FINAL PLAN OF REMEDIAL ACTION
FOR

250 South Madison Street
Wilmington, Delaware

January, 1997

DNREC Project DE-1055

Prepared by:
Delaware Department of Natural Resources & Environmental Control
Division of Air and Waste Management
Site Investigation & Restoration Branch

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250 SOUTH MADISON STREET
FINAL PLAN OF REMEDIAL ACTION

I. INTRODUCTION

The Department of Natural Resources and Environmental Control ("DNREC" or "Department") issues this Final Plan of Remedial Action under the authority granted by the Hazardous Substance Cleanup Act (7 Del. C., Ch. 91) and the Delaware Regulations Governing Hazardous Substance Cleanup ("Regulations"). The Final Plan presents the Department's final selection of remedial activities to occur at 250 South Madison Street, Wilmington, Delaware. (Figures 1 and 2)

II. BACKGROUND

In January 1996, CND, Inc., entered into an agreement with the Department of Natural Resources and Environmental Control ("DNREC" or "Department") under the authority granted by the Hazardous Substance Cleanup Act (7 Del. C., Ch. 91) ("HSCA") to conduct a Voluntary Cleanup Program Facility Evaluation ("FE") at their property located at 250 South Madison Street, Wilmington, Delaware (Tax Parcel 26-042.00-13) (the "Site" or "Property") and to perform remedial actions as necessary to protect public health, welfare and the environment.

The purpose of the FE was to determine the nature and extent of contamination of the surface and subsurface soils and shallow groundwater at the Site, evaluate risks to the public and the environment associated with identified contamination at the Site and recommend remedial action, if required, that will be protective of public health and the environment.

The site is located southeast of the intersection of South Madison Street and Roundhouse Lane. The 1.58± acre property, roughly triangular in shape, is found on the United States Geological Survey (USGS) Wilmington South Quadrangle Topographic Map (7.5 minute series) at Latitude 39°44'16" and Longitude 75°33'38" (Figures 1 and 2).

The property is part of the historical Harlan and Hollingsworth Shipyard, later owned by the Bethlehem Steel Company and the United Steel Barrel Company. The property, currently vacant, was formerly a railcar and trolley repair facility. A roundhouse present at the site since approximately 1900 was demolished in August, 1995. The property has been owned by CND, Inc. since October, 1983.

Surrounding land uses include Roundhouse Lane and SAC Tire Center to the north; Bell Supply Company (a plumbing and heating supplier) and Delmarva Power and Light Company to the east; the City of Wilmington Department of Public Works to the south and South Madison Street to the west. The Christina River is located approximately 600 feet south and east of the site. According to Planning Department maps, the property is currently zoned M-2, Manufacturing.

III. RESULTS OF INVESTIGATION

In March 1993, a Phase I Environmental Site Assessment (ESA) was conducted by WIK Associates, Inc. (WIK) at the site. According to the ESA, the property was maintained as a trolley and railcar repair facility from the early 1900's until the mid-1950's. The roundhouse was vacant from the 1950's until it was demolished in 1995. The surrounding area has been used for heavy industrial uses including shipbuilding and railcar manufacturing since the early 1800's.

In November 1995, Tetra Tech, Inc. conducted a Phase II Environmental Assessment at the property. The investigation included the collection of eight shallow soil samples (0 - 2' BLS) and one deep soil sample (7 - 9' BLS) (Figure 3). The results of analysis, when compared to DNREC HSCA screening levels for industrial surface soils and subsurface soils indicated the following:

- VOCs were not detected above DNREC screening levels in any soil sample.
- One SVOC, benzo(a)pyrene, was reported above DNREC screening levels in 7 of the 8 surface soil samples.
- SVOCs, including benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene and benzo(a)pyrene were reported above DNREC screening levels in the deep soil sample.
- PCBs were not detected above DNREC screening levels in any soil sample.
- One metal, lead, was present in one surface soil sample above the DNREC screening level.

Three metals; arsenic, barium and chromium, were detected above DNREC screening levels for subsurface soils in the deep soil sample. Lead and silver were also detected in the deep soil sample, however, no screening levels have been established for these metals.

In April 1996, WIK Associates conducted a Facility Evaluation of the subject property. Five test pits were excavated on the site. Fifteen soil samples were collected during the investigation consisting of three shallow test pit soil samples, six deep test pit soil samples (including a field duplicate, and six additional soil samples for confirmation of previous VOC analysis. Sample locations are shown in Figure 3.

Soil samples taken during the sampling event were field screened in the SIRB mobile laboratory to determine which samples should be sent to the DNREC Environmental Services laboratory for analysis. Each sample was analyzed for PCBs and toxaphene using Omicron and Millipore Immunoassay test kits, respectively.

Gas Chromatography/ Mass Spectroscopy (GC/MS) was performed on all samples using a Bruker instrument for the analysis of pesticides, and VOCs and SVOCs. Metals analysis was performed using the mobile labs X-Ray Fluorescence (XRF) instrument.

As a result of the screening, four soil samples (two shallow test pit samples and two deep test pit samples) were selected for submission to the laboratory due to significant levels of SVOCs, however, no significant levels of PCBs, pesticides or VOCs were detected. The four selected samples were delivered to the DNREC laboratory on April 4, 1996 to be analyzed for the

semivolatile component of the EPA Target Compound List (TCL). All groundwater samples were delivered to the DNREC laboratory on April 17, 1996 for full EPA TCL and Target Analyte List (TAL) analysis.

The data generated during the FE indicates that soils at the property have been impacted by historic operations at the site, including the deposition of fill materials. Fill materials observed at the site consisted of unconsolidated, fine to coarse orange-brown sands, mixed with dark gray silts, clays and gravels. Miscellaneous debris consisting of brick, wood, ash, slag and rock were also noted.

The analytical results are shown in Tables 1 through 6. The results of analysis indicated the following contaminants exceeding DNREC screening levels or EPA Region III Risk-Based Concentrations (RBC):

Surface Soil

Lead was detected above the DNREC screening level in four shallow samples. The highest concentration detected was 8008 mg/Kg (by XRF) in TP-3.

Polycyclic aromatic hydrocarbons (PAHs) were detected above screening levels in both shallow samples analyzed in the DNREC laboratory. The highest concentrations were found at sampling location TP-3.

Subsurface Soil

Arsenic, barium, chromium, nickel and selenium exceeded the DNREC screening levels for subsurface soils at several sampling locations.

PAHs exceeded screening levels in both subsurface soil samples.

Groundwater

Tetrachloroethylene was detected above the Federal Maximum Contaminant Level (MCL) in monitor well MW-3.

Lead was detected above the MCL in the duplicate filtered groundwater sample from MW-3.

Manganese was detected above the EPA Region III RBC for tap water in all three on-site wells.

Thallium was detected above the MCL in the groundwater sample from MW-1.

The PAH Benzo(a)pyrene was detected above the MCL in the groundwater sample from MW-1. Benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene and indeno(1,2,3-cd)pyrene, also PAHs, were detected above the RBC for tap water in the sample from MW-1.

IV. REMEDIAL ACTION OBJECTIVES

According to HSCA Regulations, the Department will set remedial action objectives for land use, resource use and cleanup levels that are protective of human health and the environment. The following objectives were determined to be appropriate for the site:

- Prevent contact with soil that has a lead concentration greater than 1,000 mg/Kg.
- Prevent contact with soil that has a benzo(a)pyrene concentration greater than 0.78 mg/Kg.

These objectives are consistent with the current and future use of the site, the surrounding land use, the City of Wilmington zoning policies, state and federal regulations and community safety.

V. PROPOSED PLAN AND PUBLIC PARTICIPATION

The Department provided public notice of it's Proposed Plan of Remedial Action for the 250 South Madison Street site in The News Journal and Delaware State News on December 10, 1996. The Department preferred remedy conveyed in the Proposed Plan is:

- Capping of areas of exposed soil to prevent erosion and dust emissions until a building and parking lot planned for the site is constructed. The cap will consist of a combination of either vegetated soil over a plastic or fabric membrane layer; or asphalt over areas that would later be covered by the building and parking lot. A map of the approximate areas to be capped is shown in Figure 4. This alternative will allow the property to be transferred to the new owner, who will then permanently cap the site with the planned structure and asphalt over a prepared base;
- Placement of a deed restriction on the property by the current owner restricting usage of the property to either commercial or industrial purposes; and
- Establishment of a Groundwater Management Zone (GMZ) on the property which would prohibit use of the local groundwater.

During the comment period, the Department received no comments on the Proposed Plan.

VI. FURTHER ACTION

Based upon the information and results of the investigations performed at the 250 South Madison Street property, in Wilmington, Delaware, the Department has determined that the most preferred remedy conveyed in the proposed plan should be implemented.

VII. DECLARATION

This Final Plan of Remedial Action for the 250 South Madison Street site is protective of human health, welfare and the environment and is consistent with the requirements of the Delaware Hazardous Substance Cleanup Act.

Nicholas A. Di Pasquale 1/22/97

Nicholas A. Di Pasquale, Director
Division of Air and Waste Management

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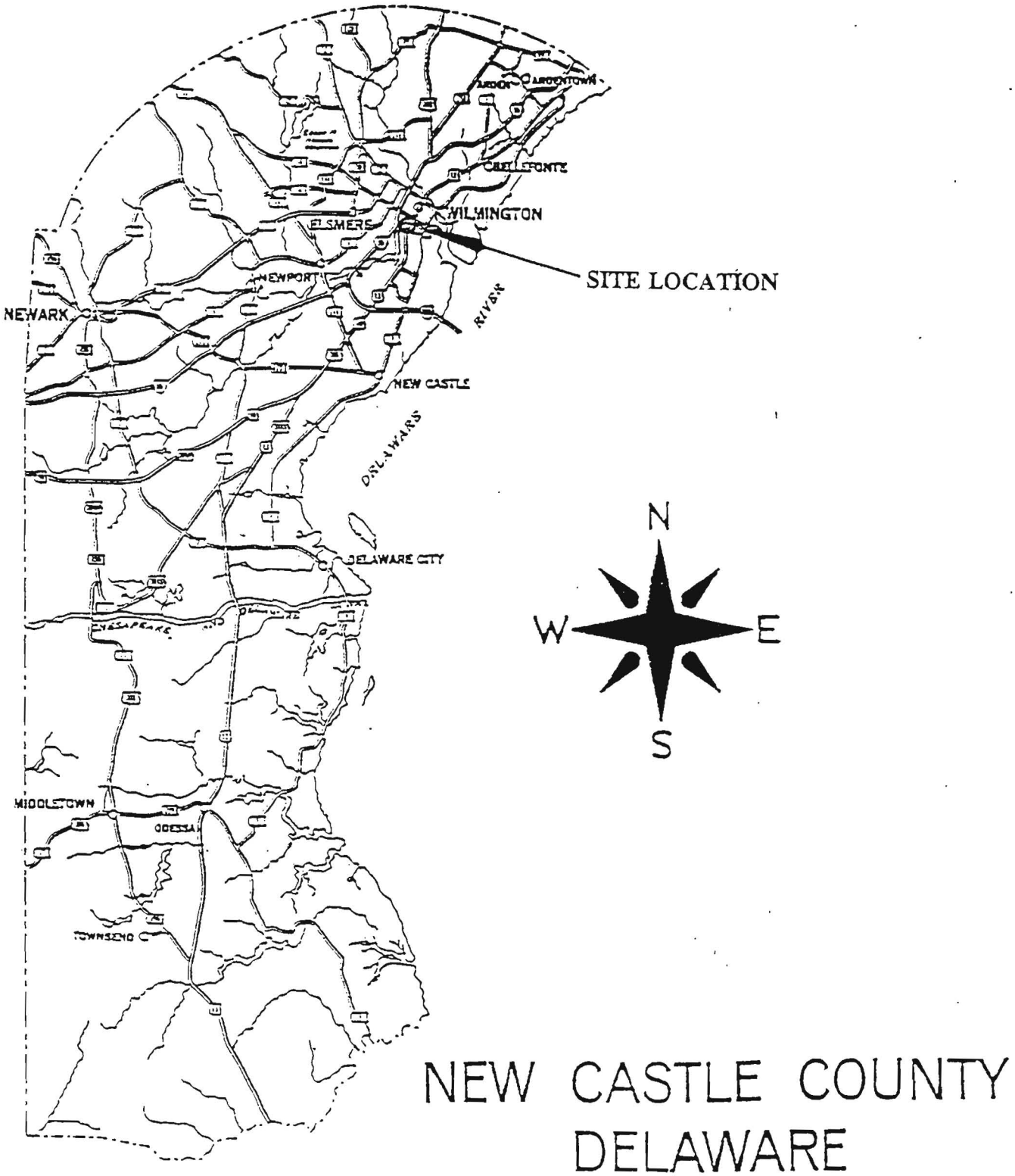
Location of 250 South Madison Street
New Castle County, Delaware

Figure 1



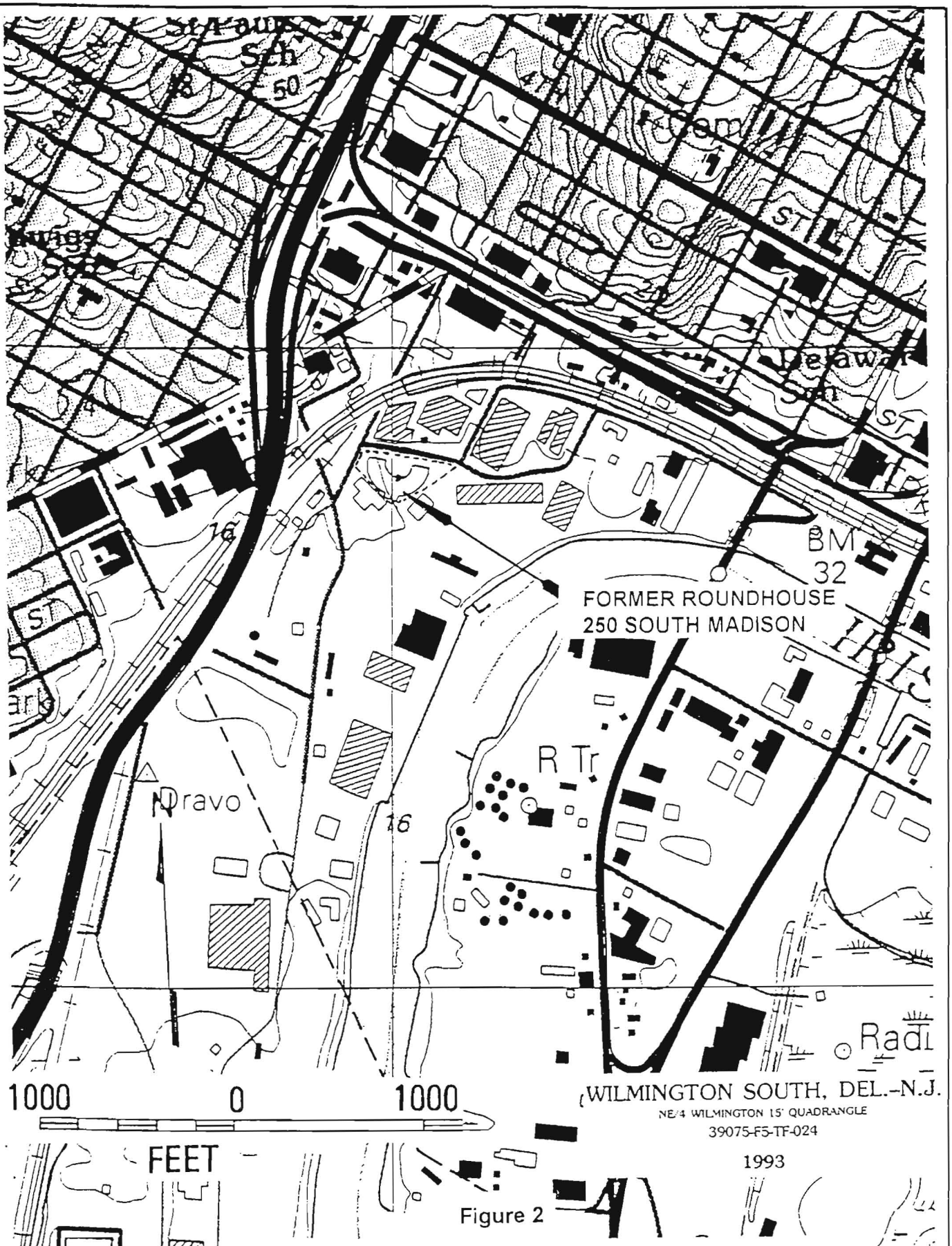


Figure 2

Location of 250 South Madison Street
New Castle County, Delaware

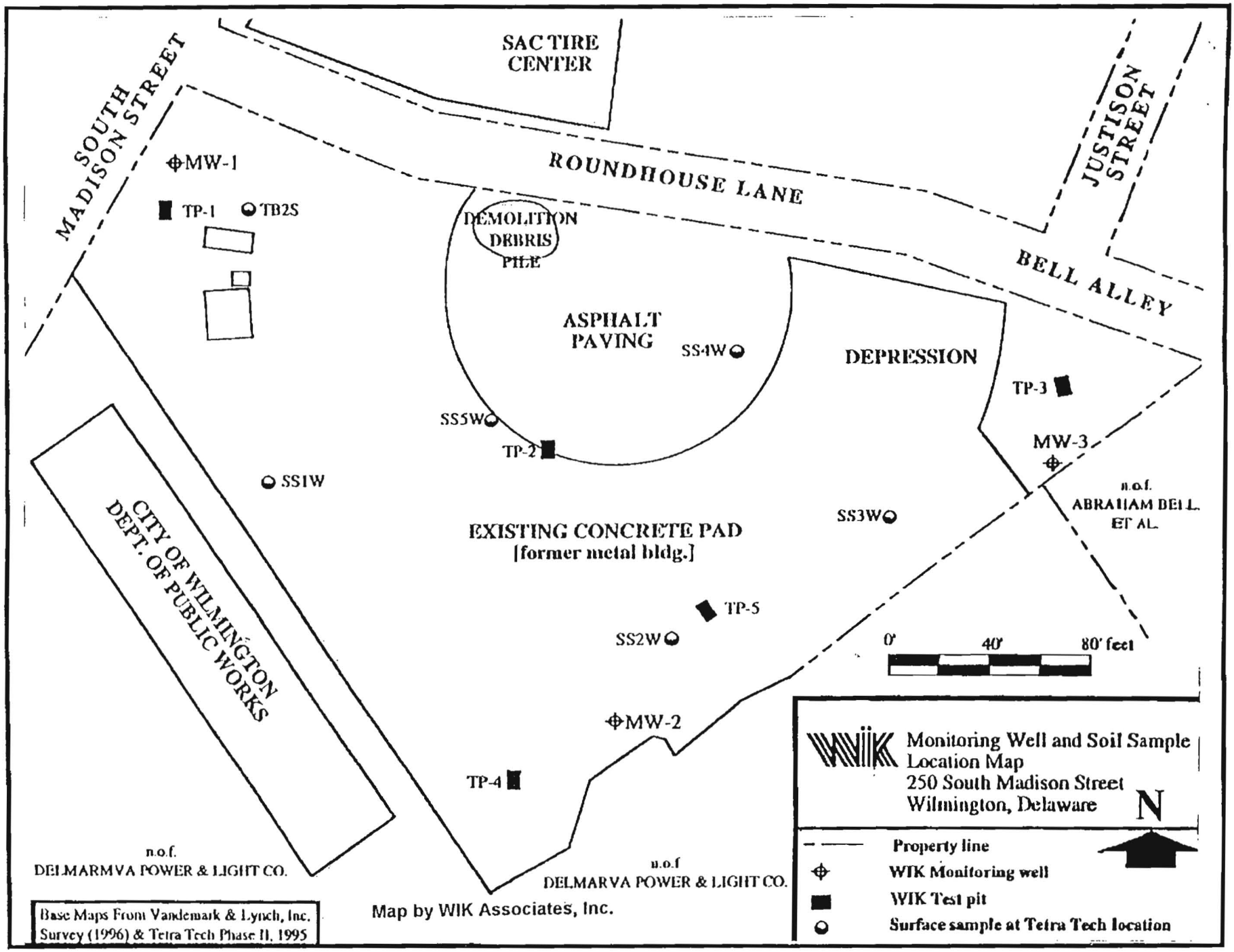

SOUTH MADISON STREET
SAC TIRE CENTER
ROUNDHOUSE LANE
JUSTISON STREET
BELL ALLEY
MW-1
TP-1
TB2S
DEMOLITION DEBRIS PILE
ASPHALT PAVING
SS4W
DEPRESSION
TP-3
MW-3
SS5W
TP-2
SS1W
n.o.f. ABRAHAM BELL ET AL.
SS3W
EXISTING CONCRETE PAD
[former metal bldg.]
TP-5
SS2W
0' 40' 80' feet
CITY OF WILMINGTON DEPT. OF PUBLIC WORKS
MW-2
TP-4
Monitoring Well and Soil Sample Location Map
250 South Madison Street
Wilmington, Delaware
N
Property line
WIK Monitoring well
WIK Test pit
Surface sample at Tetra Tech location
n.o.f. DELMARMVA POWER & LIGHT CO.
n.o.f DELMARVA POWER & LIGHT CO.
Base Maps From Vandemark & Lynch, Inc. Survey (1996) & Tetra Tech Phase II, 1995
Map by WIK Associates, Inc.

Figure 3

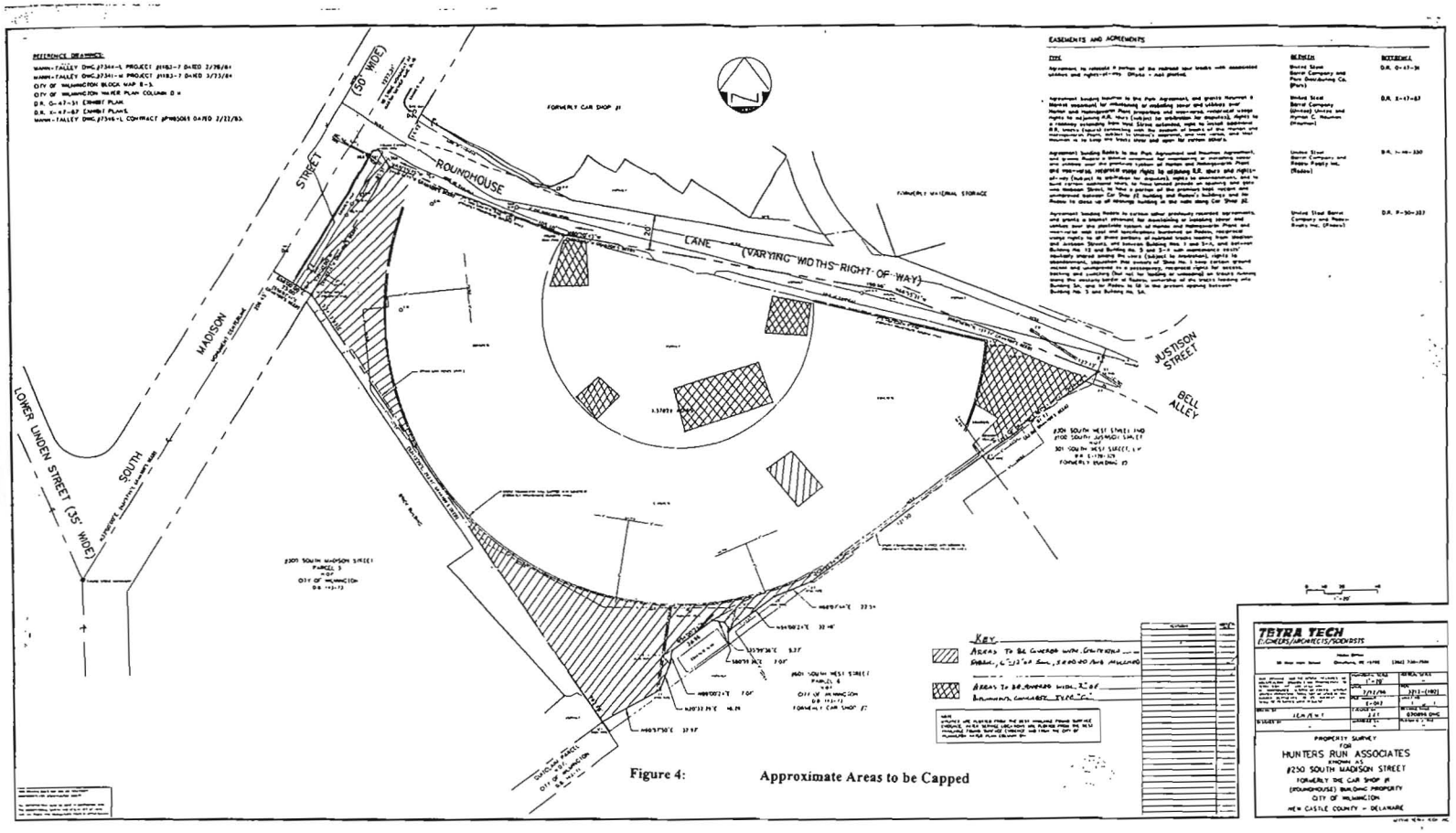


Figure 4: Approximate Areas to be Capped

Table 1 Summary of April 96 Soil Screening Data

SURFICIAL SOIL SCREENING RESULTS

	SAMPLE FIELD ID	TB2S	SS1W	SS2W	SS3W	SS4W	SS5W	TP-2	TP-3	TP-4	DNREC Reporting Level	EPA Region III RBCs
	Sample Interval (ft. BGS)	0.5-1	0.5-1	0.5-1	0.5-1	0.5-1	0.5-1	0-1	0-1	0-1	Industrial Surface Soil (3/96)	Industrial Surface Soil (4/96)
Parameters	Units											
TPH-DRO	mg/kg	<1,000	>=1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	1,000*	-
TPH-GRO	mg/kg	<100	<100	<100	<100	<100	<100	<100	<100	<100	100*	-
Organics by GC/MS	qualitative	ND	TPH, diesel	PAHs	PAHs	ND	PAHs	ND	PAHs	ND	-	-
PCBs	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.74	0.74
Toxaphene	mg/kg	<1	<1	>2, <3	>1, <2	<0.5	>3,<4	>2, <3	>2, <3	<1	5.2	5.2
Antimony	mg/kg	ND	ND	ND	ND	ND	7.4	5.4	21.6	ND	820	820
Arsenic	mg/kg	34.7	30.0	37.5	10.3	41.2	119	23.3	216	129	610	610
Barium	mg/kg	499	299	340	327	497	688	364	748	705	140,000	140,000
Cadmium	mg/kg	ND	ND	ND	ND	2.5	7.1	ND	8.5	ND	1,000	1,000
Calcium	mg/kg	20,715	24,220	16,456	5,539	9,560	13,321	7,414	29,556	36,339	-	-
Chromium, total	mg/kg	86.5	139	78.7	52.6	93.1	305	106	71.5	125	10,000 (hex)	1,000,000 (tri) 10,000 (hex)
Cobalt	mg/kg	611	753	1,047	334	562	986	590	1,172	789	-	120,000
Copper	mg/kg	184	193	323	26.7	302	663	122	898	660	-	82,000
Iron	mg/kg	46,492	44,945	52,105	29,927	52,204	71,730	34,746	167,888	64,067	-	610,000
Lead	mg/kg	354	462	940	103	**1,427**	**4,648**	351	**8,008**	**1,238**	1,000	-
Manganese	mg/kg	355	362	745	300	303	889	413	477	358	-	10,000
Mercury	mg/kg	ND	13.5	15.0	ND	10.5	20.0	ND	52.2	30.4	610	610
Nickel	mg/kg	ND	ND	ND	ND	29.5	57.1	ND	ND	58.0	41,000	41,000
Selenium	mg/kg	ND	ND	10.6	ND	4.6	ND	5.1	ND	ND	10,000	10,000
Silver	mg/kg	ND	ND	ND	ND	2.5	ND	ND	ND	ND	10,000	-
Thallium	mg/kg	ND	ND	ND	ND	13.3	ND	ND	39.8	27.3	-	-
Vanadium	mg/kg	135.9	83.3	112.3	77.1	96.3	117.9	75.6	ND	201.0	14,000	14,000
Zinc	mg/kg	547	257	311	85.7	606	2,130	232	960	723	610,000	610,000

ND Compound was analyzed for, but not detected above the laboratory minimum detection limit.
- No action level has been established.
* DNREC UST Branch Action Level for "Category B" sites.
(tri) Trivalent chromium
(hex) Hexavalent chromium

Table 2 Summary of April 96 Soil Screening Data (Continued)

SUBSURFACE SOIL SCREENING RESULTS

	SAMPLE FIELD ID	TP-1	TP-2	TP-3	TP-4	TP-5	TP-6 (TP-5 dup)	DNREC Reporting Level Subsurface Soil (03/96)	EPA Region III Soil Screening Level (4/96)
	Sample Interval (ft. BGS)	4.5-5.5	4-5	4-5	4-5	3-4	3-4		
Parameters	Units								
TPH-DRO	mg/kg	<1,000	<1,000	<1,000	<1,000	<1,000	NA	-	-
TPH-GRO	mg/kg	<100	<100	<100	<100	<100	NA	-	-
Organics by GC/MS	qualitative	ND	TPH & Sulfur	PAHs	ND	ND	NA		
PCBs	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	NA	8.2	-
Toxaphene	mg/kg	>3, <4	>1, <2	<1	>5, <6	>2, <3	NA	0.04	0.04
Antimony	mg/kg	10.1	ND	ND	ND	5.6	3.4	-	-
Arsenic	mg/kg	**233**	**75.2**	11.6	**50.0**	12.6	7.3	15	15
Barium	mg/kg	**401**	**359**	**416**	**358**	**465**	**296**	32	32
Cadmium	mg/kg	ND	ND	ND	ND	ND	ND	6	6
Calcium	mg/kg	12,009	16,994	11,143	5,734	10,658	10,852	-	-
Chromium, total	mg/kg	**371**	**72.3**	**59.3**	**122**	**116**	**107**	19 (hex)	- (tri) 19 (hex)
Cobalt	mg/kg	589	662	533	1,442	794	906	-	-
Copper	mg/kg	185	85.2	63.4	2,460	193	174	-	-
Iron	mg/kg	49,586	43,477	37,546	108,464	43,461	35,757	-	-
Lead	mg/kg	732	360	99.2	552	268	255	-	-
Manganese	mg/kg	452	587	376	1,433	226	245	-	-
Mercury	mg/kg	ND	ND	ND	ND	**10.3**	**22.7**	3	3
Nickel	mg/kg	ND	ND	19.1	**46.4**	**50.9**	**48.5**	21	21
Selenium	mg/kg	ND	ND	ND	ND	**7.0**	**7.9**	3	3
Silver	mg/kg	ND	ND	ND	ND	ND	ND	-	-
Thallium	mg/kg	ND	ND	ND	ND	ND	ND	0.4	0.4
Vanadium	mg/kg	115	123	121	140	185	252	-	-
Zinc	mg/kg	400	129	80.9	503	151	204	42,000	42,000

ND Compound was analyzed for, but not detected above, the laboratory minimum detection limit.
NA Not analyzed.
\- No action level has been established.
(tri) Trivalent chromium (hex) Hexavalent chromium

Table 3

Summary of April 96 Soil Semivolatile Organic Analytical Data
SURFICIAL SOIL ANALYTICAL RESULTS

	Sample Field ID	TP-3	TP-4	DNREC Reporting Level	EPA Region III RBCs
	Lab ID	96007370	96007380	Industrial	Industrial
	Sample Interval (ft. BGS)	0-1	0-1	Surface Soil (3/96)	Surface Soil (4/96)
Parameters	Units				
4-Methylphenol	mg/kg	<11.0	<4.2	-	10.000
Naphthalene	mg/kg	<11.0	0.088J	30	82.000
2-Methylnaphthalene	mg/kg	<11.0	<4.2	-	-
Acenaphthylene	mg/kg	1.6J	0.82J	-	-
Acenaphthene	mg/kg	1.4J	0.11J	10.000	120.000
Dibenzofuran	mg/kg	<11.0	0.32J	-	8.200
Fluorene	mg/kg	1.9J	0.54J	10.000	82.000
Phenanthrene	mg/kg	23.0J	6.5J	-	-
Anthracene	mg/kg	4.4J	0.13J	10.000	610.000
Carbazole	mg/kg	2.3J	0.39J	290	290
Di-n-butylphthalate	mg/kg	<11.0	<4.2	1.000	200.000
Fluoranthene	mg/kg	41.0J	12.0J	10.000	82.000
Pyrene	mg/kg	41.0J	11.0J	10.000	61.000
Benzo(a)anthracene	mg/kg	20.0J	6.8J	7.8	7.8
Chrysene	mg/kg	22.0J	6.0J	780	780
Benzo(b)fluoranthene	mg/kg	23.0J	5.4J	7.8	7.8
Benzo(k)fluoranthene	mg/kg	9.7J	4.3J	78	78
Benzo(a)pyrene	mg/kg	17.0J	5.1J	0.78	0.78
Indeno(1,2,3-cd)pyrene	mg/kg	12.0J	3.0J	7.8	7.8
Dibenzo(a,h)anthracene	mg/kg	4.4J	1.3J	0.78	0.78
Benzo(g,h,i)perylene	mg/kg	12.0J	2.4J	-	-
Tentatively Identified Compounds (TICs)					
9,10-Anthracenedione	mg/kg	6.0JN	1.3JN	-	-
Dibenzpyrene	mg/kg	ND	ND	-	-
Phenol, 2,4-bis(1,1-dimethyl)	mg/kg	ND	ND	-	-
4H-Cyclopenta(Def) phenanthre	mg/kg	ND	ND	-	-
7H-Benz(de)anthracene-7-one	mg/kg	ND	1.0JN	-	-
Perylene	mg/kg	ND	3.6JN	-	-
Unknown Alkane	mg/kg	ND	ND	-	-
Unknown 3-ring PAH	mg/kg	15.5J	7.4J	-	-
Unknown 4-ring PAH	mg/kg	12.1J	1.1J	-	-
Unknown 5-ring PAH	mg/kg	13.0J	ND	-	-
Unknown PAH	mg/kg	15.6J	7.8J	-	-
Unknown	mg/kg	77.0J	7.83J	-	-

ND: Compound was analyzed for but not detected above the laboratory minimum quantitation limit.
NA: Not analyzed. -: No action level has been established
J: Compound was detected, but below the minimum sample quantitation limit. Quantitation is approximate.
B Compound was detected in the associated blank as well as in the sample.
JB: Compound was detected in the associated blank as well as in the sample, but below the minimum sample quantitation limit. Quantitation is approximate.
N: Presumptive evidence of a tentatively identified compound based on a mass spectral library search.

Summary of April 96 Soil Semivolatile Organic Analytical Data
SUBSURFACE SOIL ANALYTICAL RESULTS

		Sample Field ID	TP-1	TP-2	TP-8	DNREC Reporting Level	EPA Region III
		Lab ID	96007350	96007360	96007390		
		Sample Interval (ft. BGS)	4.5-5.5	4-5	Equip. Blank	Subsurface Soils (3/96)	Subsurface Soil Screening Levels (4/96)
Parameters	**Units**						
4-Methylphenol	mg/kg		<4.0	0.12J	<0.01	-	-
Naphthalene	mg/kg		0.24J	0.85J	<0.01	30	30
2-Methylnaphthalene	mg/kg		0.15J	0.1J	<0.01	-	-
Acenaphthylene	mg/kg		0.46J	0.092J	<0.01	-	-
Acenaphthene	mg/kg		0.55J	0.3J	<0.01	200	200
Dibenzofuran	mg/kg		0.42J	0.22J	<0.01	-	120
Fluorene	mg/kg		0.71J	0.33J	<0.01	160	160
Phenanthrene	mg/kg		9.1J	1.8J	<0.01	-	-
Anthracene	mg/kg		1.5J	0.48J	<0.01	4,300	4,300
Carbazole	mg/kg		0.8J	0.14J	<0.01	0.2	0.5
Di-n-butylphthalate	mg/kg		0.068J	<0.46	<0.01	120	120
Fluoranthene	mg/kg		13.0	2.4J	<0.01	980	980
Pyrene	mg/kg		13.0	3.1J	<0.01	1,400	1,400
Benzo(a)anthracene	mg/kg		5.7J	1.4J	<0.01	0.7	0.7
Chrysene	mg/kg		6.9	1.4J	<0.01	1	1
Benzo(b)fluoranthene	mg/kg		7.0J	1.6J	<0.01	4	4
Benzo(k)fluoranthene	mg/kg		4.0	0.75J	<0.01	4	4
Benzo(a)pyrene	mg/kg		5.3	1.3J	<0.01	4	4
Indeno(1,2,3-cd)pyrene	mg/kg		3.9J	1.0J	<0.01	35	35
Dibenzo(a,h)anthracene	mg/kg		1.3J	0.45J	<0.01	11	11
Benzo(g,h,i)perylene	mg/kg		3.4J	1.0J	<0.01	-	-
Tentatively Identified Compounds (TICs)							
9,10-Anthracenedione	mg/kg		1.8JN	ND	ND	-	-
Dibenzpyrene	mg/kg		3.6JN	ND	ND	-	-
Phenol, 2,4-bis(1,1-dimethyl)	mg/kg		ND	ND	0.005JN	-	-
4H-Cyclopental(Def) phenanthre	mg/kg		ND	0.35JN	ND	-	-
7H-Benz(de)anthracene-7-one	mg/kg		ND	ND	ND	-	-
Perylene	mg/kg		ND	ND	ND	-	-
Unknown Alkane	mg/kg		ND	1.62J	ND	-	-
Unknown 3-ring PAH	mg/kg		2.17J	0.31J	ND	-	-
Unknown 4-ring PAH	mg/kg		3.09J	ND	ND	-	-
Unknown 5-ring PAH	mg/kg		3.9J	1.3J	ND	-	-
Unknown PAH	mg/kg		6.29J	ND	ND	-	-
Unknown	mg/kg		10.3J	7.0J	0.057JB	-	-

ND: Compound was analyzed for but not detected above the laboratory minimum quantitation limit.
NA: Not analyzed. -: No action level has been established
J: Compound was detected, but below the minimum sample quantitation limit. Quantitation is approximate.
B: Compound was detected in the associated blank as well as in the sample.
JB: Compound was detected in the associated blank as well as in the sample, but below the minimum sample quantitation limit. Quantitation is approximate.
N: Presumptive evidence of a tentatively identified compound based on a mass spectral library search.

Table 5

Summary of April 96 Groundwater Analytical Data (continued)

DISSOLVED (FILTERED) METALS CONCENTRATIONS

		EPA Drinking Water MCL (11/95)	MW-1	MW-2	MW-3	MW-5 Duplicate of MW-3	MW-4 Trip Blank	MW-6 Equip. Blank
			Lab ID 96008510	Lab ID 96008520	Lab ID 96008530	Lab ID 96008540	Lab ID 96008500	-
Aluminum	ug/l	37.000*	[32.9]B	[29.7]B	[19.6]B	225	NA	[27.8]B
Antimony	ug/l	6	ND	ND	[4.3]K	ND	NA	ND
Arsenic	ug/l	50	15.5K	33.6	ND	[5.0]K	NA	ND
Barium	ug/l	2.000	[34.8]	[117]	[156]	[166]	NA	ND
Calcium	ug/l	-	52.400	61.000	60.000	61.100	NA	[232]
Cobalt	ug/l	2.200*	ND	ND	[5.5]K	[5.3]K	NA	ND
Copper	ug/l	-	ND	ND	ND	ND	NA	[7.1]K
Iron	ug/l	11.000*	ND	117B	7.850	8.730	NA	137
Lead	ug/l	15	ND	ND	ND	17.1	NA	ND
Magnesium	ug/l	-	46.800	22.100	14.900	15.300	NA	[29.0]
Manganese	ug/l	180*	520	202	1.440	1.460	NA	[1.2]K
Nickel	ug/l	100	[1.7]B	[1.0]B	[1.5]B	[1.5]B	NA	[1.1]K
Potassium	ug/l	-	[3.940]	14.200	5.970	5.950	NA	ND
Sodium	ug/l	-	29.100	63.100	69.800	71.300	NA	[292]
Thallium	ug/l	2	9.2J	ND	ND	ND	NA	ND
Vanadium	ug/l	260*	[1.5]K	ND	ND	[1.2]K	NA	ND
Zinc	ug/l	-	38.0B	25.3B	36.8B	49.5B	NA	44.1
All others	ug/l	-	ND	ND	ND	ND	NA	ND

* EPA Region III Risk-based Concentrations (RBCs) for Tap Water (4/96).
K Reported value may be biased high; actual value is expected to be lower.
[ ] Values approach detection limit; the quantification may not be accurate.
B Results fall between the IDL and the CRDL.
ND Compound was analyzed for, but was not detected above the laboratory minimum detection limit.
NA Sample was not analyzed for this parameter.
J Sample concentration is estimated.

Table 6

Summary of April 96 Groundwater Analytical Data

		EPA Drinking Water MCL (11/95)	MW-1	MW-2	MW-3	MW-5 Duplicate of MW-3	MW-4 Trip Blank	MW-6 Equip. Blank
		Lab Sample ID	96008510	96008520	96008530	96008540	96008500	-
Volatile Organics								
Tetrachloroethene	ug/l	5	ND	ND	7J	9J	ND	NA
All others	ug/l		ND	ND	ND	ND	ND	NA
Semi-volatile Organics								
Phenol	ug/l	22.000*	ND	120E	ND	ND	NA	NA
4-Methylphenol	ug/l	180*	ND	110E	ND	ND	NA	NA
Naphthalene	ug/l	1.500*	1J	21	ND	ND	NA	NA
Phenanthrene	ug/l	-	2J	ND	1J	ND	NA	NA
Fluoranthene	ug/l	1.500*	3J	ND	1J	1J	NA	NA
Pyrene	ug/l	1.100*	3J	ND	1J	1J	NA	NA
Benzo(a)anthracene	ug/l	0.092*	2J	ND	ND	ND	NA	NA
Chrysene	ug/l	9.2*	2J	ND	ND	ND	NA	NA
Benzo(b)fluoranthene	ug/l	0.092*	2J	ND	ND	ND	NA	NA
Benzo(k)fluoranthene	ug/l	0.92*	2J	ND	ND	ND	NA	NA
Benzo(a)pyrene	ug/l	0.002	2J	ND	ND	ND	NA	NA
Indeno(1,2,3-cd) pyrene	ug/l	0.092*	1J	ND	ND	ND	NA	NA
SVOC Tentatively Identified Compounds (TICs)								
Unknown	ug/l	-	53JB	206J	54JB	51JB	NA	NA
UNK Aliphatic acid	ug/l	-	ND	13J	ND	ND	NA	NA
Benzoic acid	ug/l	150.000	ND	7JN	ND	ND	NA	NA
Benzeneacetic acid	ug/l	-	ND	56JN	ND	ND	NA	NA
Indole	ug/l	-	ND	5JN	ND	ND	NA	NA
Hexadecanoic acid	ug/l	-	ND	8JN	ND	ND	NA	NA
Sulfur	ug/l	-	14JN	33JN	6JN	5JN	NA	NA
Pesticides/PCBs	ug/l	-	ND	ND	ND	ND	NA	NA

ND: Compound was analyzed for, but was not detected above the laboratory minimum detection limit.
NA: Sample was not analyzed for this parameter.
MCL: Maximum Contaminant Level.
J: Compound was detected, but below the minimum sample quantitation limit. Quantitation is approximate.
B: Compound was detected in the associated blank as well as in the sample.
E: Compound was detected at a level above the calibration range of the GC/MS instrument.
-: No action level has been established.
N: Presumptive evidence of a tentatively identified compound based on a mass spectral library search.
* EPA Region III Risk-based concentrations for tap water (4/96).

STATE OF DELAWARE

April 1, 2003

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