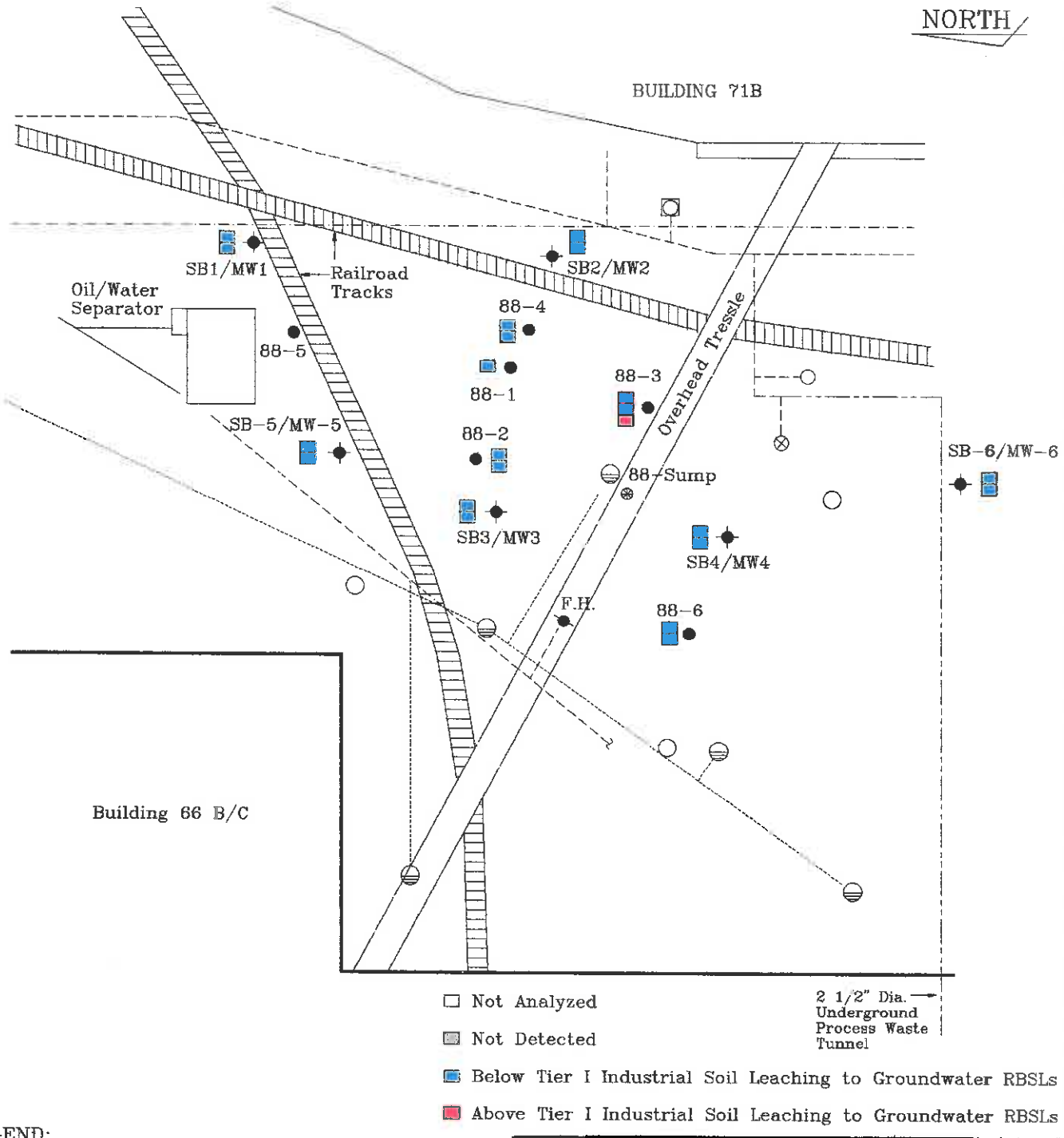
LEGEND:

- Monitoring Well/Soil Boring
- Geoprobe Sample Locations
- Fire Protection Line
- Storm Sewer Line
- City Water Line
- Fire Hydrant

GM-CLCD NORTH

TITLE: SOIL CONCENTRATION MAP: CADMIUM
BUILDING 88
TANKS 050/88 - 058/88

SCALE: 1"=40'	DATE: 4/29/97
Global Environmental Engineering Inc.	APPROVED BY: A.L.K.
	PREPARED BY: C.G.S.
	ATTACHMENT NUMBER: 5c
	PROJECT NUMBER: F174



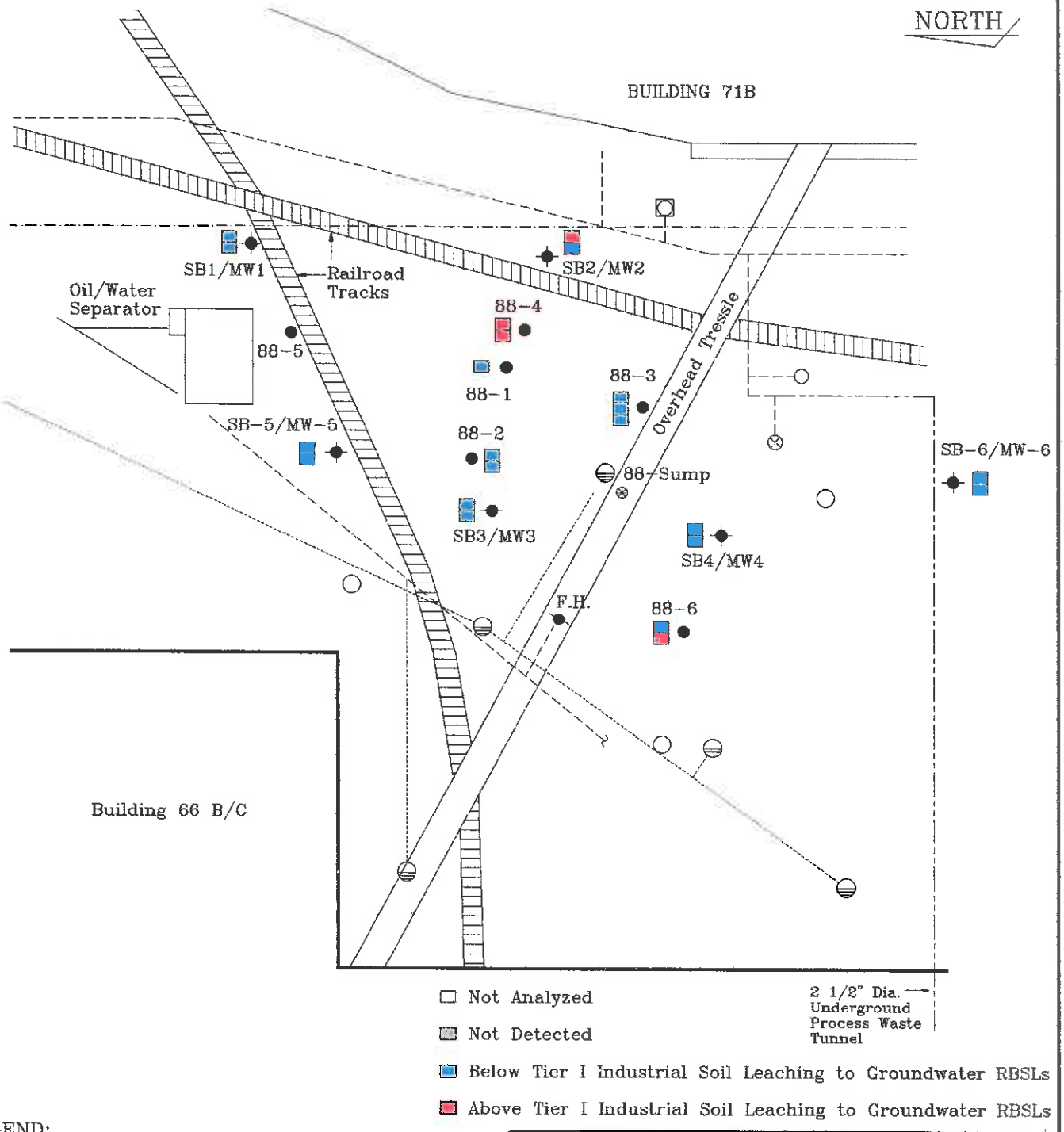
LEGEND:

- Monitoring Well/Soil Boring
- Geoprobe Sample Locations
- Fire Protection Line
- Storm Sewer Line
- City Water Line
- Fire Hydrant

GM-CLCD NORTH

TITLE: SOIL CONCENTRATION MAP: CHROMIUM
BUILDING 88
TANKS 050/88 - 058/88

SCALE: 1"=40'	DATE: 4/29/97
Global Environmental Engineering Inc.	APPROVED BY: A.L.K.
	PREPARED BY: C.G.S.
	ATTACHMENT NUMBER: 5d
	PROJECT NUMBER: F174



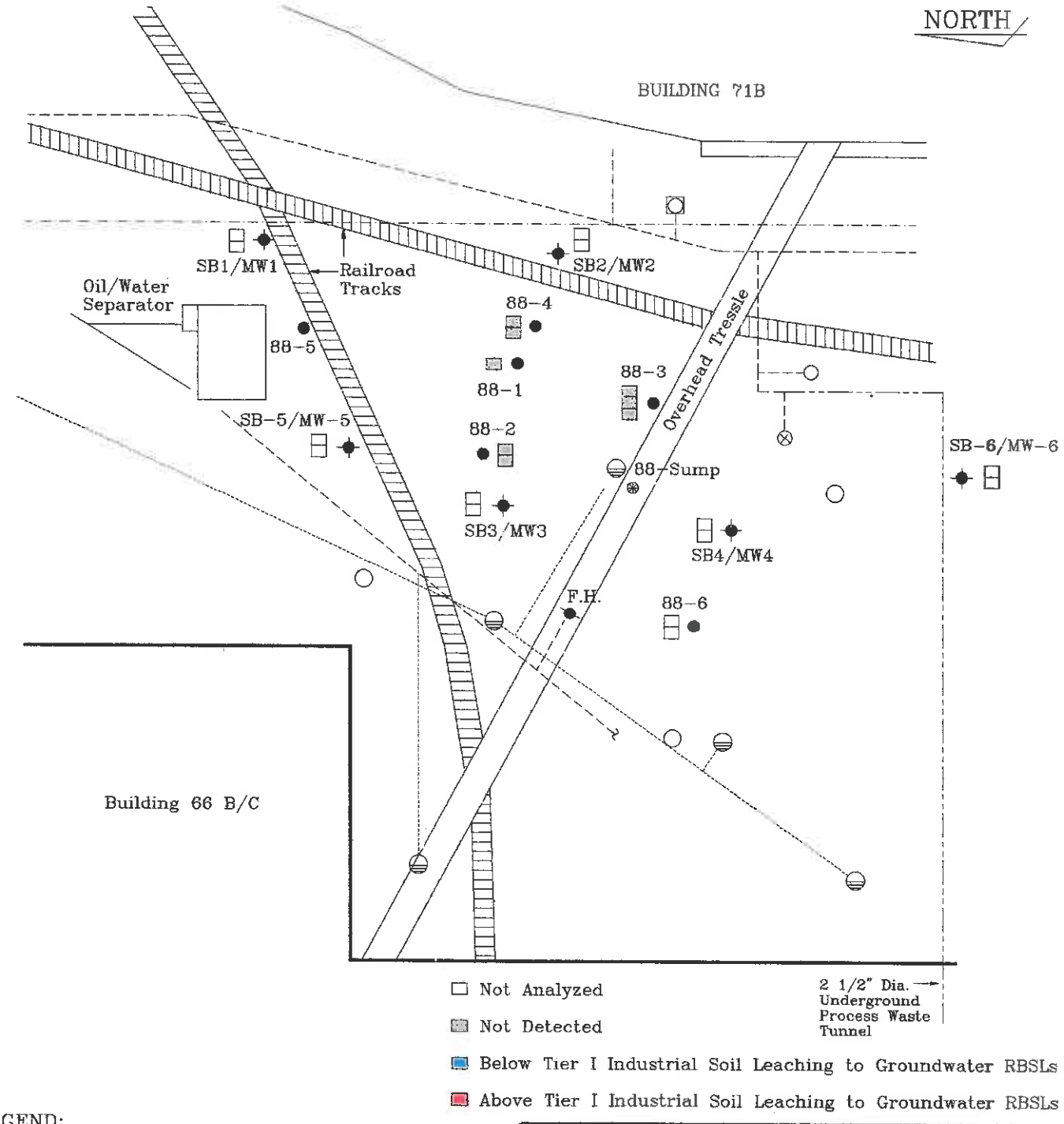
LEGEND:

- Monitoring Well/Soil Boring
- Geoprobe Sample Locations
- Fire Protection Line
- Storm Sewer Line
- City Water Line
- Fire Hydrant

GM-CLCD NORTH

TITLE: SOIL CONCENTRATION MAP: LEAD
BUILDING 88
TANKS 050/88 - 058/88

SCALE: 1"=40'	DATE: 4/29/97
Global Environmental Engineering Inc.	APPROVED BY: A.L.K.
	PREPARED BY: C.G.S.
	ATTACHMENT NUMBER: 5e
	PROJECT NUMBER: F174

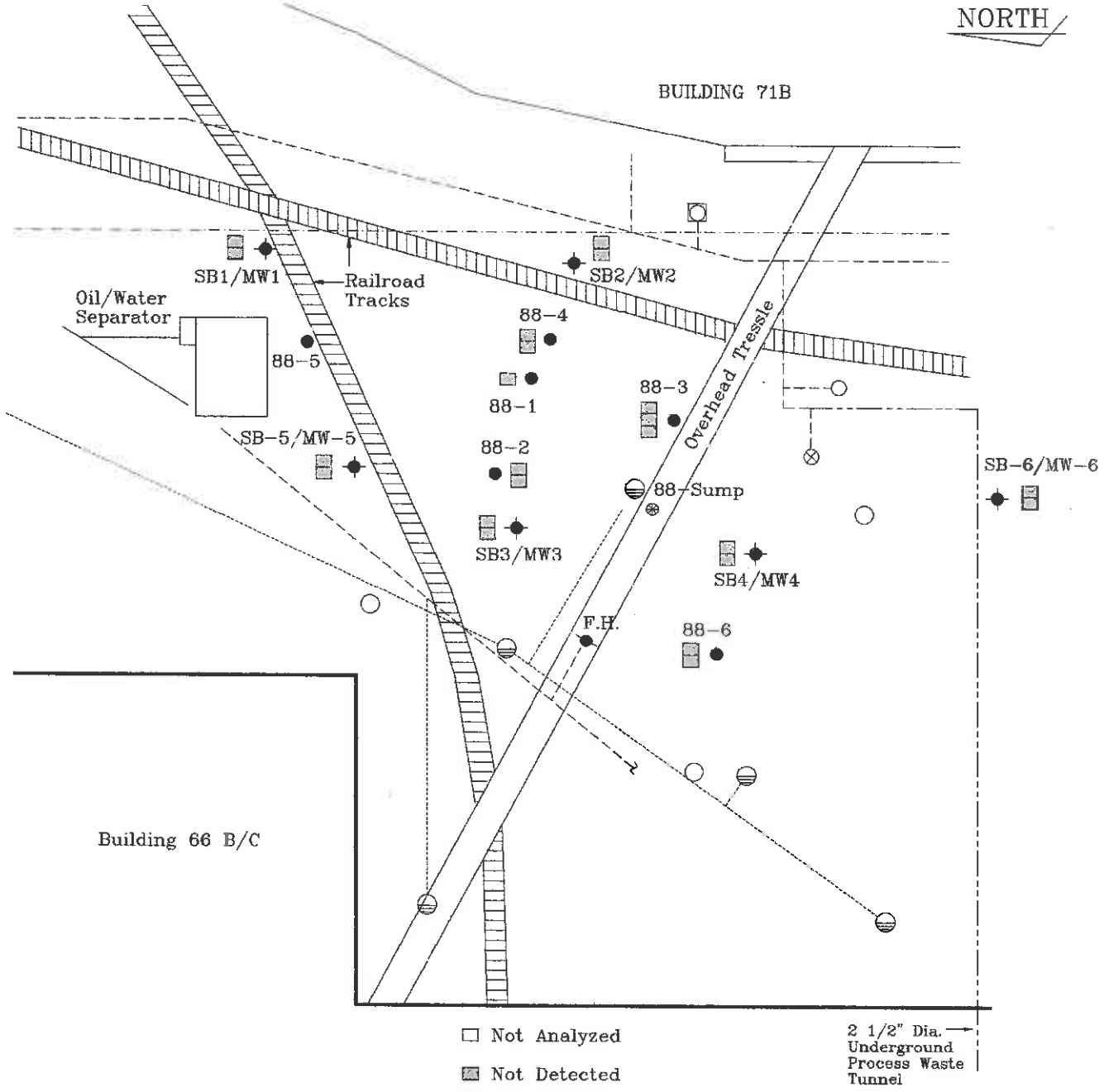


LEGEND:

- Monitoring Well/Soil Boring
- Geoprobe Sample Locations
- Fire Protection Line
- Storm Sewer Line
- City Water Line
- Fire Hydrant

GM-CLCD NORTH

TITLE: SOIL CONCENTRATION MAP: PCBs BUILDING 88 TANKS 050/88 - 058/88	
SCALE: 1"=40'	DATE: 4/29/97
Global Environmental Engineering Inc.	APPROVED BY: A.L.K.
	PREPARED BY: C.G.S.
	ATTACHMENT NUMBER: 5f
	PROJECT NUMBER: F174



LEGEND:

- Monitoring Well/Soil Boring
- Geoprobe Sample Locations
- Fire Protection Line
- Storm Sewer Line
- City Water Line
- Fire Hydrant

GM-CLCD NORTH

TITLE: SOIL CONCENTRATION MAP: HALOGENATED HYDROCARBONS - BUILDING 88 TANKS 050/88 - 058/88

SCALE: 1"=40'	DATE: 4/29/97
Global Environmental Engineering Inc.	APPROVED BY: A.L.K.
	PREPARED BY: C.G.S.
	ATTACHMENT NUMBER: 5g
	PROJECT NUMBER: F174

ATTACHMENT 6

Global Environmental Engineering, Inc.
5467 Hill 23 Dr., Suite B
Flint, Michigan 48507
Tel: (810) 238-9190
Fax: (810) 238-9195

Soil Boring:	Bldg 88-1	Project:	GM CLCD North UST Closure
Date:	7/22/96	Project #:	F174
Drilling Contractor:	YECI	Location:	Hamilton & Industrial Ave.
Prepared By:	JCW	Twp/Sec.:	
Time Started:	9:30	Depth Drilled:	14'
Time Completed:		Hole Diameter:	2"
Length Coring Device:	2'	Coring Device:	2"
Fluid Used:	None		
Driller:	Ken		
Helper:	N/A		
Weight/Drop:	N/A		

Boring Methods

	Hollow Stem Auger
	Hand Auger
X	Geoprobe

Groundwater Information

GW Encountered at	
Monitor Wells Installed	
Yes	No

Penetration Tons/Sq ft.	Sample Type	Depth (ft.)	USCS Code	SOIL DESCRIPTION	REMARKS	FID	GC
				Concrete			
		1		Stone			
	GP-1		SP	Sand	Brown, Moist, Fine/Medium		
		2					
		3				ND	
		4					
		5				ND	
	GP-2						
		6					
		7				ND	
		8					
					Wet		
	[X]	9				95.0	
	GP-3						
		10					
		11				ND	
		12					
		13				ND	
	GP-4						
		14			Sample Refusal (Concrete)	ND	
			E.O.B	End of Boring 14'			
		15					
		16					
		17					
		18					
		19					
		20					
		21					
		22					
		23					
		24					
		25					

SS-Split Spoon
NR-No Recovery
HA-Hand Auger Sample
[X]-Laboratory/Jar Sample
PID-Photoionization Detector (ppm)
GC-Gas Chromatograph (ppb)
AL-Acetate Liner
FS-Field Screening Container

Global Environmental Engineering, Inc.
5467 Hill 23 Dr., Suite B
Flint, Michigan 48507
Tel: (810) 238-9190
Fax: (810) 238-9195

Soil Boring:	Bldg 88-2	Project:	GM CLCD North UST Closure
Date:	7/22/96	Project #:	F174
Drilling Contractor:	YECI	Location:	Hamilton & Industrial Ave.
Prepared By:	JCW	Twp/Sec.:	
Time Started:	10:25	Depth Drilled:	17'
Time Completed:		Hole Diameter:	2"
Length Coring Device:	2'	Coring Device:	2"

Boring Methods	Groundwater Information		
	Hollow Stem Auger	GW Encountered at	Driller: Ken
	Hand Auger	Monitor Wells Installed	Helper: N/A
X	Geoprobe	Yes No	Weight/Drop: N/A

Penetration Tons/Sq ft	Sample Type	Depth (ft.)	USCS Code	SOIL DESCRIPTION	REMARKS	FID	GC
				Concrete			
		1		Stone			
	GP-1		SP	Sand/Coal	Brown/Black, Moist, Fine/Medium		
		2					
		3					
				Sand	Brown	ND	
		4					
		5					
	GP-2					ND	
		6					
		7					
						ND	
		8					
	[X]	9				75.0	
	GP-3						
		10					
		11				50.0	
		12					
		13				65.0	
	GP-4		SM	Sandy Silt	Gray		
		14					
		15				75.0	
		16					
	[X]	17				125.0	
			E.O.B	End of Boring 17'			
		18					
		19					
		20					
		21					
		22					
		23					
		24					
		25					

SS-Split Spoon
NR-No Recovery
HA-Hand Auger Sample
[X]-Laboratory/Jar Sample
PID-Photoionization Detector (ppm)
GC-Gas Chromatograph (ppb)
AL-Acetate Liner
FS-Field Screening Container

Global Environmental Engineering, Inc.
5467 Hill 23 Dr., Suite B
Flint, Michigan 48507
Tel: (810) 238-9190
Fax: (810) 238-9195

Soil Boring:	Bldg 88-3	Project:	GM CLCD North UST Closure
Date:	7/22/96	Project #:	F174
Drilling Contractor:	YECI	Location:	Hamilton & Industrial Ave.
Prepared By:	JCW	Twp/Sec.:	
Time Started:	13:20	Depth Drilled:	21'
Time Completed:		Hole Diameter:	2"
Length Coring Device:	2'	Coring Device:	2"

Boring Methods

	Hollow Stem Auger
	Hand Auger
X	Geoprobe

Groundwater Information

GW Encountered at	
Monitor Wells Installed	
Yes	No

Fluid Used:	None
Driller:	Ken
Helper:	N/A
Weight/Drop:	N/A

Penetration Tons/Sq ft.	Sample Type	Depth (ft.)	USCS Code	SOIL DESCRIPTION	REMARKS	FID	GC
				Concrete			
		1		Stone			
	GP-1		SP	Sand	Brown, Moist, Fine/Medium		
		2					
		3					
				Sand	Brown	ND	
		4					
		5					
	GP-2					ND	
		6					
		7					
					Wet	75	
		8					
	[X]	9					
	GP-3						
		10					
		11				180	
		12					
		13				250	
	GP-4						
		14					
			SM	Sandy Silt	Gray, Moist		
	[X]	15				>1000	
	GP-5			Silty Sand	Wet		
		16					
					No Recovery (16'-18')		
	[X]	17				NA	
	GP-6						
		18					
		19				150	
	GP-7	20	CL	Clay	Moist		
	[X]	21				ND	
			E.O.B	End of Boring 21'			
		22					
		23					
		24					
		25					

SS-Split Spoon
NR-No Recovery
HA-Hand Auger Sample
[X]-Laboratory/Jar Sample
PID-Photoionization Detector (ppm)
GC-Gas Chromatograph (ppb)
AL-Acetate Liner
FS-Field Screening Container

Global Environmental Engineering, Inc.
5467 Hill 23 Dr., Suite B
Flint, Michigan 48507
Tel: (810) 238–9190
Fax: (810) 238–9195

Soil Boring:	Bldg 88–4	Project:	GM CLCD North UST Closure
Date:	7/22/96	Project #:	F174
Drilling Contractor:	YECI	Location:	Hamilton & Industrial Ave.
Prepared By:	JCW	Twp/Sec.:	
Time Started:	13:20	Depth Drilled:	13'
Time Completed:		Hole Diameter:	2"
Length Coring Device:	2'	Coring Device:	2"

Boring Methods		Groundwater Information			
	Hollow Stem Auger	GW Encountered at		Driller:	Ken
	Hand Auger	Monitor Wells Installed		Helper:	N/A
X	Geoprobe	Yes	No	Weight/Drop:	N/A

Penetration Tons/Sq ft.	Sample Type	Depth (ft.)	USCS Code	SOIL DESCRIPTION	REMARKS	PID	GC
				Concrete			
		1		Stone			
	GP–1		SP	Sand	Black, Moist, Fine/Medium		
		2					
		3				ND	
		4					
		5					
	GP–2					4.0	
		6					
		7					
						50.0	
		8					
		9			Wet		
	GP–3[X]					>1000	
		10					
		11					
						>1000	
		12					
	[X]	13				>1000	
			E.O.B	End of Boring 13'			
		14					
		15					
		16					
		17					
		18					
		19					
		20					
		21					
		22					
		23					
		24					
		25					

SS–Split Spoon
NR–No Recovery
HA–Hand Auger Sample
[X]–Laboratory/Jar Sample
PID–Photoionization Detector (ppm)
GC–Gas Chromatograph (ppb)
AL–Acetate Liner
FS–Field Screening Container

Global Environmental Engineering Inc.
5467 Hill 23 Dr., Suite B
Flint, Michigan 48507
Tel: (810) 238-9190
Fax: (810) 238-9195

Date:	11/12/96	Project #:	F174
Drilling Contractor:	YECI	Location:	Building 88
Prepared By:	JCW	Twp/Sec.:	
Time Started:	9:05	Total Depth Drilled:	13'
Time Completed:		Hole Diameter:	2"
Length Coring Device:	5'	Dia. Coring Device:	2"
Drilling Fluid Used:			None
Driller:			Scott
Helper:			N/A
Hammer Weight/Drop:			N/A

Boring Methods

	Hollow Stem Auger
	Hand Auger
X	Geoprobe

Ground Water Observations

GW Encountered at

Monitor Wells Installed: Yes / No

Penetration Tons/Sq ft.	Sample Type	Depth (ft.)	USCS Code	SOIL DESCRIPTION	REMARKS	OVA	GC
				Concrete			
		1.					
	GP-1		SP	Sand	Brown, Moist, Fine/Medium		
		2.					
		3.				ND	
		4.					
						8.0	
		5.					
	GP-2						
		6.					
						125.0	
		7.					
		8.					
	[X]	9.			Black, Wet	>1000	
	GP-3						
		10.					
		11.			Brown/Gray		
		12.					
		13.					
	[X]		E.O.B.	End of Boring 13'		>1000	
		14.					
		15.					
		16.					
		17.					
		18.					
		19.					
		20.					
		21.					
		22.					
		23					

SS-Split Spoon
NR-No Recovery
HA-Hand Auger Sample
[X]-Laboratory/Jar Sample
PID-Photoionization Detector (ppm)
GC-Gas Chromatograph (ppb)
AL-Acetate Liner
FS-Field Screening Container

Global Environmental Engineering, Inc.
352 South Saginaw St., Suite 600
Flint, Michigan 48502
Tel: (810) 238–9190
Fax: (810) 238–9195

Soil Boring:	SB1/MW1	Project:	GMCLCD N. – UST Closures
Date:	11/6/96	Project #:	F174
Drilling Contractor:	GEEI	Location:	Building 88
Prepared By:	JCW	Twp/Sec.:	
Time Started:	8:30	Depth Drilled:	17'
Time Completed:		Hole Diameter:	8.25"
Length Coring Device:	5'	Coring Device:	4.5"
		Fluid Used:	None
		Driller:	Lisa
		Helper:	NA
		Weight/Drop:	140#/30"

Boring Methods

	Hollow Stem Auger
	Hand Auger
X	Geoprobe

Groundwater Information

GW Encountered at		
Monitor Wells Installed		
Yes X	No	

Penetration Tons/Sq ft.	Sample Type	Depth (ft.)	USCS Code	SOIL DESCRIPTION	REMARKS	OVA	GC
		1					
		2					
		3					
		4					
		5					
	SS		SP	Sand	Black, Moist, Fine/Medium		
	SS	6					
	SS						
	SS–[X]	7	SM	Silt	Gray		
	SS					>1000	
	SS	8					
	SS						
	SS	9					
	SS					200	
	SS	10					
	SS						
	SS	11					
	SS		CL	Silty Clay		100	
	SS	12					
	SS		SM	Silt			
	SS	13			Wet		
	SS					8.0	
	SS	14					
	SS						
	SS–[X]	15				8.0	
		16					
		17					
			E.O.B.	End of Boring 17'			
		18					
		19					
		20					
		21					
		22					
		23					
		24					
		25					

SS–Split Spoon
[R–No Recovery
HA–Hand Auger Sample
[X]–Laboratory/Jar Sample
PID–Photoionization Detector (ppm)
GC–Gas Chromatograph (ppb)
AL–Acetate Liner
FS–Field Screening Container

Global Environmental Engineering, Inc.
5467 Hill 23 Dr., Suite B
Flint, Michigan 48507
Tel: (810) 238-9190
Fax: (810) 238-9195

Soil Boring:	SB2/MW2	Project:	GMCLCD N. – UST Closures
Date:	11/6/96	Project #:	F174
Drilling Contractor:	GEEI	Location:	Building 88
Prepared By:	JCW	Twp/Sec.:	
Time Started:	11:45	Depth Drilled:	16'
Time Completed:		Hole Diameter:	8.25"
Length Coring Device:	5'	Coring Device:	4.5"
Fluid Used:	None		
Driller:	Lisa		
Helper:	NA		
Weight/Drop:	140#/30"		

Boring Methods

X	Hollow Stem Auger
	Hand Auger
	Geoprobe

Groundwater Information

GW Encountered at	
Monitor Wells Installed	
Yes X	No

Penetration Tons/Sq ft.	Sample Type	Depth (ft.)	USCS Code	SOIL DESCRIPTION	REMARKS	OVA	GC
		1					
		2					
	SS		SP	Sand	Brown, Moist, Fine/Medium		
	SS	3					
	SS						
	SS	4				500	
	SS						
	SS	5			Black		
	SS						
	SS-[X]	6				>1000	
	SS						
	SS	7					
	SS					>1000	
	SS	8					
	SS				Brown		
	SS	9					
	SS						
	SS	10				280	
	SS						
	SS	11					
	SS						
	SS	12				320	
	SS				Wet		
	SS	13					
	SS						
	SS	14					
	SS						
	SS	15					
	SS						
	SS-[X]	16					
			E.O.B.	End of Boring 16'			
		17					
		18					
		19					
		20					
		21					
		22					
		23					
		24					
		25					

SS–Split Spoon
NR–No Recovery
HA–Hand Auger Sample
[X]–Laboratory/Jar Sample
PID–Photoionization Detector (ppm)
GC–Gas Chromatograph (ppb)
AL–Acetate Liner
FS–Field Screening Container

Global Environmental Engineering, Inc.
5467 Hill 23 Dr., Suite B
Flint, Michigan 48507
Tel: (810) 238-9190
Fax: (810) 238-9195

Soil Boring:	SB3/MW3	Project:	GMCLCD N. – UST Closures
Date:	11/7/96	Project #:	F174
Drilling Contractor:	GEEI	Location:	Building 88
Prepared By:	JCW	Twp/Sec.:	
Time Started:	11:45	Depth Drilled:	15'
Time Completed:		Hole Diameter:	8.25"
Length Coring Device:	5'	Coring Device:	4.5"

Boring Methods

X	Hollow Stem Auger
	Hand Auger
	Geoprobe

Groundwater Information

GW Encountered at	
Monitor Wells Installed	
Yes X	No

Fluid Used:	None
Driller:	Lisa
Helper:	NA
Weight/Drop:	140#/30"

Penetration Tons/Sq ft.	Sample Type	Depth (ft.)	USCS Code	SOIL DESCRIPTION	REMARKS	OVA	GC
		1					
		2					
	SS		SP	Sand	Brown, Moist, Fine/Medium		
	SS	3					
	SS				Brown		
	SS	4				2.0	
	SS						
	SS	5					
	SS						
	SS–[X]	6				2.0	
	SS						
	SS	7					
	SS					>1000	
	SS	8				2.0	
	SS						
	SS	9					
	SS						
	SS	10				ND	
	SS						
	SS	11			Wet		
	SS						
	SS	12				3.0	
	SS						
	SS	13					
	SS						
	SS	14				2.0	
	SS						
	SS–[X]	15					
			E.O.B.	End of Boring 15'			
		16					
		17					
		18					
		19					
		20					
		21					
		22					
		23					
		24					
		25					

SS–Split Spoon
NR–No Recovery
HA–Hand Auger Sample
[X]–Laboratory/Jar Sample
PID–Photoionization Detector (ppm)
GC–Gas Chromatograph (ppb)
AL–Acetate Liner
FS–Field Screening Container

Global Environmental Engineering, Inc.
5467 Hill 23 Dr., Suite B
Flint, Michigan 48507
Tel: (810) 238-9190
Fax: (810) 238-9195

Soil Boring:	SB4/MW4	**Project:**	GMCLCD N. – UST Closures
Date:	11/18/96	**Project #:**	F174
Drilling Contractor:	GEEI	**Location:**	Building 88
Prepared By:	JCW	**Twp/Sec.:**	
Time Started:	8:25	**Depth Drilled:**	12'
Time Completed:		**Hole Diameter:**	8.25"
Length Coring Device:	5'	**Coring Device:**	4.5"
Fluid Used:	None		
Driller:	Lisa		
Helper:	NA		
Weight/Drop:	140#/30"		

Boring Methods		Groundwater Information
X	Hollow Stem Auger	GW Encountered at
	Hand Auger	Monitor Wells Installed
	Geoprobe	Yes X No

Penetration Tons/Sq ft.	Sample Type	Depth (ft.)	USCS Code	SOIL DESCRIPTION	REMARKS	OVA	GC
		1					
		2					
	SS		SP	Sand	Brown, Moist, Fine/Medium		
	SS	3					
	SS						
	SS	4				ND	
	SS						
	SS	5					
	SS				Trace of Gravel		
	SS	6				1.0	
	SS						
	SS	7					
	SS						
	SS	8				12.0	
	SS				Wet		
	SS	9					
	SS						
	SS-[X]	10				750	
	SS						
	SS	11					
	SS						
	SS-[X]	12				>1000	
			E.O.B.	End of Boring 12'			
		13					
		14					
		15					
		16					
		17					
		18					
		19					
		20					
		21					
		22					
		23					
		24					
		25					

SS-Split Spoon
NR-No Recovery
HA-Hand Auger Sample
[X]-Laboratory/Jar Sample
PID-Photoionization Detector (ppm)
GC-Gas Chromatograph (ppb)
AL-Acetate Liner
FS-Field Screening Container

Global Environmental Engineering, Inc.
5467 Hill 23 Dr., Suite B
Flint, Michigan 48507
Tel: (810) 238-9190
Fax: (810) 238-9195

Soil Boring:	SB-5/MW-5	**Project:**	**GM - Building 88**
Date:	6/2/97	**Project #:**	F329
Drilling Contractor:	GEEI	**Location:**	
Prepared By:	JCW	**Twp/Sec.:**	
Time Started:	11:30	**Depth Drilled:**	12'
Time Completed:		**Hole Diameter:**	8.25"
Length Coring Device:	4'	**Coring Device:**	4.5"
Fluid Used:	None		
Driller:	Norm		
Helper:	Ash		
Weight/Drop:	140lb/30"		

Boring Methods

X	**Hollow Stem Auger**
	Hand Auger
	Geoprobe

Groundwater Information

GW Encountered at	
Monitor Wells Installed	
Yes X	**No**

Penetration Tons/Sq ft.	Sample Type	Depth (ft.)	USCS Code	SOIL DESCRIPTION	REMARKS	PID	GC
				Concrete			
		1.					
		2.					
	SS			Stone			
	SS	3.	SP	Sand	Black, Moist, Fine/Medium		
	SS						
	SS-[X]	4.			Brown	10.0	
	SS						
	SS	5.					
	SS						
	SS	6.				6.0	
	SS						
	SS	7.					
	SS						
	SS	8.				2.0	
	SS				Wet		
	SS	9.			Greenish		
	SS						
	SS-[X]	10.				5.0	
	SS				Gray		
	SS	11.					
	SS						
	SS	12.			<25% Recovery	ND	
			E.O.B.	End of Boring 12'			
		13.					
		14.					
		15.					
		16.					
		17.					
		18.					
		19.					
		20.					
		21.					
		22.					
		23.					

SS-Split Spoon
NR-No Recovery
HA-Hand Auger Sample
[X]-Laboratory/Jar Sample
PID-Photoionization Detector (ppm)
GC-Gas Chromatograph (ppb)
AL-Acetate Liner
FS-Field Screening Container

Global Environmental Engineering, Inc.
5467 Hill 23 Dr., Suite B
Flint, Michigan 48507
Tel: (810) 238-9190
Fax: (810) 238-9195

Soil Boring:	SB-6/MW-6	**Project:**	GM - Building 88
Date:	6/2/97	**Project #:**	F329
Drilling Contractor:	GEEI	**Location:**	
Prepared By:	JCW	**Twp/Sec.:**	
Time Started:	14:00	**Depth Drilled:**	13'
Time Completed:		**Hole Diameter:**	8.25"
Length Coring Device:	4'	**Coring Device:**	4.5"

Boring Methods		**Groundwater Information**			
X	**Hollow Stem Auger**	**GW Encountered at**		**Driller:**	Norm
	Hand Auger	**Monitor Wells Installed**		**Helper:**	Ash
	Geoprobe	**Yes X**	**No**	**Weight/Drop:**	140lb/30"

Penetration Tons/Sq ft.	Sample Type	Depth (ft.)	USCS Code	SOIL DESCRIPTION	REMARKS	PID	GC
				Concrete			
		1.					
	SS		SP	Sand	Brown, Moist, Fine/Medium		
	SS	2.					
	SS						
	SS	3.			1" Slag	6.0	
	SS						
	SS	4.					
	SS						
	SS	5.				5.0	
	SS						
	SS	6.					
	SS						
	SS	7.				3.0	
	SS						
	SS	8.					
	SS						
	SS-[X]	9.			Wet	8.0	
	SS				Gray		
	SS	10.					
	SS						
	SS-[X]	11.				11.0	
	SS						
	SS	12.					
	SS						
	SS	13.			>25% Recovery	ND	
			E.O.B.	End of Boring 13'			
		14.					
		15.					
		16.					
		17.					
		18.					
		19.					
		20.					
		21.					
		22.					
		23.					

SS-Split Spoon
NR-No Recovery
HA-Hand Auger Sample
[X]-Laboratory/Jar Sample
PID-Photoionization Detector (ppm)
GC-Gas Chromatograph (ppb)
AL-Acetate Liner
FS-Field Screening Container

ATTACHMENT 7

ATTACHMENT 7

BUILDING 88/TANKS 050/88 - 058/88
SUMMARY REPORT (Continued)

LABORATORY RESULTS GROUNDWATER
FACILITY NAME: NAO FLINT OPERATIONS (BLDG 88/TANKS 050/88 - 058/88)
FACILITY NUMBER: 0-002763

VOLATILES										
Sample ID	Bldg 88 - Sump		Bldg 88 - 1		Bldg 88 - 2		Bldg 88 - 3		Bldg 88-4	
Sample Depth (feet BGS)	-		-		-		-		-	
Date Collected	7/22/96		7/22/96		7/22/96		7/22/96		7/22/96	
Date Extracted	7/26/96		7/26/96		7/26/96		7/26/96		7/26/96	
Date Analyzed	7/26/96		7/26/96		7/26/96		7/26/96		7/26/96	
Collection Method*	Bailer		GP		GP		GP		GP	
Analytical Method No.	602		602		602		602		602	
CONSTITUENT (ug/l)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Benzene	2	1	9	1	ND	1	3	1	ND	1
☐ Toluene	ND	1	ND	1	ND	1	ND	1	ND	1
☐ Ethylbenzene	ND	1	ND	1	ND	1	ND	1	1	1
☐ Total Xylenes	ND	1	ND	1	ND	1	ND	1	3	1
☐ MTBE										
POLYNUCLEAR AROMATICS (PNAs)										
Sample ID										
Sample Depth (feet BGS)										
Date Collected										
Date Extracted										
Date Analyzed										
Collection Method*										
Analytical Method No.										
CONSTITUENT (ug/l)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Acenaphthene										
☐ Acenaphthylene										
☐ Anthracene										
☐ Benzo(a)anthracene										
☐ Benzo(a)pyrene										
☐ Benzo(b)fluoranthene										
☐ Benzo(g,h,i)perylene										
☐ Benzo(k)fluoranthene										
☐ Chrysene										
☐ Dibenzo(a,h)anthracene										

BGS = Below Ground Surface
* If Applicable
** Footnote and define all Collection Method Codes used in this table: _____
MDL = Method Detection Limit

LABORATORY RESULTS GROUNDWATER
FACILITY NAME: NAO FLINT OPERATIONS (BLDG 88/TANKS 050/88 - 058/88)
FACILITY NUMBER: 0-002763

POLYNUCLEAR AROMATICS (PNAs)										
Sample ID										
Sample Depth (feet BGS)										
Date Collected										
Date Extracted										
Date Analyzed										
Collection Method*										
Analytical Method No.										
CONSTITUENT (ug/l)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Fluoranthene										
☐ Fluorene										
☐ Indeno(1,2,3- cd)pyrene										
☐ Naphthalene										
☐ 2-Methylnaphthalene										
☐ Phenanthrene										
☐ Pyrene										
METALS - FILTERED										
Sample ID	Bldg 88 - Sump		Bldg 88 - 1		Bldg 88 - 2		Bldg 88 - 3		Bldg 88 - 4	
Sample Depth (feet BGS)	-		-		-		-		-	
Date Collected	7/22/96		7/22/96		7/22/96		7/22/96		7/22/96	
Date Extracted	7/29/96		7/29/96		7/29/96		7/29/96		7/29/96	
Date Analyzed	7/29/96		7/29/96		7/29/96		7/29/96		7/29/96	
Collection Method*	Bailer		GP		GP		GP		GP	
Analytical Method No.	200.8		200.8		200.8		200.8		200.8	
CONSTITUENT (ug/l)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Cadmium	ND	.2	ND	.2	ND	.2	ND	.2	ND	.2
☐ Total Chromium	ND	10	ND	10	ND	10	ND	10	ND	10
☐ Total Lead	ND	3	ND	3	ND	3	ND	3	ND	3

BGS = Below Ground Surface
* If Applicable
** Footnote and define all Collection Method Codes used in this table:_____
MDL = Method Detection Limit

BUILDING 88/TANKS 050/88 - 058/88
SUMMARY REPORT (Continued)

LABORATORY RESULTS GROUNDWATER
FACILITY NAME: NAO FLINT OPERATIONS (BLDG 88/TANKS 050/88 - 058/88)
FACILITY NUMBER: 0-002763

PCBs										
Sample ID	Bldg 88 - Sump		Bldg 88 - 1		Bldg 88 - 2		Bldg 88 - 3		Bldg 88 - 4	
Sample Depth (feet BGS)	-		-		-		-		-	
Date Collected	7/22/96		7/22/96		7/22/96		7/22/96		7/22/96	
Date Extracted	7/24/96		7/24/96		7/24/96		7/24/96		7/24/96	
Date Analyzed	7/25/96		7/25/96		7/25/96		7/25/96		7/25/96	
Collection Method*	Bailer		GP		GP		GP		GP	
Analytical Method No.	608		608		608		608		608	
CONSTITUENT (ug/l)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Aroclor 1016	ND	.1	ND	.1	ND	.1	ND	.1	ND	.1
☐ Aroclor 1221	ND	.1	ND	.1	ND	.1	ND	.1	ND	.1
☐ Aroclor 1232	ND	.1	ND	.1	ND	.1	ND	.1	ND	.1
☐ Aroclor 1242	ND	.1	ND	.1	ND	.1	ND	.1	ND	.1
☐ Aroclor 1248	ND	.1	ND	.1	ND	.1	ND	.1	ND	.1
☐ Aroclor 1254	ND	.1	ND	.1	ND	.1	ND	.1	ND	.1
☐ Aroclor 1280	ND	.1	ND	.1	ND	.1	ND	.1	ND	.1
HALOGENATED HYDROCARBONS										
Sample ID	Bldg 88 - Sump		Bldg 88 - 1		Bldg 88 - 2		Bldg 88 - 3		Bldg 88 - 4	
Sample Depth (feet BGS)	-		-		-		-		-	
Date Collected	7/22/96		7/22/96		7/22/96		7/22/96		7/22/96	
Date Extracted	7/26/96		7/26/96		7/26/96		7/24/96		7/24/96	
Date Analyzed	7/26/96		7/26/96		7/26/96		7/25/96		7/25/96	
Collection Method*	Bailer		GP		GP		GP		GP	
Analytical Method No.	601		601		601		608		608	
CONSTITUENT (ug/l)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Carbon Tetrachloride	ND	1	ND	1	ND	1	ND	1	ND	1
☐ 1,1-Dichloroethane	ND	1	ND	1	2	1	ND	1	ND	1
☐ 1,2-Dichloroethane	ND	1	ND	1	ND	1	ND	1	ND	1
☐ 1,1-Dichloroethylene	ND	1	ND	1	2	1	ND	1	ND	1
☐ cis-1,2-Dichloroethylene	ND	1	ND	1	ND	1	ND	1	ND	1
☐ trans-1,2- Dichloroethylene	ND	1	ND	1	12	1	ND	1	ND	1

BGS = Below Ground Surface
* If Applicable
** Footnote and define all Collection Method Codes used in this table:_____
MDL = Method Detection Limit

BUILDING 88/TANKS 050/88 - 058/88
SUMMARY REPORT (Continued)

LABORATORY RESULTS GROUNDWATER
FACILITY NAME: NAO FLINT OPERATIONS (BLDG 88/TANKS 050/88 - 058/88)
FACILITY NUMBER: 0-002763

HALOGENATED HYDROCARBONS (Cont.)										
☐ Tetrachloroethylene	ND	1	ND	1	ND	1	ND	1	ND	1
☐ Trichloroethylene	2	1	ND	1	236	1	ND	1	ND	1
☐ 1,1,2-Trichloroethane	ND	1	ND	1	ND	1	ND	1	ND	1
☐ Vinyl Chloride	ND	1	ND	1	23	1	ND	1	ND	1
OTHER *(Specify)*										
Sample ID										
Sample Depth (feet BGS)										
Date Collected										
Date Extracted										
Date Analyzed										
Collection Method*										
Analytical Method No.										
CONSTITUENT (ug/l)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐										
☐										
☐										
☐										
☐										
☐										
☐										
☐										
☐										
☐										
☐										
☐										
☐										

BGS = Below Ground Surface
* If Applicable
** Footnote and define all Collection Method Codes used in this table:_____
MDL = Method Detection Limit

BUILDING 88/TANKS 050/88 - 058/88
SUMMARY REPORT (Continued)

LABORATORY RESULTS GROUNDWATER
FACILITY NAME: NAO FLINT OPERATIONS (BLDG 88/TANKS 050/88 - 058/88)
FACILITY NUMBER: 0-002763

VOLATILES										
Sample ID	Bldg 88-6		MW-1		MW-2		MW-3		MW-4	
Sample Depth (feet BGS)	-		-		-		-		-	
Date Collected	11/12/96		11/12/96		11/12/96		11/12/96		11/12/96	
Date Extracted	11/15/96		11/15/96		11/15/96		11/15/96		11/15/96	
Date Analyzed	11/15/96		11/15/96		11/15/96		11/15/96		11/15/96	
Collection Method*	GP		Bailer		Bailer		Bailer		Bailer	
Analytical Method No.	602		602		602		602		602	
CONSTITUENT (ug/l)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Benzene	ND	1	ND	1	ND	1	ND	1	ND	1
☐ Toluene	ND	1	ND	1	ND	1	ND	1	ND	1
☐ Ethylbenzene	90	1	6	1	ND	1	ND	1	ND	1
☐ Total Xylenes	ND	1	10	1	ND	1	ND	1	ND	1
☐ MTBE										
POLYNUCLEAR AROMATICS (PNAs)										
Sample ID	Bldg 88-6		MW-1		MW-2		MW-3		MW-4	
Sample Depth (feet BGS)	-		-		-		-		-	
Date Collected	11/12/96		11/12/96		11/12/96		11/12/96		11/12/96	
Date Extracted	11/19/96		11/19/96		11/19/96		11/19/96		11/19/96	
Date Analyzed	12/02/96		12/02/96		12/02/96		12/02/96		12/02/96	
Collection Method*	GP		Bailer		Bailer		Bailer		Bailer	
Analytical Method No.	8270		8270		8270		8270		8270	
CONSTITUENT (ug/l)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Acenaphthene	ND	10	ND	1	ND	1	ND	1	ND	1
☐ Acenaphthylene	ND	10	ND	1	ND	1	ND	1	ND	1
☐ Anthracene	ND	10	ND	1	ND	1	ND	1	ND	1
☐ Benzo(a)anthracene	ND	10	ND	1	ND	1	ND	1	ND	1
☐ Benzo(a)pyrene	ND	10	ND	1	ND	1	ND	1	ND	1
☐ Benzo(b)fluoranthene	ND	10	ND	1	ND	1	ND	1	ND	1
☐ Benzo(g,h,i)perylene	ND	10	ND	1	ND	1	ND	1	ND	1
☐ Benzo(k)fluoranthene	ND	10	ND	1	ND	1	ND	1	ND	1
☐ Chrysene	ND	10	ND	1	ND	1	ND	1	ND	1
☐ Dibenzo(a,h)anthracene	ND	10	ND	1	ND	1	ND	1	ND	1

BGS = Below Ground Surface
* If Applicable
** Footnote and define all Collection Method Codes used in this table:_____
MDL = Method Detection Limit

LABORATORY RESULTS GROUNDWATER
FACILITY NAME: NAO FLINT OPERATIONS (BLDG 88/TANKS 050/88 - 058/88)
FACILITY NUMBER: 0-002763

POLYNUCLEAR AROMATICS (PNAs)										
Sample ID	Bldg 88-6		MW-1		MW-2		MW-3		MW-4	
Sample Depth (feet BGS)	-		-		-		-		-	
Date Collected	11/12/96		11/12/96		11/12/96		11/12/96		11/12/96	
Date Extracted	11/19/96		11/19/96		11/19/96		11/19/96		11/19/96	
Date Analyzed	12/02/96		12/02/96		12/02/96		12/02/96		12/02/96	
Collection Method*	GP		Bailer		Bailer		Bailer		Bailer	
Analytical Method No.	8270		8270		8270		8270		8270	
CONSTITUENT (ug/l)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Fluoranthene	ND	10	ND	1	ND	1	ND	1	ND	1
☐ Fluorene	ND	10	ND	1	ND	1	ND	1	ND	1
☐ Indeno(1,2,3- cd)pyrene	ND	10	ND	1	ND	1	ND	1	ND	1
☐ Naphthalene	50	10	ND	1	ND	1	ND	1	ND	1
☐ 2-Methylnaphthalene	ND	10	ND	1	ND	1	ND	1	ND	1
☐ Phenanthrene	ND	10	ND	1	ND	1	ND	1	ND	1
☐ Pyrene	ND	10	ND	1	ND	1	ND	1	ND	1
METALS - FILTERED										
Sample ID	Bldg 88-6		MW-1		MW-2		MW-3		MW-4	
Sample Depth (feet BGS)	-		-		-		-		-	
Date Collected	11/12/96		11/12/96		11/12/96		11/12/96		11/12/96	
Date Extracted	11/20/96		11/20/96		11/20/96		11/20/96		11/20/96	
Date Analyzed	11/20/96		11/20/96		11/20/96		11/20/96		11/20/96	
Collection Method*	GP		Bailer		Bailer		Bailer		Bailer	
Analytical Method No.	200.8		200.8		200.8		200.8		200.8	
CONSTITUENT (ug/l)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Cadmium										
☐ Total Chromium	ND	10	ND	10	ND	10	ND	10	ND	10
☐ Total Lead	ND	3	ND	3	ND	3	ND	3	ND	3

BGS = Below Ground Surface
* If Applicable
** Footnote and define all Collection Method Codes used in this table:_____
MDL = Method Detection Limit

BUILDING 88/TANKS 050/88 - 058/88
SUMMARY REPORT (Continued)

LABORATORY RESULTS GROUNDWATER
FACILITY NAME: NAO FLINT OPERATIONS (BLDG 88/TANKS 050/88 - 058/88)_
FACILITY NUMBER: 0-002763

PCBs										
Sample ID										
Sample Depth (feet BGS)										
Date Collected										
Date Extracted										
Date Analyzed										
Collection Method*										
Analytical Method No.										
CONSTITUENT (ug/l)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Aroclor 1016										
☐ Aroclor 1221										
☐ Aroclor 1232										
☐ Aroclor 1242										
☐ Aroclor 1248										
☐ Aroclor 1254										
☐ Aroclor 1280										
HALOGENATED HYDROCARBONS										
Sample ID	Bldg 88-6		MW-1		MW-2		MW-3		MW-4	
Sample Depth (feet BGS)	-		-		-		-		-	
Date Collected	11/12/96		11/12/96		11/12/96		11/12/96		11/12/96	
Date Extracted	11/15/96		11/15/96		11/15/96		11/15/96		11/15/96	
Date Analyzed	11/15/96		11/15/96		11/15/96		11/15/96		11/15/96	
Collection Method*	GP		Bailer		Bailer		Bailer		Bailer	
Analytical Method No.	601		601		601		601		601	
CONSTITUENT (ug/l)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Carbon Tetrachloride	ND	1	ND	1	ND	1	ND	1	ND	1
☐ 1,1-Dichloroethane	ND	1	ND	1	ND	1	ND	1	ND	1
☐ 1,2-Dichloroethane	ND	1	ND	1	ND	1	ND	1	ND	1
☐ 1,1-Dichloroethylene	ND	1	ND	1	ND	1	ND	1	ND	1
☐ cis-1,2-Dichloroethylene	ND	1	ND	1	ND	1	ND	1	ND	1
☐ trans-1,2- Dichloroethylene	ND	1	ND	1	ND	1	ND	1	ND	1

BGS = Below Ground Surface
* If Applicable
** Footnote and define all Collection Method Codes used in this table:_____
MDL = Method Detection Limit

BUILDING 88/TANKS 050/88 - 058/88
SUMMARY REPORT (Continued)

LABORATORY RESULTS GROUNDWATER
FACILITY NAME: NAO FLINT OPERATIONS (BLDG 88/TANKS 050/88 - 058/88)
FACILITY NUMBER: 0-002763

HALOGENATED HYDROCARBONS (Cont.)										
☐ Tetrachloroethylene	ND	1	ND	1	ND	1	ND	1	ND	1
☐ Trichloroethylene	2	1	ND	1	ND	1	18	1	ND	1
☐ 1,1,2-Trichloroethane	ND	1	ND	1	ND	1	ND	1	ND	1
☐ Vinyl Chloride	ND	1	ND	1	ND	1	ND	1	133	1
OTHER *(Specify)*										
Sample ID	Bldg 88-6									
Sample Depth (feet BGS)	-									
Date Collected	11/12/96									
Date Extracted	11/15/96									
Date Analyzed	11/15/96									
Collection Method*	GP									
Analytical Method No.	601									
CONSTITUENT (ug/l)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Chloroethane	50	1								
☐										
☐										
☐										
☐										
☐										
☐										
☐										
☐										
☐										
☐										
☐										
☐										

BGS = Below Ground Surface
* If Applicable
** Footnote and define all Collection Method Codes used in this table:_____
MDL = Method Detection Limit

BUILDING 88/TANKS 050/88 - 058/88
SUMMARY REPORT (Continued)

LABORATORY RESULTS GROUNDWATER
FACILITY NAME: NAO FLINT OPERATIONS (BLDG 88/TANKS 050/88 - 058/88)
FACILITY NUMBER: 0-002763

VOLATILES										
Sample ID	MW-5		MW-6							
Sample Depth (feet BGS)	-		-							
Date Collected	06/10/97		06/10/97							
Date Extracted	06/13/97		06/13/97							
Date Analyzed	06/13/97		06/13/97							
Collection Method*	Bailer		Bailer							
Analytical Method No.	8260		8260							
CONSTITUENT (ug/l)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Benzene	10	1	ND	1						
☐ Toluene	ND	1	ND	1						
☐ Ethylbenzene	ND	1	ND	1						
☐ Total Xylenes	1	1	ND	1						
☐ MTBE										
POLYNUCLEAR AROMATICS (PNAs)										
Sample ID	MW-5		MW-6							
Sample Depth (feet BGS)	-		-							
Date Collected	06/10/97		06/10/97							
Date Extracted	06/13/97		06/13/97							
Date Analyzed	06/13/97		06/13/97							
Collection Method*	Bailer		Bailer							
Analytical Method No.	8270		8270							
CONSTITUENT (ug/l)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Acenaphthene	ND	5	ND	5						
☐ Acenaphthylene	ND	5	ND	5						
☐ Anthracene	ND	5	ND	5						
☐ Benzo(a)anthracene	ND	5	ND	5						
☐ Benzo(a)pyrene	ND	5	ND	5						
☐ Benzo(b)fluoranthene	ND	5	ND	5						
☐ Benzo(g,h,i)perylene	ND	5	ND	5						
☐ Benzo(k)fluoranthene	ND	5	ND	5						
☐ Chrysene	ND	5	ND	5						
☐ Dibenzo(a,h)anthracene	ND	5	ND	5						

BGS = Below Ground Surface
* If Applicable
** Footnote and define all Collection Method Codes used in this table:_____
MDL = Method Detection Limit

ATTACHMENT NO. 3
LABORATORY RESULTS GROUNDWATER
FACILITY NAME: NAO FLINT OPERATIONS (BLDG 88/TANKS 050/88 - 058/88)
FACILITY NUMBER: 0-002763

POLYNUCLEAR AROMATICS (PNAs)										
Sample ID	MW-5		MW-6							
Sample Depth (feet BGS)	-		-							
Date Collected	06/10/97		06/10/97							
Date Extracted	06/13/97		06/13/97							
Date Analyzed	06/13/97		06/13/97							
Collection Method*	Bailer		Bailer							
Analytical Method No.	8270		8270							
CONSTITUENT (ug/l)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Fluoranthene	ND	5	ND	5						
☐ Fluorene	ND	5	ND	5						
☐ Indeno(1,2,3- cd)pyrene	ND	5	ND	5						
☐ Naphthalene	ND	5	ND	5						
☐ 2-Methylnaphthalene	ND	5	ND	5						
☐ Phenanthrene	ND	5	ND	5						
☐ Pyrene	ND	5	ND	5						
METALS - FILTERED										
Sample ID	MW-5		MW-6							
Sample Depth (feet BGS)	-		-							
Date Collected	06/10/97		06/10/97							
Date Extracted	06/16/97		06/16/97							
Date Analyzed	06/16/97		06/16/97							
Collection Method*	Bailer		Bailer							
Analytical Method No.	200.8		200.8							
CONSTITUENT (ug/l)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Cadmium										
☐ Total Chromium	ND	10	ND	10						
☐ Total Lead	ND	3	ND	3						

BGS = Below Ground Surface
* If Applicable
** Footnote and define all Collection Method Codes used in this table:_____
MDL = Method Detection Limit

LABORATORY RESULTS GROUNDWATER
FACILITY NAME: NAO FLINT OPERATIONS (BLDG 88/TANKS 050/88 - 058/88)_
FACILITY NUMBER: 0-002763

PCBs										
Sample ID										
Sample Depth (feet BGS)										
Date Collected										
Date Extracted										
Date Analyzed										
Collection Method*										
Analytical Method No.										
CONSTITUENT (ug/l)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Aroclor 1016										
☐ Aroclor 1221										
☐ Aroclor 1232										
☐ Aroclor 1242										
☐ Aroclor 1248										
☐ Aroclor 1254										
☐ Aroclor 1280										
HALOGENATED HYDROCARBONS										
Sample ID	MW-5		MW-6							
Sample Depth (feet BGS)	-		-							
Date Collected	06/10/97		06/10/97							
Date Extracted	06/13/97		06/13/97							
Date Analyzed	06/13/97		06/13/97							
Collection Method*	Bailer		Bailer							
Analytical Method No.	601		601							
CONSTITUENT (ug/l)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Carbon Tetrachloride	ND	1	ND	1						
☐ 1,1-Dichloroethane	ND	1	ND	1						
☐ 1,2-Dichloroethane	ND	1	ND	1						
☐ 1,1-Dichloroethylene	ND	1	ND	1						
☐ cis-1,2-Dichloroethylene	ND	1	ND	1						
☐ trans-1,2- Dichloroethylene	ND	1	ND	1						

BGS = Below Ground Surface
* If Applicable
** Footnote and define all Collection Method Codes used in this table:_____
MDL = Method Detection Limit

BUILDING 88/TANKS 050/88 - 058/88
SUMMARY REPORT (Continued)

LABORATORY RESULTS GROUNDWATER
FACILITY NAME: NAO FLINT OPERATIONS (BLDG 88/TANKS 050/88 - 058/88)
FACILITY NUMBER: 0-002763

HALOGENATED HYDROCARBONS (Cont.)										
☐ Tetrachloroethylene	ND	1	ND	1						
☐ Trichloroethylene	150	1	ND	1						
☐ 1,1,2-Trichloroethane	ND	1	ND	1						
☐ Vinyl Chloride	ND	1	39	1						
OTHER *(Specify)*										
Sample ID										
Sample Depth (feet BGS)										
Date Collected										
Date Extracted										
Date Analyzed										
Collection Method*										
Analytical Method No.										
CONSTITUENT (ug/l)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐										
☐										
☐										
☐										
☐										
☐										
☐										
☐										
☐										
☐										
☐										
☐										
☐										

BGS = Below Ground Surface
* If Applicable
** Footnote and define all Collection Method Codes used in this table:_____
MDL = Method Detection Limit

ATTACHMENT 8

BUILDING 88/TANKS 050/88 - 058/88
SUMMARY REPORT (Continued)

ATTACHMENT NO. 8
TIER I RBSL/TIER II OR TIER III SSTL
COMPARISON TABLE FOR GROUNDWATER
FACILITY NAME: NAO FLINT OPERATIONS (BLDG 88/TANKS 050/88 - 058/88)
FACILITY NUMBER: 0-002763

Contaminant	Sample ID with Maximum Detected Concentration	Corresponding Sample Date	Maximum Detected Concentration (ug/l)	Applicable Criterion (ug/l)			
				Tier I Residential Health-Based Drinking Water	Tier I Industrial Health-Based Drinking Water	Tier I Groundwater Surface Water Interface	Tier I Direct Contact
METALS - FILTERED							
☐ Cadmium			ND	5	5	.64	110,000
☐ Total Chromium			ND	100	100	77	320,000,000
☐ Total Lead			ND	4	4	140,000	Not Available
PCBs - Not Analyzed							
HALOGENATED HYDROCARBONS							
☐ Carbon Tetrachloride			ND	5	5	21	1600
☐ Chloroethane	Bldg 88-6	11/12/96	50	880	2500	Not Available	2,100,000
☐ 1,1-Dichloroethane	Bldg 88-2	7/22/96	2	5	5	560	11,000
☐ 1,2-Dichloroethane			ND	7	7	32	9900
☐ 1,1-Dichloroethylene	Bldg 88-2	7/22/96	2	70	70	Not Available	170,000
☐ cis-1,2-Dichloroethylene			ND	100	100	300	200,000
☐ trans-1,2-Dichloroethylene	Bldg 88-2	7/22/96	12	5	5	22	5000
☐ Tetrachloroethylene			ND	5	5	65	9600
☐ 1,1,2-Trichloroethane			ND	5	5	65	9600
☐ Trichloroethylene	Bldg 88-2	7/22/96	236	5	5	94	11,000
☐ Vinyl Chloride	MW-4	11/12/96	133	2	2	3.1	290
OTHER *							
☐ Chloroethane	Bldg 88-6	11/12/96	50	220	910	NA	200,000
☐							
☐							
☐							
☐							

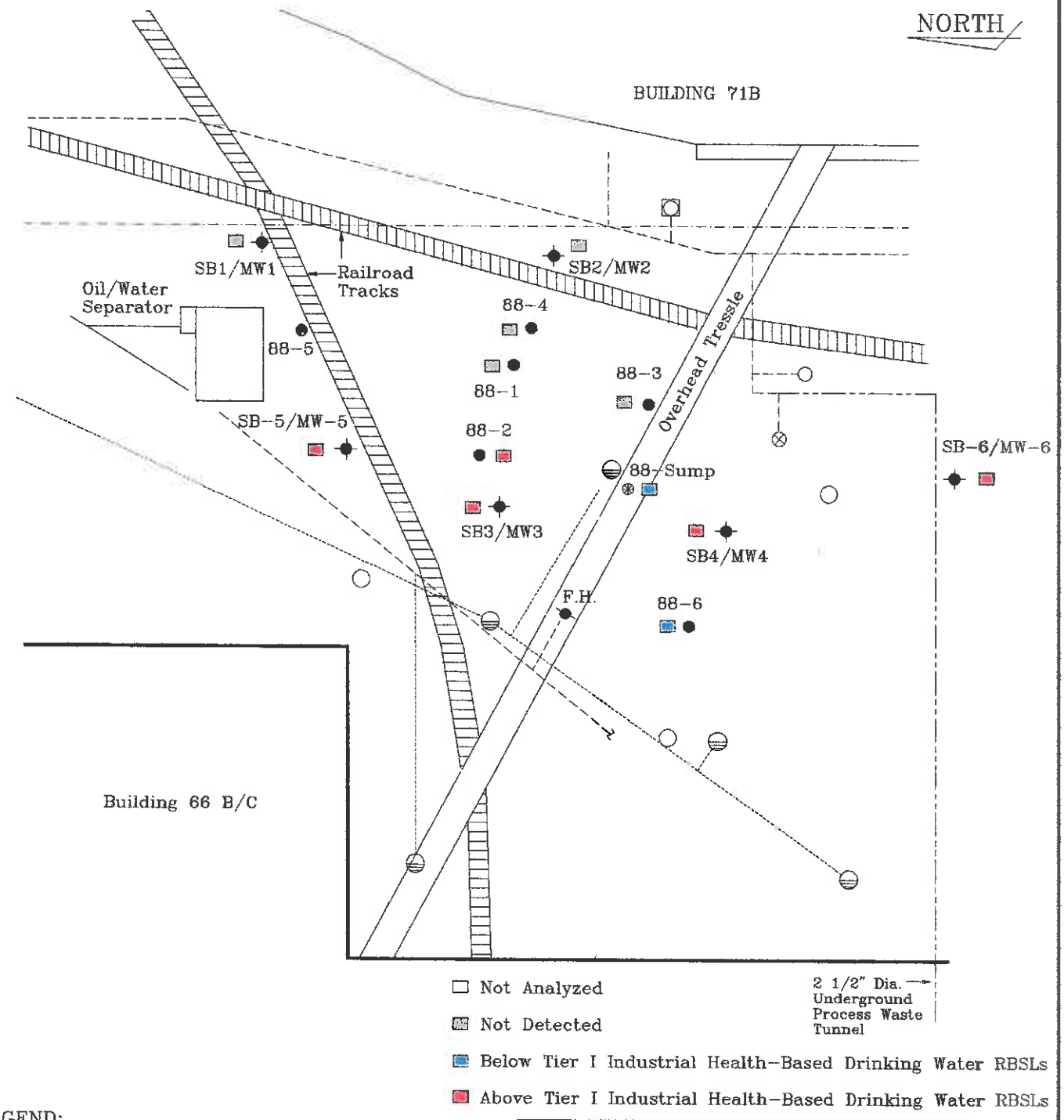
BUILDING 88/TANKS 050/88 - 058/88
SUMMARY REPORT (Continued)

ATTACHMENT NO. 8
TIER I RBSL/TIER II OR TIER III SSTL
COMPARISON TABLE FOR GROUNDWATER
FACILITY NAME: NAO FLINT OPERATIONS (BLDG 88/TANKS 050/88 - 058/88)
FACILITY NUMBER: 0-002763

☑ **Residential** ☐ **Commercial** ☑ **Industrial**

Contaminant	Sample ID with Maximum Detected Concentration	Corresponding Sample Date	Maximum Detected Concentration (ug/l)	Applicable Criterion (ug/l)			
				Tier I Residential Health-Based Drinking Water	Tier I Industrial Health-Based Drinking Water	Tier I Groundwater Surface Water Interface	Tier I Direct Contact
VOLATILES							
☐ Benzene	MW-5	06/10/97	10	5	5	53	9300
☐ Toluene			ND	790	790	110	>526,000
☐ Ethylbenzene	Bldg 88-6	11/12/96	90	74	74	31	>169,000
☐ Total Xylenes	MW-1	11/12/96	10	280	280	59	>186,000
☐ MTBE							
POLYNUCLEAR AROMATICS (PNAs)							
☐ Acenaphthene			ND	1300	3800	3.8	>4240
☐ Acenaphthylene			ND	26	75	Not Available	ID
☐ Anthracene			ND	7300	21,000	110,000	>43
☐ Benzo(a)anthracene			ND	1.2	4.8	.31	4
☐ Benzo(a)pyrene			ND	.2	.2	.31	.24
☐ Benzo(b)fluoranthene			ND	1.2	4.8	.31	2
☐ Benzo(g,h,i)perylene			ND	26	75	Not Available	ID
☐ Benzo(k)fluoranthene			ND	12	48	.31	20
☐ Chrysene			ND	120	480	.31	400
☐ Dibenzo-(a,h)anthracene			ND	.12	.48	.31	.11
☐ Fluoranthene			ND	880	2500	370	>206
☐ Fluorene			ND	880	2500	14,000	>1980
☐ Indeno(1,2,3-cd)pyrene			ND	1.2	4.8	.31	>0.022
☐ Naphthalene	Bldg 88-6	11/12/96	50	260	750	34	>31,000
☐ Phenanthrene			ND	26	75	Not Available	>1000
☐ Pyrene			ND	550	1600	11,000	>135
☐ 2-Methylnaphthalene			ND	260	750	59	>110,000

ATTACHMENT 9



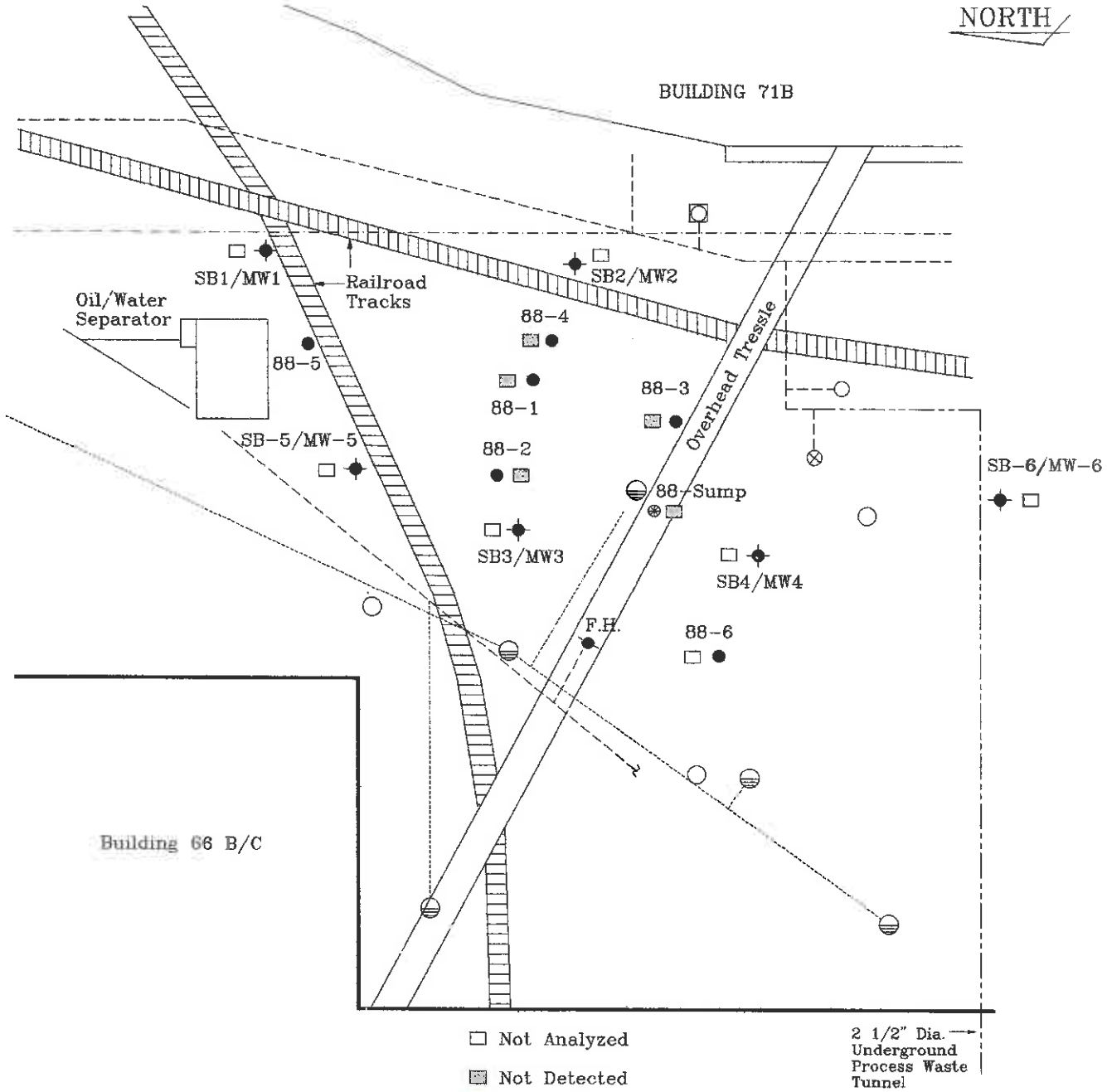
LEGEND:

- Monitoring Well/Soil Boring
- Geoprobe Sample Locations
- Fire Protection Line
- Storm Sewer Line
- City Water Line
- Fire Hydrant

GM-CLCD NORTH

TITLE: GROUNDWATER CONCENTRATION MAP: HALOGENATED HYDROCARBONS - BUILDING 88 TANKS 050/88 - 058/88

SCALE: 1"=40'	DATE: 4/29/97
Global Environmental Engineering Inc.	APPROVED BY: A.L.K.
	PREPARED BY: C.G.S.
	ATTACHMENT NUMBER: 9g
	PROJECT NUMBER: F174



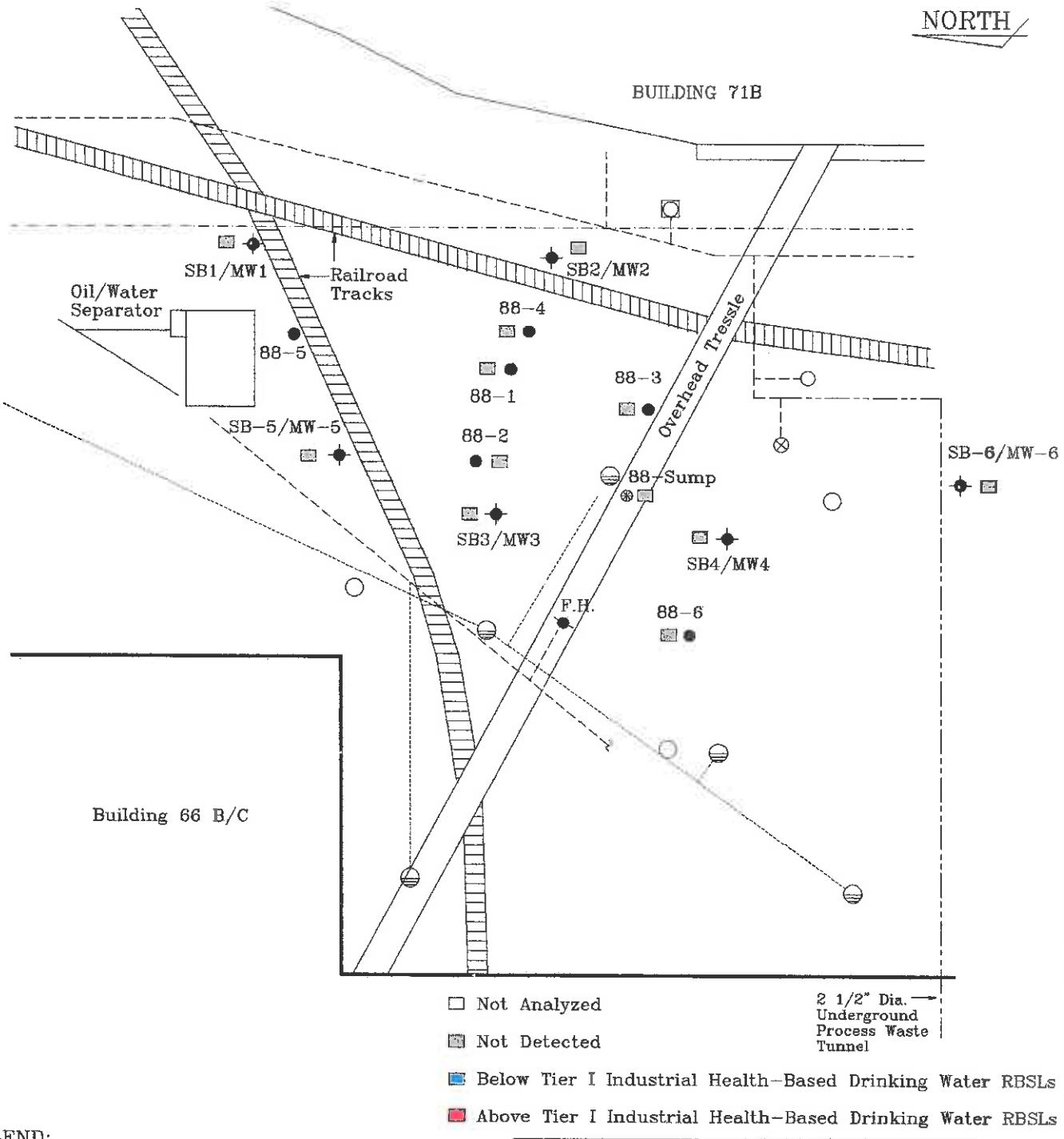
LEGEND:

- Monitoring Well/Soil Boring
- Geoprobe Sample Locations
- Fire Protection Line
- Storm Sewer Line
- City Water Line
- Fire Hydrant

GM-CLCD NORTH

TITLE: GROUNDWATER CONCENTRATION MAP: PCBs
BUILDING 88
TANKS 050/88 - 058/88

SCALE: 1"=40'	DATE: 4/29/97
Global Environmental Engineering Inc.	APPROVED BY: A.L.K.
	PREPARED BY: C.G.S.
	ATTACHMENT NUMBER: 9f
	PROJECT NUMBER: F174



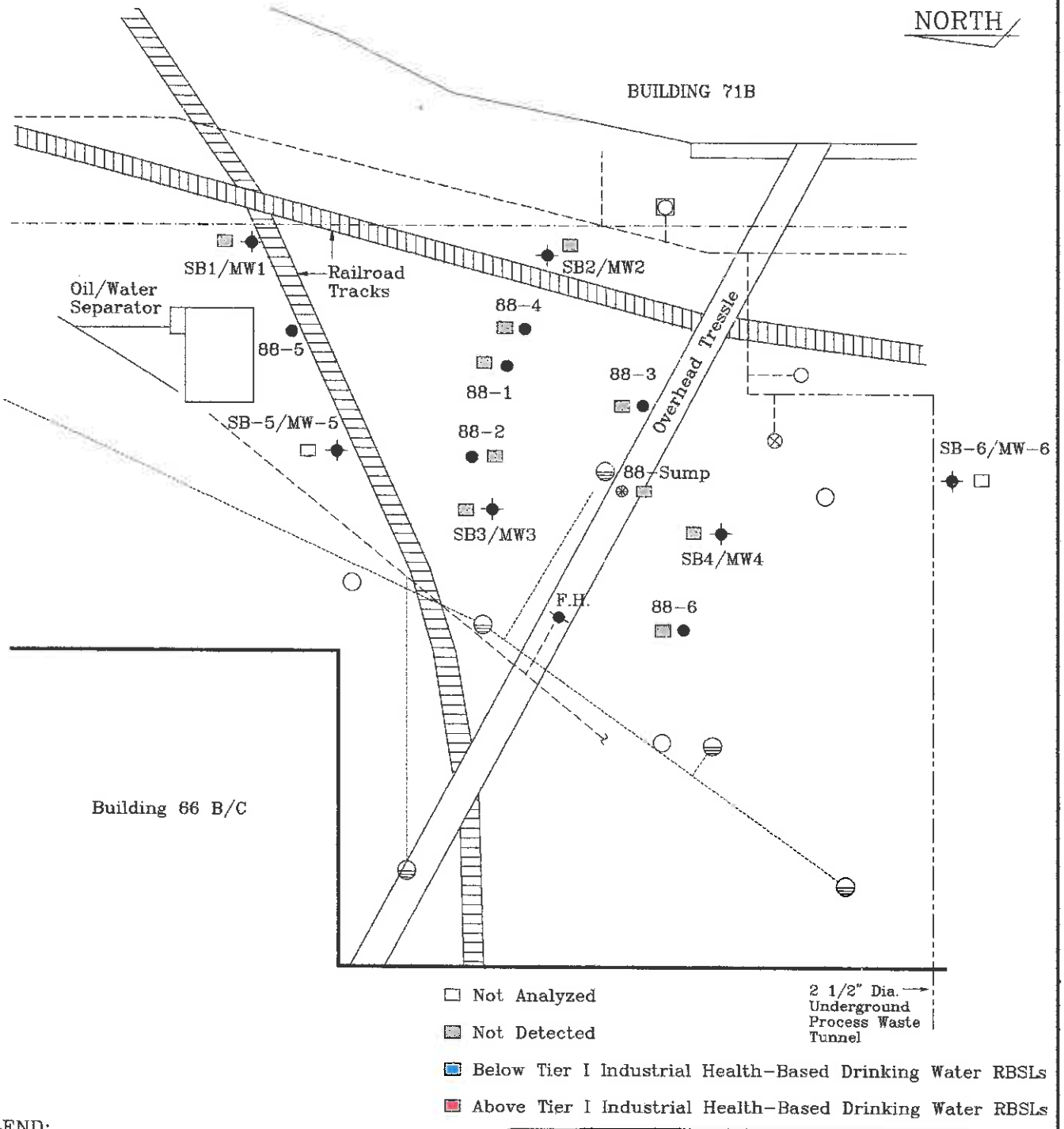
LEGEND:

- Monitoring Well/Soil Boring
- Geoprobe Sample Locations
- Fire Protection Line
- Storm Sewer Line
- City Water Line
- Fire Hydrant

GM-CLCD NORTH

TITLE: GROUNDWATER CONCENTRATION MAP: LEAD
BUILDING 88
TANKS 050/88 - 058/88

SCALE: 1"=40'	DATE: 4/29/97
Global Environmental Engineering Inc.	APPROVED BY: A.L.K.
	PREPARED BY: C.G.S.
	ATTACHMENT NUMBER: 9e
	PROJECT NUMBER: F174



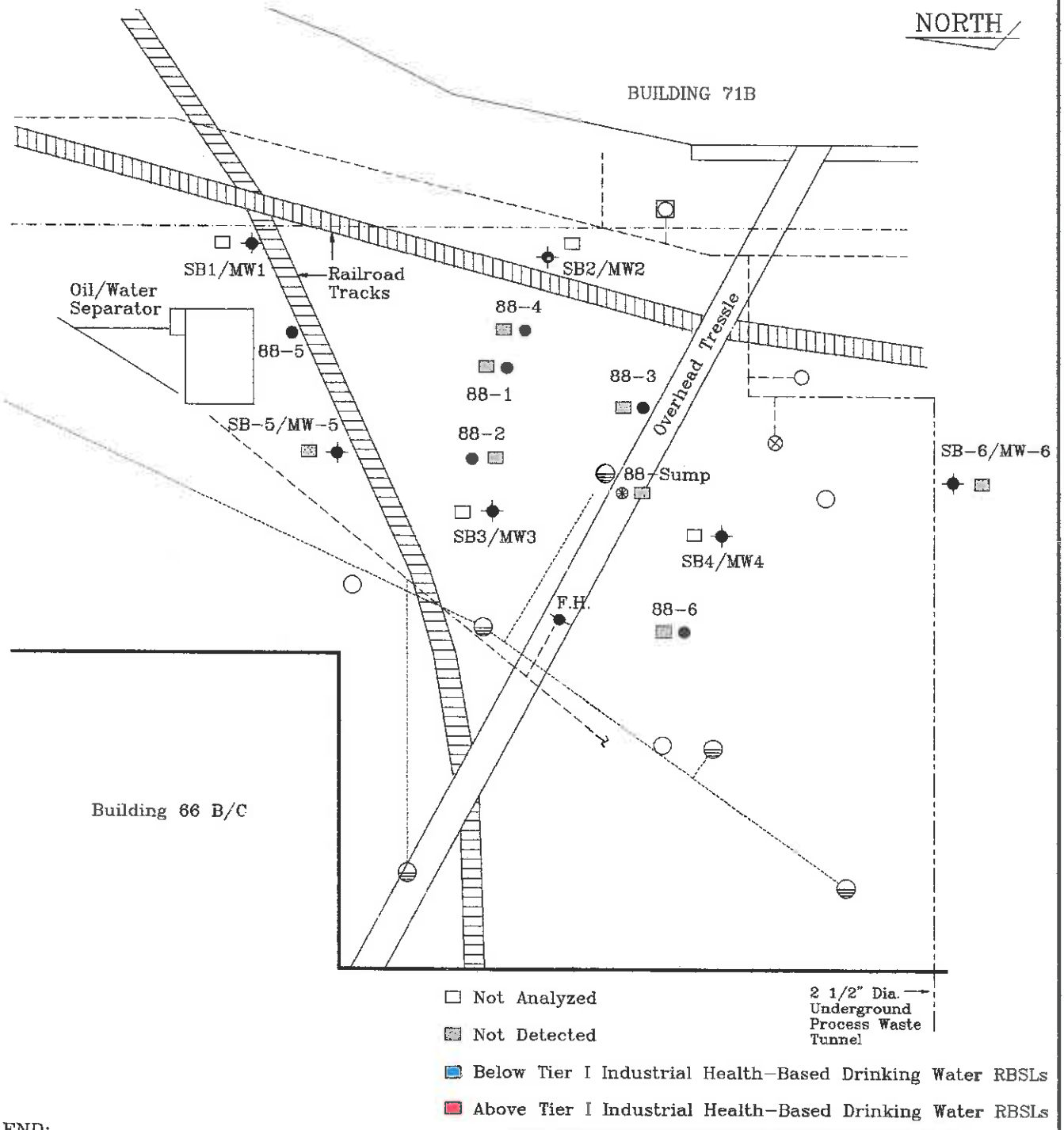
LEGEND:

- Monitoring Well/Soil Boring
- Geoprobe Sample Locations
- Fire Protection Line
- Storm Sewer Line
- City Water Line
- Fire Hydrant

GM-CLCD NORTH

TITLE: GROUNDWATER CONCENTRATION MAP: CHROMIUM
BUILDING 88
TANKS 050/88 - 058/88

SCALE: 1"=40'	DATE: 4/29/97
Global Environmental Engineering Inc.	APPROVED BY: A.L.K.
	PREPARED BY: C.G.S.
	ATTACHMENT NUMBER: 9d
	PROJECT NUMBER: F174



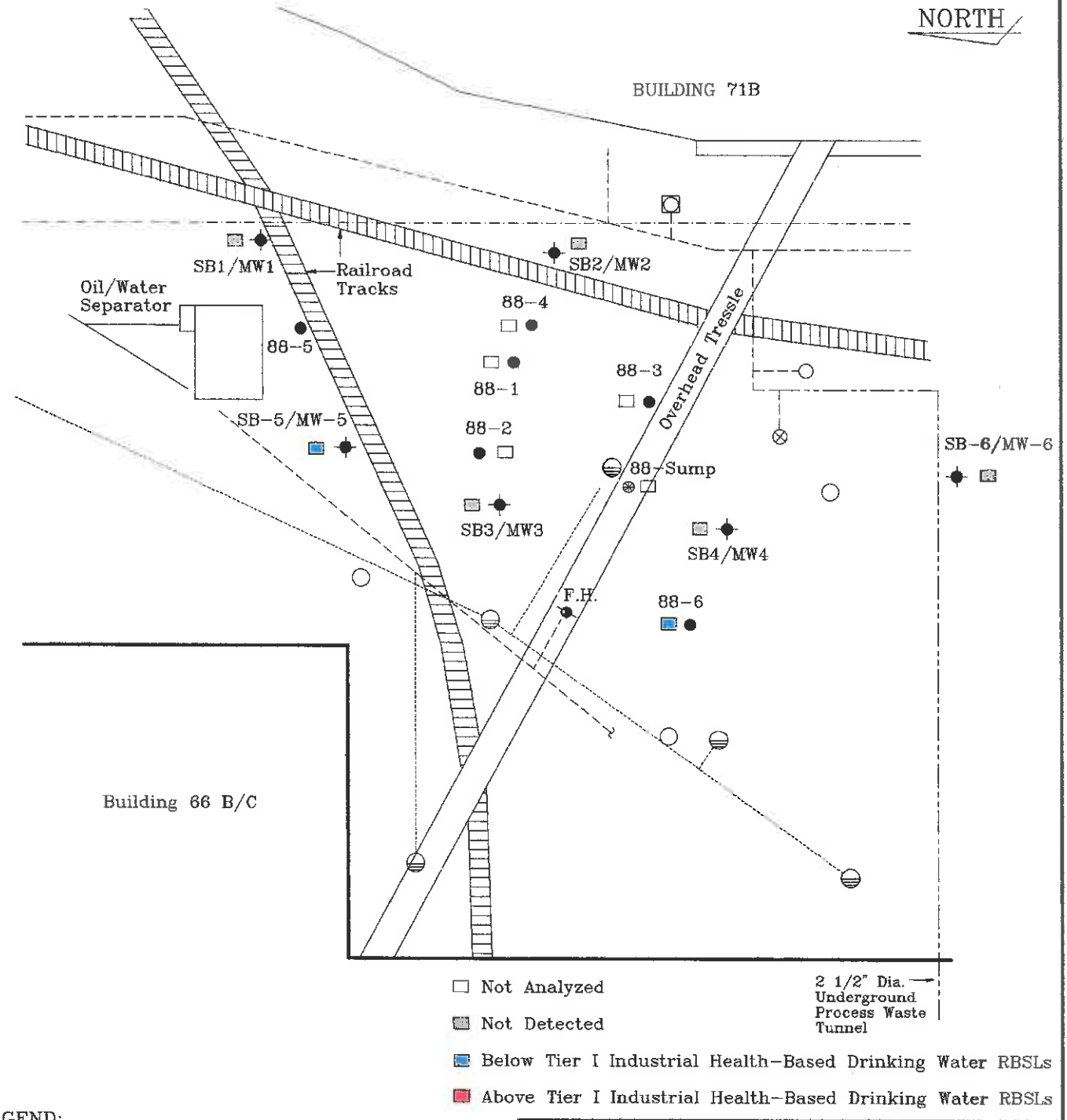
LEGEND:

- Monitoring Well/Soil Boring
- Geoprobe Sample Locations
- Fire Protection Line
- Storm Sewer Line
- City Water Line
- Fire Hydrant

GM-CLCD NORTH

TITLE: GROUNDWATER CONCENTRATION MAP: CADMIUM
BUILDING 88
TANKS 050/88 - 058/88

SCALE: 1"=40'	DATE: 4/29/97
Global Environmental Engineering Inc.	APPROVED BY: A.L.K.
	PREPARED BY: C.G.S.
	ATTACHMENT NUMBER: 9c
	PROJECT NUMBER: F174



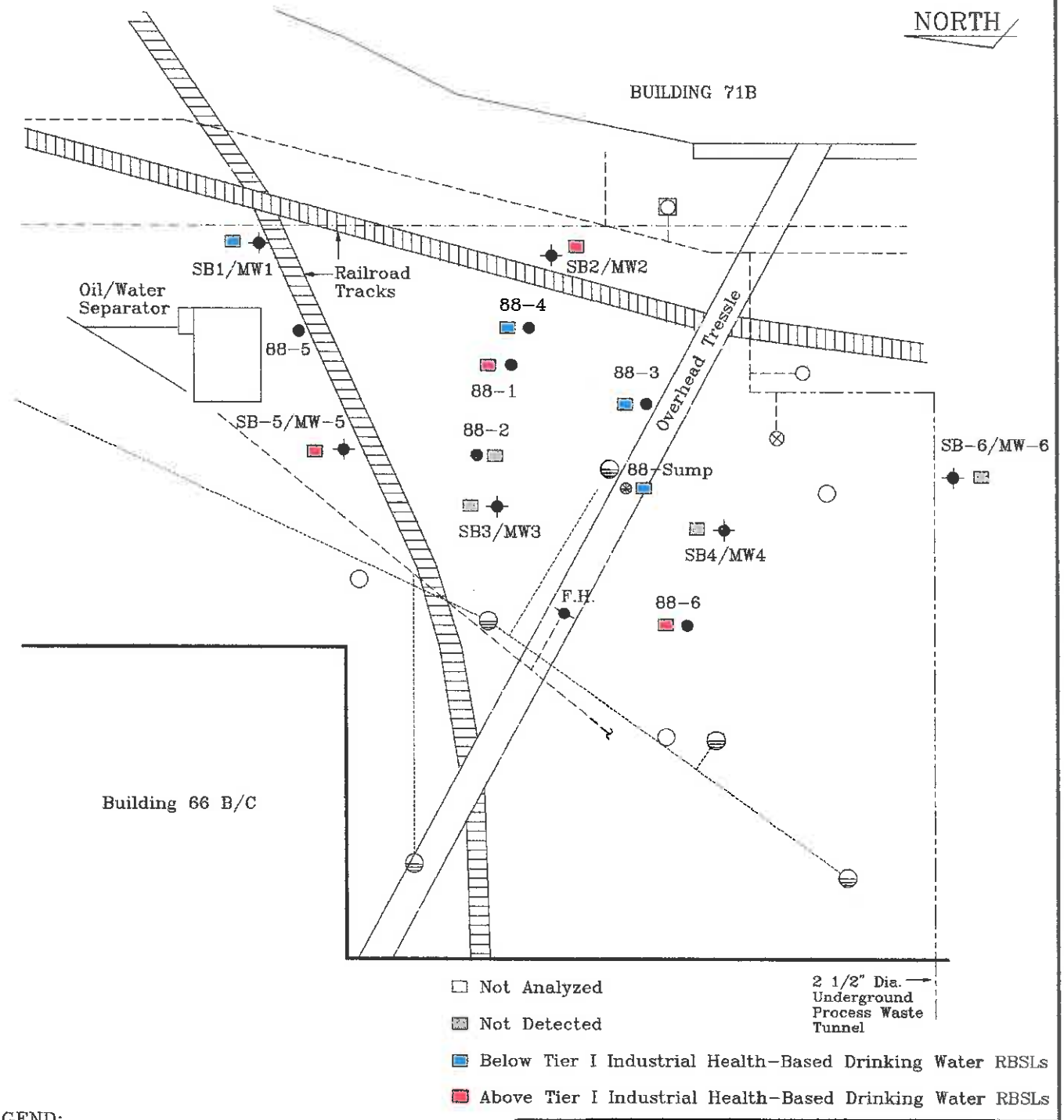
LEGEND:

- Monitoring Well/Soil Boring
- Geoprobe Sample Locations
- Fire Protection Line
- Storm Sewer Line
- City Water Line
- Fire Hydrant

GM-CLCD NORTH

TITLE: GROUNDWATER CONCENTRATION MAP:PNAHs
BUILDING 88
TANKS 050/88 - 058/88

SCALE: 1"=40'	DATE: 4/29/97
Global Environmental Engineering Inc.	APPROVED BY: A.L.K.
	PREPARED BY: C.G.S.
	ATTACHMENT NUMBER: 9b
	PROJECT NUMBER: F174



LEGEND:

- Monitoring Well/Soil Boring
- Geoprobe Sample Locations
- Fire Protection Line
- Storm Sewer Line
- City Water Line
- Fire Hydrant

GM-CLCD NORTH

TITLE: GROUNDWATER CONCENTRATION MAP: BTEX
BUILDING 88
TANKS 050/88 - 058/88

SCALE: 1"=40'	DATE: 4/29/97
Global Environmental Engineering Inc.	APPROVED BY: A.L.K.
	PREPARED BY: C.G.S.
	ATTACHMENT NUMBER: 9a
	PROJECT NUMBER: F174

ATTACHMENT 10

Global Environmental Engineering Inc.
5467 Hill 23 Drive, Suite B
Flint, Michigan 48507
Tel: (810) 238-9190
Fax: (810) 238-9195

Monitoring Well:	SB-6/MW-6	Project Name:	GM - BUILDING 88
Date:	6/2/97	Project No.:	F329
Contractor:	GEEI	Location:	
Prepared By:	ALK	Twp/Range/Sec.:	
Time Started:	14:00	Depth Drilled:	12'
Time Completed:		Hole Diamater:	8.25"
Coring Device:	5'	Inner Diamater:	4.50"
		Drilling Fluid:	None
		Driller:	Norm
		Helper:	Ash

Boring Methods

X	Hollow Stem Auger
	Hand Auger
	Geoprobe

Water Level Data

Date	SWL Elevation
6/10/97	7.48

WELL SPECIFICATIONS

Well Casing Cover:

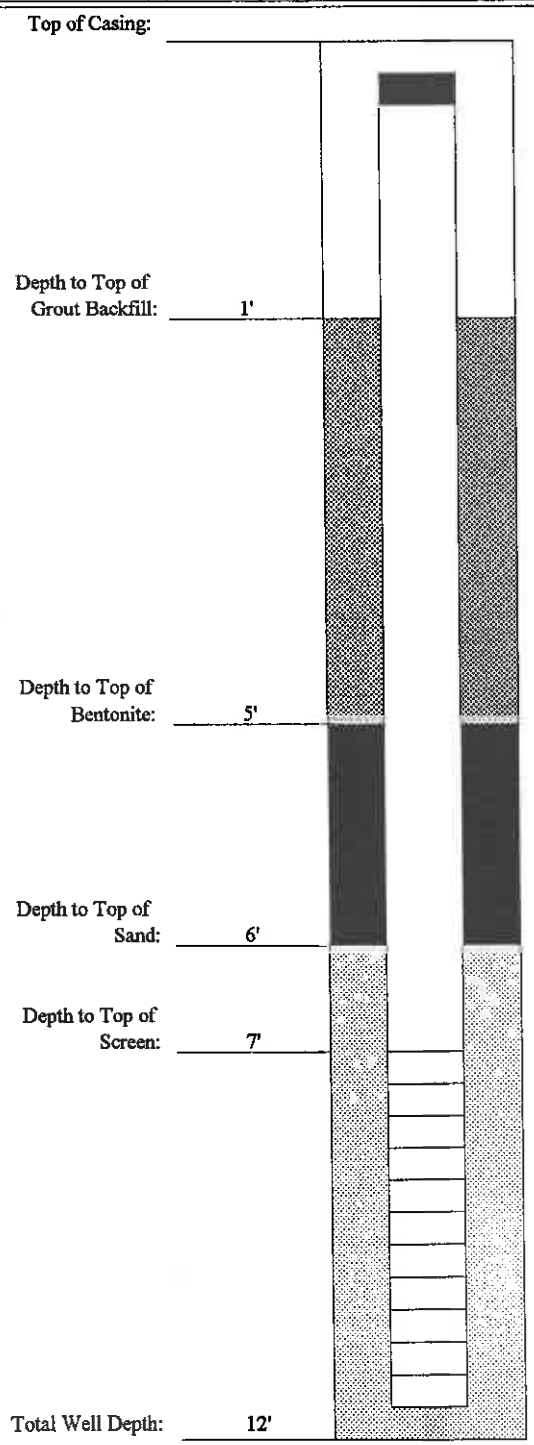
Material:	Steel
Diamater:	12"
Length:	12"
Lock:	No

Well Casing:

Diamater:	2"
Length:	12"
Material:	PVC
Cap:	Expandable
Locking:	Dolphin

Well Screen:

Diamater:	2"
Length:	5'
Slotsize:	0.01
Material:	PVC
Well Screen Interval:	7'-12'
Filter Pack:	Sand



SOIL PROFILE

0 - 1.5' Concrete
1.5'- 12' Sand

Groundwater Encountered at 9'

Global Environmental Engineering Inc.
5467 Hill 23 Drive, Suite B
Flint, Michigan 48507
Tel: (810) 238-9190
Fax: (810) 238-9195

Monitoring Well:	SB-5/MW-5	Project Name:	GM - BUILDING 88
Date:	6/2/97	Project No.:	F329
Contractor:	GEEI	Location:	
Prepared By:	ALK	Twp/Range/Sec.:	
Time Started:	11:30	Depth Drilled:	12'
Time Completed:		Hole Diamater:	8.25"
Coring Device:	5'	Inner Diamater:	4.50"
		Drilling Fluid:	None
		Driller:	Norm
		Helper:	Ash

Boring Methods

X	Hollow Stem Auger
	Hand Auger
	Geoprobe

Water Level Data

Date	SWL Elevation
6/10/97	7.52

WELL SPECIFICATIONS

Well Casing Cover:

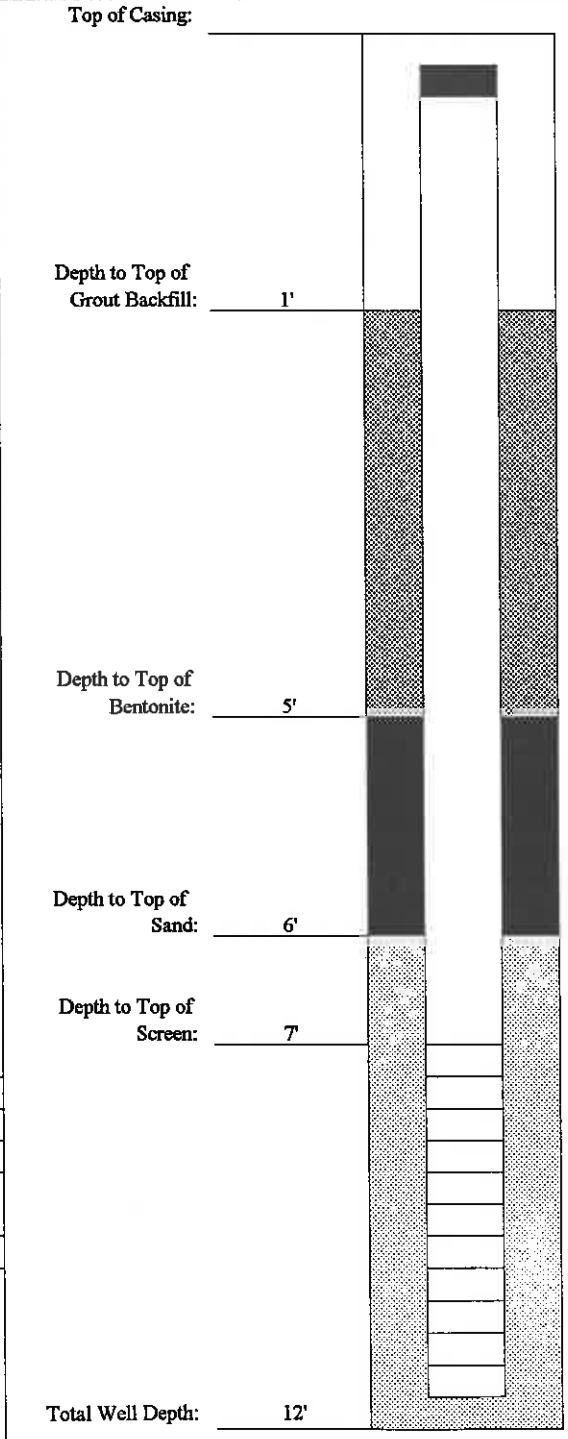
Material:	Steel
Diamater:	12"
Length:	12"
Lock:	No

Well Casing:

Diamater:	2"
Length:	12"
Material:	PVC
Cap:	Expandable
Locking:	Dolphin

Well Screen:

Diamater:	2"
Length:	5'
Slotsize:	0.01
Material:	PVC
Well Screen Interval:	7'-12'
Filter Pack:	Sand



SOIL PROFILE

0 - 2' Concrete
2'- 3' Stone
3 - 12' Sand

Groundwater Encountered at 8'

Global Environmental Engineering Inc.
5467 Hill 23 Drive, Suite B
Flint, Michigan 48507
Tel: (810) 238-9190
Fax: (810) 238-9195

Monitoring Well:	SB4/MW4	Project Name:	GMCLCD N.
Date:	11/8/96	Project No.:	F174
Contractor:	GEEI	Location:	Building 88
Prepared By:	A.L.K.	Twp/Range/Sec.:	
Time Started:	8:00	Depth Drilled:	12'
Time Completed:	10:30	Hole Diamater:	8.25"
Coring Device:	5'	Inner Diamater:	4.5"
		Drilling Fluid:	None
		Driller:	Lisa
		Helper:	NA

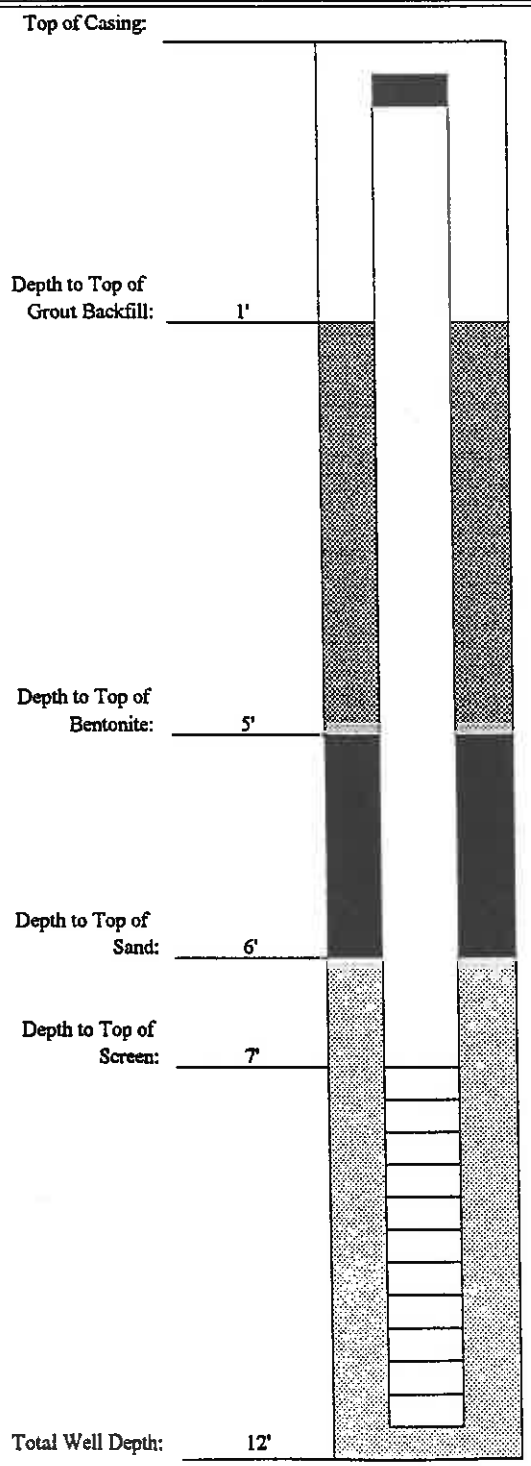
Boring Methods		Water Level Data	
X	Hollow Stem Auger	Date	SWL Elevation
	Hand Auger		
	Geoprobe		

WELL SPECIFICATIONS

Well Casing Cover:
- Material: Steel
- Diamater: 12"
- Length: 12"
- Lock: No.

Well Casing:
- Diamater: 2"
- Length: 12'
- Material: PVC
- Cap: Expandable
- Locking: Dolphin

Well Screen:
- Diamater: 2"
- Length: 5'
- Slotsize: 0.01"
- Material: PVC
- Well Screen Interval: 7'-12'
- Filter Pack: Sand



SOIL PROFILE

0'-12' - Sand

Global Environmental Engineering Inc.
5467 Hill 23 Drive, Suite B
Flint, Michigan 48507
Tel: (810) 238-9190
Fax: (810) 238-9195

Monitoring Well:	SB3/MW3	Project Name:	GMCLCD N.
Date:	11/6/96	Project No.:	F174
Contractor:	GEEI	Location:	Building 88
Prepared By:	A.L.K.	Twp/Range/Sec.:	
Time Started:	14:45	Depth Drilled:	15'
Time Completed:		Hole Diamater:	8.25"
Coring Device:	5'	Inner Diamater:	4.5"
		Drilling Fluid:	None
		Driller:	Lisa
		Helper:	NA

Boring Methods

X	Hollow Stem Auger
	Hand Auger
	Geoprobe

Water Level Data

Date	SWL Elevation

WELL SPECIFICATIONS

ll Casing Cover:

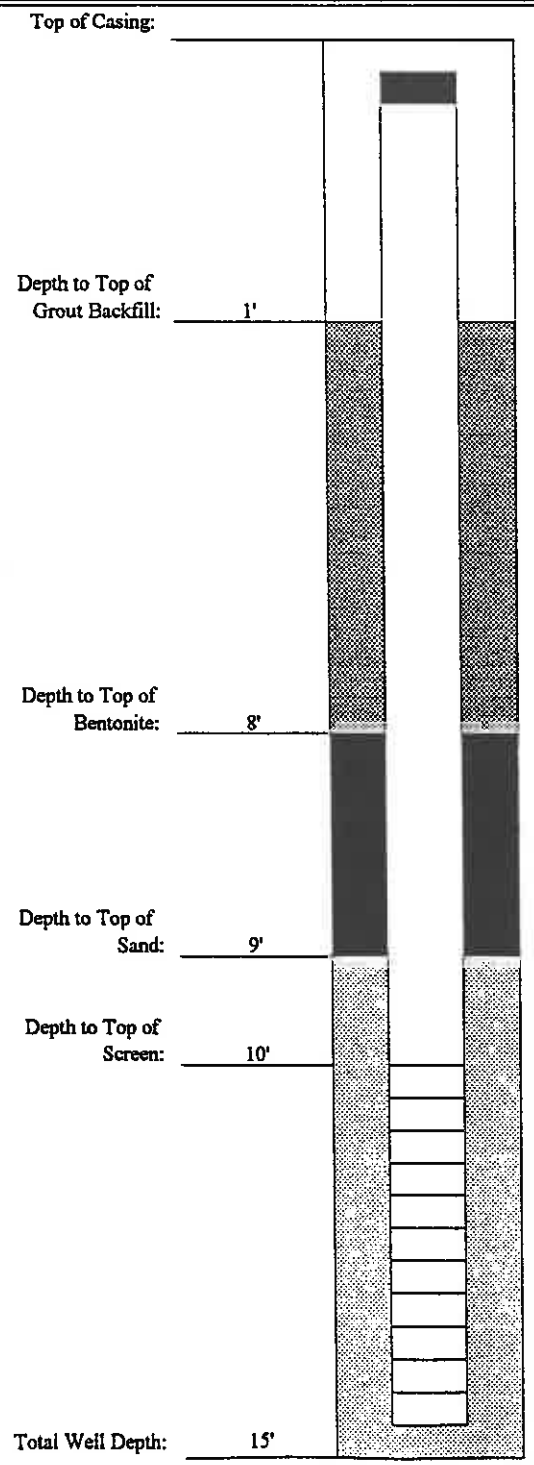
Material:	Steel
Diamater:	12"
Length:	12"
Lock:	No

..ell Casing:

Diamater:	2"
Length:	15'
Material:	PVC
Cap:	Expandable
Locking:	Dolphin

..Vell Screen:

Diamater:	2"
Length:	5'
Slotsize:	0.01"
Material:	PVC
Well Screen Interval:	10'-15'
Filter Pack:	Sand



SOIL PROFILE

0'-15' - Sand

Global Environmental Engineering Inc.
5467 Hill 23 Drive, Suite B
Flint, Michigan 48507
Tel: (810) 238-9190
Fax: (810) 238-9195

Monitoring Well:	SB2/MW2	Project Name:	GMCLCD N.
Date:	11/6/96	Project No.:	F174
Contractor:	GEEI	Location:	Building 88
Prepared By:	A.L.K.	Twp/Range/Sec.:	
Time Started:	11:45	Depth Drilled:	16'
Time Completed:	4:05	Hole Diamater:	8.25"
Coring Device:	5'	Inner Diamater:	4.5"
		Drilling Fluid:	None
		Driller:	Lisa
		Helper:	NA

Boring Methods

X	Hollow Stem Auger
	Hand Auger
	Geoprobe

Water Level Data

Date	SWL Elevation

WELL SPECIFICATIONS

ll Casing Cover:

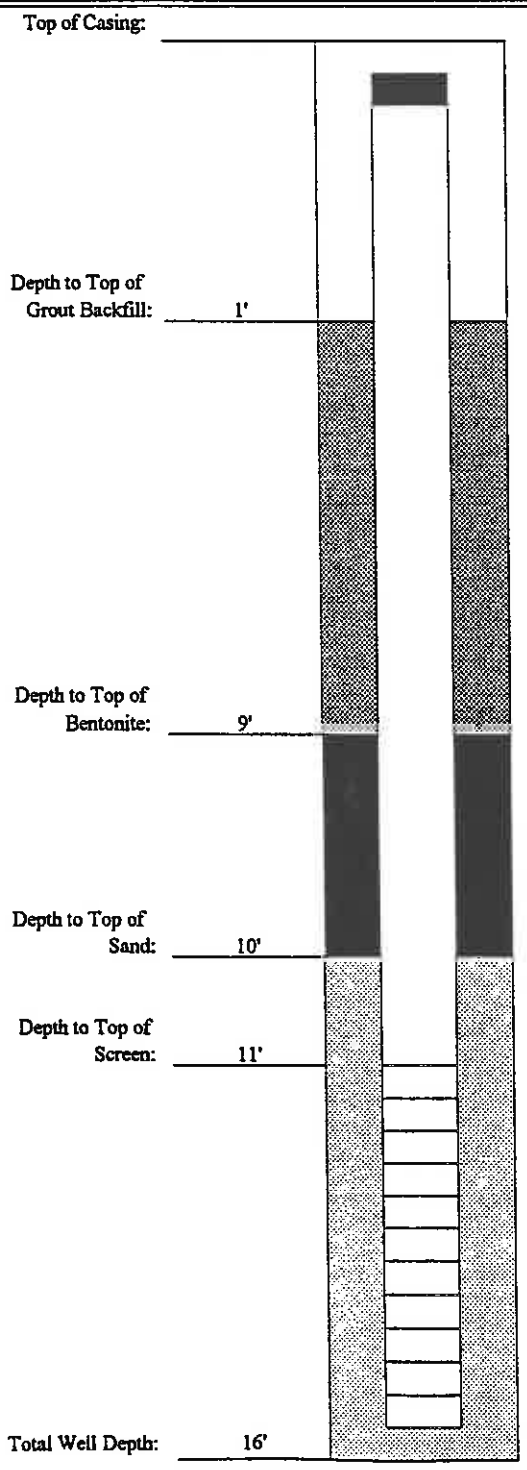
Material:	Steel
Diamater:	12"
Length:	12"
Lock:	No

ell Casing:

Diamater:	2"
Length:	16'
Material:	PVC
Cap:	Expandable
Locking:	Dolphin

Well Screen:

Diamater:	2"
Length:	5'
Slotsize:	0.01"
Material:	PVC
Well Screen Interval:	11'-16'
Filter Pack:	Sand



SOIL PROFILE

0'-16' - Sand

Global Environmental Engineering Inc.
5467 Hill 23 Drive, Suite B
Flint, Michigan 48507
Tel: (810) 238-9190
Fax: (810) 238-9195

Monitoring Well:	SB1/MW1	Project Name:	GMCLCD N.
Date:	11/6/96	Project No.:	F174
Contractor:	GEEI	Location:	Building 88
Prepared By:	A.L.K.	Twp/Range/Sec.:	
Time Started:	8:30	Depth Drilled:	17'
Time Completed:	11:15	Hole Diamater:	8.25"
Coring Device:	5'	Inner Diamater:	4.5"
		Drilling Fluid:	None
		Driller:	Lisa
		Helper:	NA

Boring Methods

X	Hollow Stem Auger
	Hand Auger
	Geoprobe

Water Level Data

Date	SWL Elevation

WELL SPECIFICATIONS

ell Casing Cover:

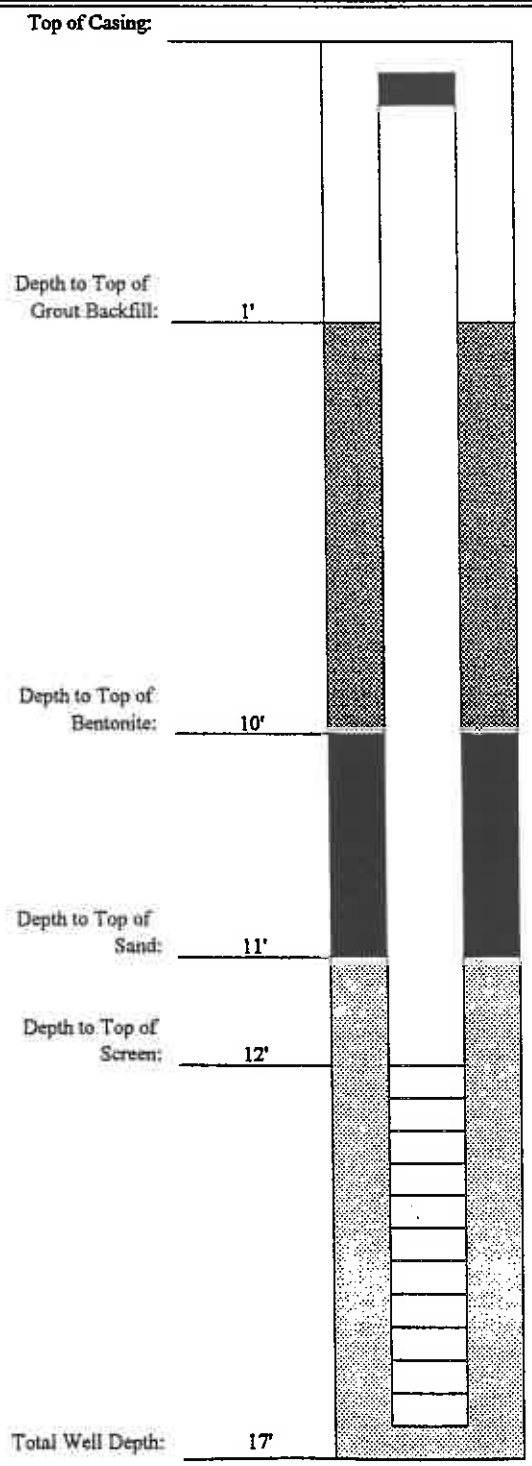
Material:	Steel
Diamater:	12"
Length:	12"
Lock:	No

'ell Casing:

Diamater:	2"
Length:	17'
Material:	PVC
Cap:	Expandable
Locking:	Dolphin

Vell Screen:

Diamater:	2"
Length:	5'
Slotsize:	0.01"
Material:	PVC
Well Screen Interval:	12'-17'
Filter Pack:	Sand



SOIL PROFILE

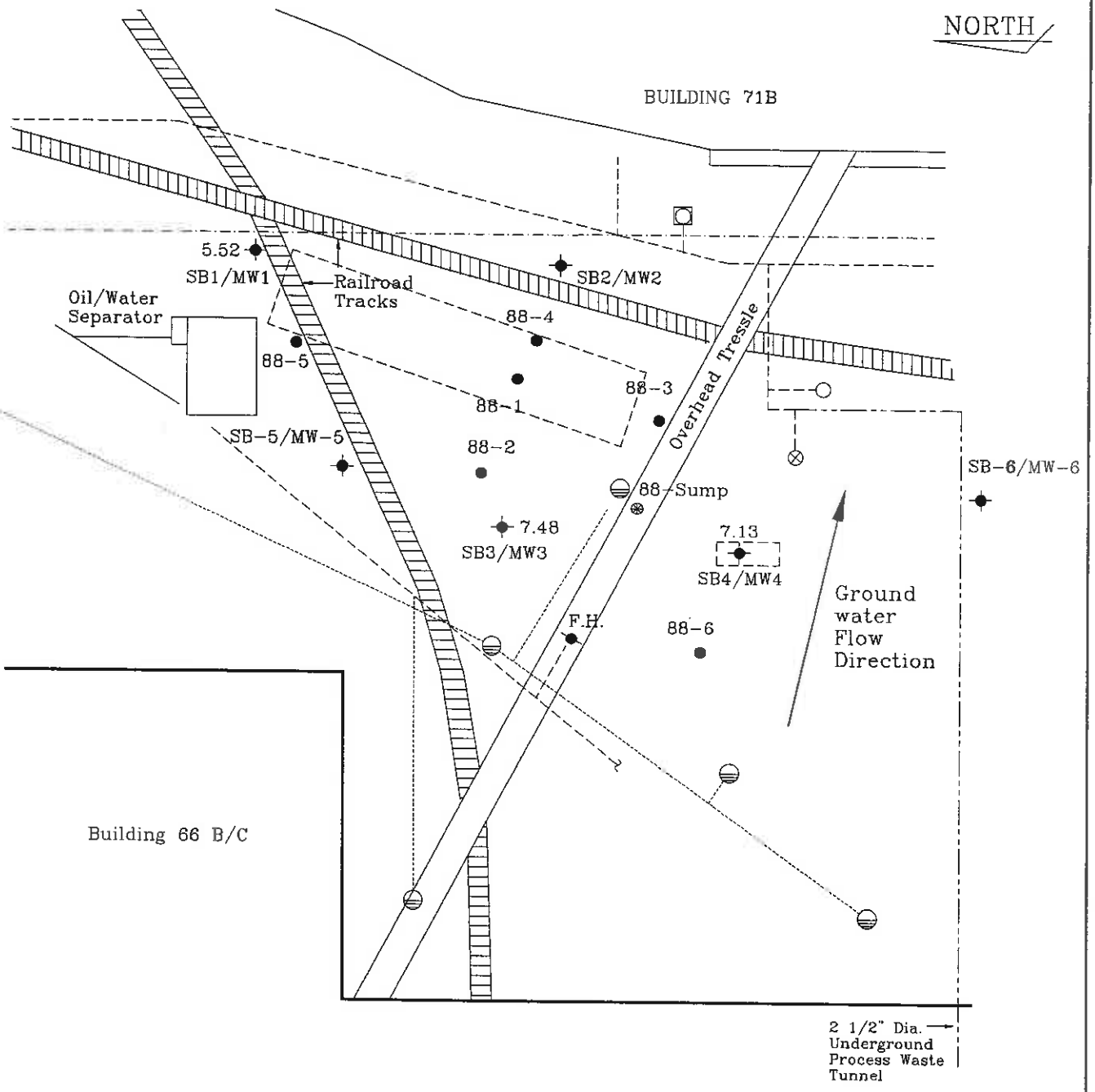
0'-6.5' - Sand

6.5' - 11' - Silt

11'-12' ; Silty Clay

12'-17' - Silt

ATTACHMENT 11



LEGEND:

- Monitoring Well/Soil Boring
- Geoprobe Sample Locations
- Fire Protection Line
- Storm Sewer Line
- City Water Line
- Fire Hydrant
- Former UST Locations

Static Water Level Data Obtained 2/24/97

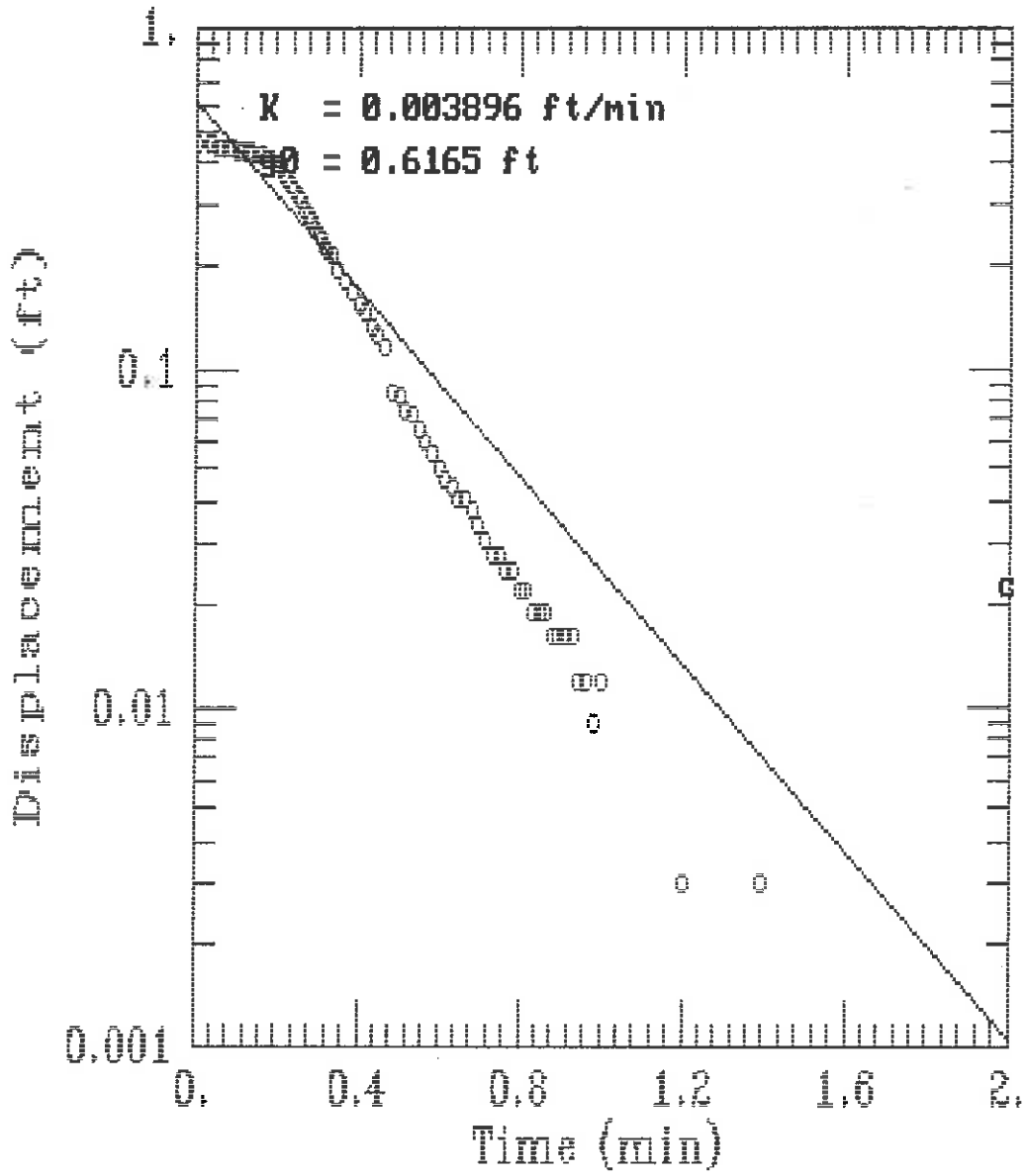
GM-CLCD NORTH

TITLE: GROUNDWATER FLOW MAP
GM-CLCD NORTH
BUILDING 88 - TANKS 050/88 - 058/88

SCALE: 1"=40'	DATE: 4/29/97
Global Environmental Engineering Inc.	APPROVED BY: A.L.K.
	PREPARED BY: C.G.S.
	ATTACHMENT NUMBER: 11
	PROJECT NUMBER: F174

ATTACHMENT 12

Building 88/MW-4



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AQTESOLV

GERAGHTY & MILLER, INC.

Modeling Group

0.5	0.082	0.12479	-0.042788	1
0.5166	0.075	0.11834	-0.043343	1
0.5333	0.072	0.11219	-0.040195	1
0.55	0.066	0.10637	-0.040366	1
0.5666	0.06	0.10087	-0.040872	1
0.5833	0.056	0.095631	-0.039631	1
0.6	0.05	0.090663	-0.040663	1
0.6166	0.047	0.08598	-0.03898	1
0.6333	0.044	0.081513	-0.037513	1
0.65	0.041	0.077278	-0.036278	1
0.6666	0.041	0.073287	-0.032287	1
0.6833	0.038	0.069479	-0.031479	1
0.7	0.034	0.065869	-0.031869	1
0.7166	0.031	0.062467	-0.031467	1
0.7333	0.028	0.059222	-0.031222	1
0.75	0.028	0.056145	-0.028145	1
0.7666	0.025	0.053245	-0.028245	1
0.7833	0.025	0.050479	-0.025479	1
0.8	0.022	0.047856	-0.025856	1
0.8166	0.022	0.045384	-0.023384	1
0.8333	0.019	0.043026	-0.024026	1
0.85	0.019	0.040791	-0.021791	1
0.8666	0.019	0.038684	-0.019684	1
0.8833	0.016	0.036674	-0.020674	1
0.9	0.016	0.034769	-0.018769	1
0.9166	0.016	0.032973	-0.016973	1
0.9333	0.016	0.03126	-0.01526	1
0.95	0.012	0.029636	-0.017636	1
0.9666	0.012	0.028105	-0.016105	1
0.9833	0.009	0.026645	-0.017645	1
1	0.012	0.025261	-0.013261	1
1.2	0.003	0.013334	-0.010334	1
1.4	0.003	0.0070383	-0.0040383	1

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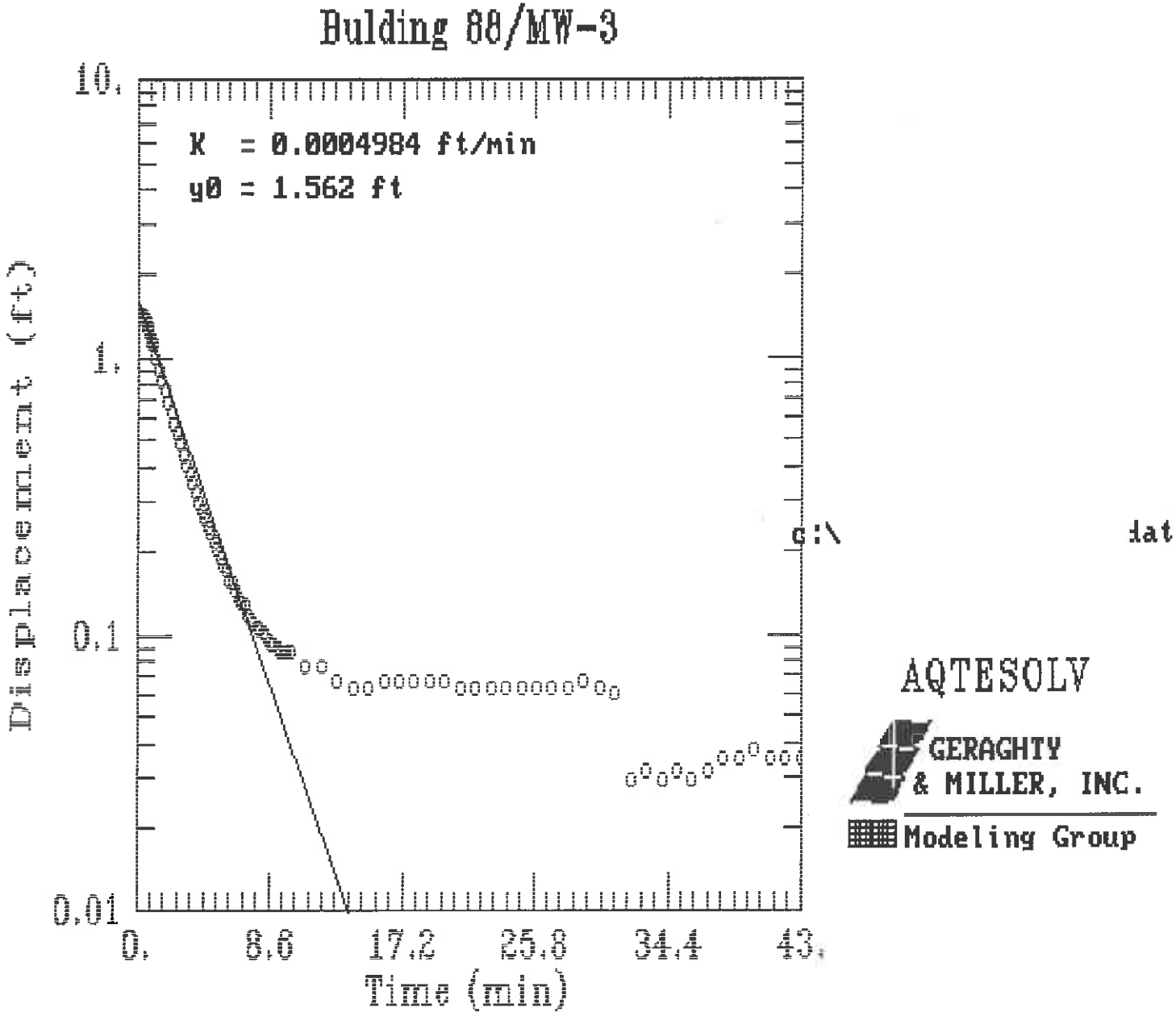
RESULTS FROM VISUAL CURVE MATCHING

VISUAL MATCH PARAMETER ESTIMATES

	Estimate
K =	3.8963E-003
y0 =	6.1646E-001

Model Residuals:

Time	Observed	Calculated	Residual	Weight
0.0333	0.46	0.55424	-0.094242	1
0.0416	0.454	0.53974	-0.085739	1
0.05	0.451	0.52545	-0.074447	1
0.0583	0.447	0.5117	-0.064697	1
0.0666	0.447	0.49831	-0.051307	1
0.075	0.444	0.48511	-0.041113	1
0.0833	0.441	0.47242	-0.031418	1
0.0916	0.441	0.46006	-0.019056	1
0.1	0.438	0.44787	-0.0098745	1
0.1083	0.438	0.43615	0.0018454	1
0.1166	0.435	0.42474	0.010259	1
0.125	0.435	0.41349	0.021505	1
0.1333	0.432	0.40267	0.029326	1
0.1416	0.428	0.39214	0.035863	1
0.15	0.428	0.38175	0.046246	1
0.1583	0.425	0.37176	0.053236	1
0.1666	0.422	0.36204	0.059964	1
0.175	0.416	0.35245	0.06355	1
0.1833	0.41	0.34323	0.066773	1
0.1916	0.406	0.33425	0.071755	1
0.2	0.397	0.32539	0.071605	1
0.2083	0.387	0.31688	0.07012	1
0.2166	0.375	0.30859	0.066412	1
0.225	0.362	0.30042	0.061583	1
0.2333	0.346	0.29256	0.053444	1
0.2416	0.334	0.2849	0.0491	1
0.25	0.321	0.27736	0.043644	1
0.2583	0.309	0.2701	0.038901	1
0.2666	0.293	0.26303	0.029969	1
0.275	0.283	0.25607	0.026934	1
0.2833	0.271	0.24937	0.021635	1
0.2916	0.258	0.24284	0.01516	1
0.3	0.249	0.23641	0.01259	1
0.3083	0.239	0.23022	0.0087766	1
0.3166	0.23	0.2242	0.0058011	1
0.325	0.22	0.21826	0.0017376	1
0.3333	0.214	0.21255	0.001449	1
0.35	0.195	0.20151	-0.0065081	1
0.3666	0.179	0.1911	-0.0121	1
0.3833	0.167	0.18117	-0.014172	1
0.4	0.154	0.17176	-0.017759	1
0.4166	0.145	0.16289	-0.017888	1
0.4333	0.132	0.15442	-0.022425	1
0.45	0.126	0.1464	-0.020402	1
0.4666	0.116	0.13884	-0.02284	1
0.4833	0.085	0.13163	-0.046627	1


Bulding 88/MW-3
K = 0.0004984 ft/min
y0 = 1.562 ft
10.
1.
0.1
0.01
Displacement (ft)
0.
8.6
17.2
25.8
34.4
43.
Time (min)
c:\
dat
AQTESOLV
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Modeling Group

26	0.064	0.00011542	0.063885	1
27	0.064	8.0053E-005	0.06392	1
28	0.064	5.5523E-005	0.063944	1
29	0.067	3.851E-005	0.066961	1
30	0.064	2.671E-005	0.063973	1
31	0.06	1.8525E-005	0.059981	1
32	0.029	1.2849E-005	0.028987	1
33	0.032	8.9116E-006	0.031991	1
34	0.029	6.1809E-006	0.028994	1
35	0.032	4.287E-006	0.031996	1
36	0.029	2.9734E-006	0.028997	1
37	0.032	2.0623E-006	0.031998	1
38	0.035	1.4303E-006	0.034999	1
39	0.035	9.9205E-007	0.034999	1
40	0.038	6.8807E-007	0.037999	1
41	0.035	4.7723E-007	0.035	1
42	0.035	3.31E-007	0.035	1
43	0.035	2.2957E-007	0.035	1

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RESULTS FROM VISUAL CURVE MATCHING

VISUAL MATCH PARAMETER ESTIMATES

Estimate
K = 4.9845E-004
y0 = 1.5623E+000

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3.2	0.414	0.48449	-0.070491	1
3.4	0.383	0.4503	-0.067304	1
3.6	0.354	0.41853	-0.064528	1
3.8	0.326	0.38899	-0.062995	1
4	0.304	0.36155	-0.057546	1
4.2	0.281	0.33603	-0.055033	1
4.4	0.263	0.31232	-0.049321	1
4.6	0.247	0.29028	-0.043283	1
4.8	0.231	0.2698	-0.038799	1
5	0.215	0.25076	-0.035761	1
5.2	0.203	0.23307	-0.030066	1
5.4	0.19	0.21662	-0.02662	1
5.6	0.18	0.20133	-0.021334	1
5.8	0.171	0.18713	-0.016127	1
6	0.158	0.17392	-0.015923	1
6.2	0.152	0.16165	-0.0096498	1
6.4	0.146	0.15024	-0.0042431	1
6.6	0.136	0.13964	-0.0036413	1
6.8	0.133	0.12979	0.0032125	1
7	0.127	0.12063	0.0063708	1
7.2	0.12	0.11212	0.007883	1
7.4	0.114	0.10421	0.0097945	1
7.6	0.111	0.096852	0.014148	1
7.8	0.108	0.090018	0.017982	1
8	0.105	0.083666	0.021334	1
8.2	0.102	0.077762	0.024238	1
8.4	0.098	0.072275	0.025725	1
8.6	0.095	0.067175	0.027825	1
8.8	0.092	0.062435	0.029565	1
9	0.092	0.058029	0.033971	1
9.2	0.089	0.053934	0.035066	1
9.4	0.086	0.050128	0.035872	1
9.6	0.086	0.046591	0.039409	1
9.8	0.086	0.043303	0.042697	1
10	0.086	0.040248	0.045752	1
11	0.076	0.027915	0.048085	1
12	0.076	0.019361	0.056639	1
13	0.067	0.013429	0.053571	1
14	0.064	0.0093138	0.054686	1
15	0.064	0.0064599	0.05754	1
16	0.067	0.0044804	0.06252	1
17	0.067	0.0031075	0.063892	1
18	0.067	0.0021553	0.064845	1
19	0.067	0.0014949	0.065505	1
20	0.067	0.0010368	0.065963	1
21	0.064	0.00071912	0.063281	1
22	0.064	0.00049877	0.063501	1
23	0.064	0.00034593	0.063654	1
24	0.064	0.00023993	0.06376	1
25	0.064	0.00016641	0.063834	1

0.35	1.399	1.3746	0.024447	1
0.3666	1.392	1.3662	0.02577	1
0.3833	1.405	1.3579	0.047093	1
0.4	1.408	1.3496	0.058365	1
0.4166	1.405	1.3415	0.063537	1
0.4333	1.402	1.3333	0.068709	1
0.45	1.399	1.3252	0.073831	1
0.4666	1.392	1.3171	0.074856	1
0.4833	1.389	1.3091	0.079879	1
0.5	1.386	1.3011	0.084854	1
0.5166	1.38	1.2933	0.086733	1
0.5333	1.37	1.2854	0.084611	1
0.55	1.361	1.2776	0.083441	1
0.5666	1.351	1.2698	0.081177	1
0.5833	1.342	1.2621	0.079913	1
0.6	1.333	1.2544	0.078601	1
0.6166	1.326	1.2468	0.079197	1
0.6333	1.314	1.2392	0.074792	1
0.65	1.298	1.2317	0.066341	1
0.6666	1.295	1.2242	0.070799	1
0.6833	1.282	1.2167	0.065257	1
0.7	1.269	1.2093	0.059669	1
0.7166	1.263	1.202	0.060992	1
0.7333	1.247	1.1947	0.052314	1
0.75	1.235	1.1874	0.047592	1
0.7666	1.225	1.1802	0.044782	1
0.7833	1.216	1.173	0.042971	1
0.8	1.209	1.1659	0.043117	1
0.8166	1.197	1.1588	0.038177	1
0.8333	1.191	1.1518	0.039236	1
0.85	1.181	1.1447	0.036252	1
0.8666	1.172	1.1378	0.034184	1
0.8833	1.159	1.1309	0.028116	1
0.9	1.15	1.124	0.026005	1
0.9166	1.137	1.1172	0.019811	1
0.9333	1.131	1.1104	0.020616	1
0.95	1.124	1.1036	0.020381	1
0.9666	1.115	1.0969	0.018063	1
0.9833	1.105	1.0903	0.014746	1
1	1.099	1.0836	0.015387	1
1.2	0.995	1.0071	-0.012148	1
1.4	0.906	0.93608	-0.030079	1
1.6	0.828	0.87003	-0.042026	1
1.8	0.758	0.80863	-0.050633	1
2	0.692	0.75157	-0.059572	1
2.2	0.632	0.69854	-0.066538	1
2.4	0.581	0.64925	-0.068246	1
2.6	0.531	0.60343	-0.072432	1
2.8	0.49	0.56085	-0.070851	1
3	0.449	0.52127	-0.072275	1

AQTESOLV RESULTS
Version 1.10

08/25/97 08:50:13

TEST DESCRIPTION

Data set..... GM88MW4.DAT
Data set title..... Building 88/MW-4

Knowns and Constants:
No. of data points..... 79
Radius of well casing..... 0.08333
Radius of well..... 0.3333
Aquifer saturated thickness..... 6
Well screen length..... 5
Static height of water in well..... 4.87
Log(Re/Rw)..... 1.756
A, B, C..... 2.021, 0.301, 0.000

ANALYTICAL METHOD

Bouwer-Rice (Unconfined Aquifer Slug Test)

RESULTS FROM STATISTICAL CURVE MATCHING

STATISTICAL MATCH PARAMETER ESTIMATES

	Estimate		Std. Error
K =	3.8963E-003	+/-	1.6442E-004
y0 =	6.1646E-001	+/-	1.6888E-002

ANALYSIS OF MODEL RESIDUALS

residual = calculated - observed
weighted residual = residual * weight

Weighted Residual Statistics:
Number of residuals..... 79
Number of estimated parameters.... 2
Degrees of freedom..... 77
Residual mean..... -0.006578
Residual standard deviation..... 0.03936
Residual variance..... 0.00155

Number of residuals..... 156
Number of estimated parameters.... 2
Degrees of freedom..... 154
Residual mean..... 0.01056
Residual standard deviation..... 0.05205
Residual variance..... 0.00271

Model Residuals:

Time	Observed	Calculated	Residual	Weight
0.025	1.443	1.5481	-0.10512	1
0.0333	1.437	1.5434	-0.10643	1
0.0416	1.437	1.5387	-0.10175	1
0.05	1.437	1.534	-0.097026	1
0.0583	1.437	1.5294	-0.092374	1
0.0666	1.437	1.5247	-0.087737	1
0.075	1.437	1.5201	-0.083058	1
0.0833	1.437	1.5154	-0.078448	1
0.0916	1.437	1.5109	-0.073853	1
0.1	1.437	1.5062	-0.069217	1
0.1083	1.437	1.5016	-0.064649	1
0.1166	1.434	1.4971	-0.063096	1
0.125	1.434	1.4925	-0.058502	1
0.1333	1.434	1.488	-0.053976	1
0.1416	1.434	1.4835	-0.049464	1
0.15	1.434	1.4789	-0.044912	1
0.1583	1.434	1.4744	-0.040427	1
0.1666	1.434	1.47	-0.035957	1
0.175	1.43	1.4654	-0.035446	1
0.1833	1.43	1.461	-0.031002	1
0.1916	1.43	1.4566	-0.026572	1
0.2	1.43	1.4521	-0.022102	1
0.2083	1.427	1.4477	-0.020699	1
0.2166	1.427	1.4433	-0.016309	1
0.225	1.427	1.4389	-0.01188	1
0.2333	1.427	1.4345	-0.0075167	1
0.2416	1.424	1.4302	-0.0061669	1
0.25	1.424	1.4258	-0.001778	1
0.2583	1.424	1.4215	0.0025453	1
0.2666	1.421	1.4171	0.0038556	1
0.275	1.421	1.4128	0.0082044	1
0.2833	1.418	1.4085	0.0094884	1
0.2916	1.415	1.4042	0.010759	1
0.3	1.415	1.3999	0.015069	1
0.3083	1.411	1.3957	0.015314	1
0.3166	1.408	1.3915	0.016546	1
0.325	1.408	1.3872	0.020816	1
0.3333	1.405	1.383	0.022022	1

AQTESOLV RESULTS
Version 1.10

07/25/97 14:20:34

TEST DESCRIPTION

Data set..... gm88mw3.dat
Data set title..... Bulding 88/MW-3

Knowns and Constants:
- No. of data points..... 156
- Radius of well casing..... 0.08333
- Radius of well..... 0.3333
- Aquifer saturated thickness..... 8.52
- Well screen length..... 5
- Static height of water in well..... 7.52
- Log(Re/Rw)..... 1.962
- A, B, C..... 2.021, 0.301, 0.000

ANALYTICAL METHOD

Bouwer-Rice (Unconfined Aquifer Slug Test)

RESULTS FROM STATISTICAL CURVE MATCHING

STATISTICAL MATCH PARAMETER ESTIMATES

	Estimate		Std. Error
K =	4.9845E-004	+/-	9.6703E-006
y0 =	1.5623E+000	+/-	8.5085E-003

ANALYSIS OF MODEL RESIDUALS

residual = calculated - observed
weighted residual = residual * weight

Weighted Residual Statistics: