

ENVIRONMENTAL CONSULTING & MANAGEMENT  
**ROUX ASSOCIATES INC**



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September 20, 1995

Mr. Robert Noonan  
Senior Director, Environmental Control  
National Railroad Passenger Corporation  
400 North Capitol Street, N.W.  
Washington, D.C. 20001

Re: Preliminary Remediation Cost Estimates for PCB-Contaminated Soils at  
Sunnyside Yard, Queens, New York

Dear Mr. Noonan:

Based on discussions held during the June 7, 1995 meeting between National Railroad Passenger Corporation (AMTRAK), New Jersey Transit, Roux Associates, Inc. (Roux Associates), Remedial Engineering, P.C. (Remedial Engineering), the New York State Department of Environmental Conservation (NYSDEC) and the New York State Department of Health (NYSDOH), we have, as you requested, developed preliminary cost estimates for soil remediation at the Sunnyside Yard, Queens, New York (Yard). A Site Map of the Yard is presented in Figure 1. These estimates preliminarily establish the relative cost range for soil remediation (i.e., excavation, transportation, disposal and track work) work under potential cleanup scenarios at the Yard that would achieve cleanup levels of less than 1, 10, 25 and 50 parts per million (ppm) of total polychlorinated biphenyls (PCBs) in soil. It should be noted that these remediation costs do not include the costs for other remedial measures which will be required for other media such as separate-phase product and ground water at the Yard. The costs for the anticipated additional remedial measures is estimated to range from \$4,000,000 to \$10,000,000 (excluding operation and maintenance cost).

As we discussed, the soil remediation cost estimates are based on excavation and off-site disposal, so no other remediation technologies were evaluated for this estimate. The cost estimates (rounded to the nearest thousand) are presented in Table 1 and a summary is presented below:

- \$255,000 for Yard-wide remediation to less than 50 ppm total PCBs;
- \$510,000 for Yard-wide remediation to less than 25 ppm total PCBs;

- \$5,646,000 for Yard-wide remediation to less than 10 ppm total PCBs; and
- \$88,848,000 for Yard-wide remediation to less than 1 ppm total PCBs.

The cost estimates presented have been developed based primarily on the data included in the Phase II Remedial Investigation (RI) for the Yard prepared by Roux Associates and submitted to the NYSDEC on February 15, 1995. The PCB soil results (laboratory and immunoassay test kits) of the Phase II RI were evaluated to define the vertical and horizontal extent of contamination in soil for each of the potential PCB cleanup scenarios. Once the estimated extent of contamination was determined, a soil excavation volume was established. The estimated extent of PCB contamination in soil for the less than 10 ppm, 25 ppm and 50 ppm scenarios as well as the amount of track removal and replacement required for each of the affected areas of concern are presented in Figures 2 through 6. An estimated cost of \$200 per linear foot for track work was determined by the AMTRAK Engineering Department. Lastly, the likely disposal scenario for the specific material was developed so a remediation cost could be estimated. The disposal scenarios include RCRA hazardous, TSCA hazardous, and nonhazardous/contaminated. While the extent of the remediation was established based on PCB concentrations only, the disposal scenarios and costs were estimated based on the concentrations of PCBs present as well as the presence of other hazardous constituents such as lead. The unit cost for each disposal scenario is presented below.

- RCRA Hazardous (subject to land ban) - \$500/cubic yard;
- TSCA Hazardous - \$400/cubic yard; and
- Nonhazardous/Contaminated - \$275/cubic yard.

The breakdown of the volumes of soil and the linear feet of track work for remediation to less than 10 ppm, 25 ppm and 50 ppm is presented in Tables 2, 3, and 4, respectively. Within Tables 2 through 4, the results are summarized for each area of concern requiring remediation. Presentation of a "breakdown" table for the less than 1 ppm scenario is not practical, however, a summary of the assumptions utilized is provided below.

The open area (i.e., no buildings or pavement) of the Yard was determined and the volume of soil to be remediated under the less than 1 ppm scenario is estimated to be 70 percent of the Yard's open area. The estimate is based on excavation from 0 to 2 feet below land surface and the assumption that all of the track area would be included in this scenario.

Costs for remediation to less than 10 ppm include volumes of soil actually delineated to 10 ppm and areas which, although no analytical data are provided to a detection limit of 10 ppm, are suspected to contain PCBs greater than 1 ppm

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Page 3

and less than 10 ppm. The less than 10 ppm scenario is based on a conservative volume which represents areas that were detected at less than 25, but were not delineated below 25 ppm.

It must also be noted that the cost estimates include the cost for the removal and replacement of all track within the areas of excavation, but do not include any costs for dewatering and dewatering water treatment which could be significant, if needed. The cost for engineering design for each potential cleanup scenario has been assumed to be 15 percent of the remediation costs. The contingency cost has been calculated for each proposed cleanup level as shown in Table 1.

As you know, we will continue to refine these estimates of remediation costs during the Feasibility Study process, as more data become available or as a NYSDEC-accepted cleanup level is established, however, we believe that these cost estimates provide a valid basis for initial comparison of the impact of varying cleanup levels on soil remediation costs.

Should you have any questions or require additional information, please do not hesitate to call.

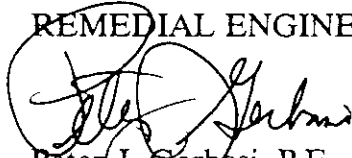
Sincerely,

ROUX ASSOCIATES, INC.



Joseph D. Duminuco  
Principal Hydrogeologist/  
Project Manager

REMEDIAL ENGINEERING, P.C.

  
Peter J. Gerbasi, P.E.  
Principal Engineer

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M. Pollick, AMTRAK  
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S. Jurow, New Jersey Transit  
K. Worton, Esq., New Jersey Transit  
L. Wilson, Roux Associates, Inc.  
S. Lock, Ph.D., DABT, Roux Associates, Inc.

Table 1. Summary of Estimated Remediation Costs for Polychlorinated Biphenyls in Soil, Sunnyside Yard, Queens, New York										
Cleanup levels (ppm)	Volume RCRA Hazardous (cu.yd.)	Volume TSCA Hazardous (cu.yd)	Volume Nonhazardous/contaminated (cu.yd)	Total Cost Soil Removal	Required Track Work (lf)	Total Cost Track Work	Subtotal Cost	Engineering (15%)	Contingency <sup>1</sup>	Total Cost <sup>1</sup>
1	37,100	315	148,400	\$59,486,000	63,000	\$12,600,000	\$72,086,000	\$10,812,900	\$5,948,600	\$88,848,000
10	3,660	315	3,795	\$2,999,625	3,705	\$741,000	\$3,740,625	\$561,094	\$1,344,488	\$5,646,000
25	25	315	415	\$252,625	625	\$125,000	\$377,625	\$56,645	\$75,525	\$510,000
50	10	315	0	\$131,000	365	\$73,000	\$204,000	\$30,600	\$20,400	\$255,000

cu. yd - cubic yard  
lf - linear feet  
ppm - parts per million

NOTE:

Unit Costs are based on the following:

Soil Remediation (excavation, transportation, and disposal)

- Nonhazardous/ Contaminated - \$275/cubic yard
- RCRA Hazardous (Subject to LandBan) - \$500/cubic yard
- TSCA Hazardous - \$400/cubic yard

Track Work (removal and replacement) - \$200/linear foot

<sup>1</sup> Contingency for each cleanup level is calculated as follows:

- 1 ppm - 10% soil, 0% track
- 10 ppm - 30% soil, 30% track
- 25 ppm - 20% soil, 20% track
- 50 ppm - 10% soil, 10% track

<sup>2</sup> All dollar amounts rounded to the nearest thousand



**Table 2. Summary of Soil Volumes and Linear Feet of Track Work for Proposed Cleanup Level of Less Than 10 ppm Polychlorinated Biphenyls, Sunnyside Yard, Queens, New York**

Area of Concern	Total Volume (cu. yd.)	RCRA Hazardous (cu. yd)	TSCA Hazardous (cu. yd)	Nonhazardous/Contaminated (cu. yd)	Track Work (lf)
Area 1	2,500	350	115	2,035	1,740
Area 4	1,200	950	0	250	0
Area 8	1,230	0	175	1,055	1,305
Area 9	40	0	10	30	0
Area 17	2,800	2,360	15	425	660
<b>TOTAL</b>	<b>7,770</b>	<b>3,660</b>	<b>315</b>	<b>3,795</b>	<b>3,705</b>

cu. yd - cubic yard  
lf - linear feet

**Table 3. Summary of Soil Volumes and Linear Feet of Track Work for Proposed Cleanup Level of Less Than 25 ppm Polychlorinated Biphenyls, Sunnyside Yard, Queens, New York**

Area of Concern	Total Volume (cu. yd.)	RCRA Hazardous (cu. yd)	TSCA Hazardous (cu. yd)	Nonhazardous/ Contaminated (cu. yd)	Track Work (lf)
Area 1	375	0	115	260	370
Area 4	15	15	0	0	0
Area 8	305	0	175	130	255
Area 9	10	0	10	0	0
Area 17	50	10	15	25	0
<b>TOTAL</b>	<b>755</b>	<b>25</b>	<b>315</b>	<b>415</b>	<b>625</b>

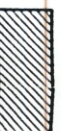
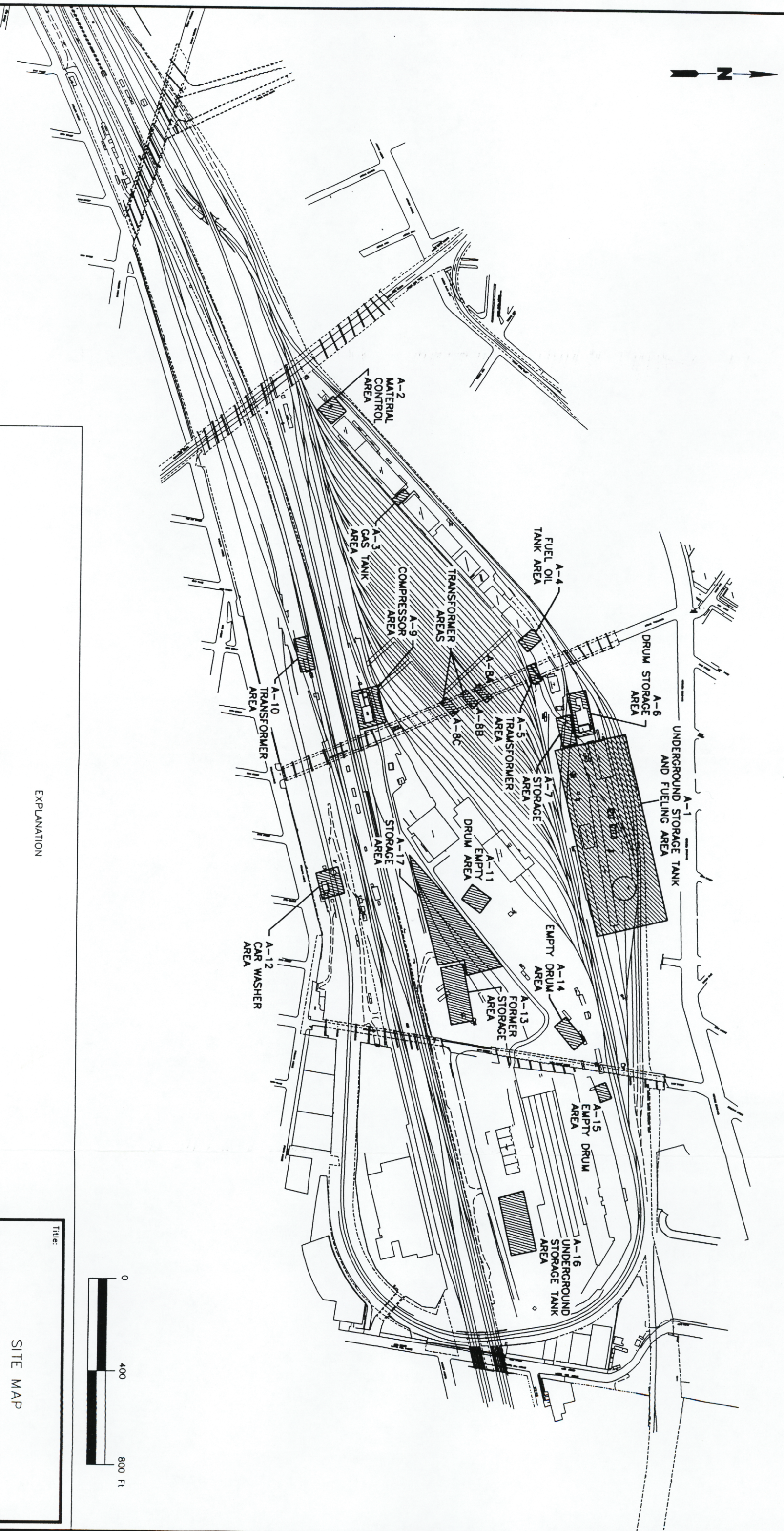
cu. yd - cubic yard  
lf - linear feet

**Table 4. Summary of Soil Volumes and Linear Feet of Track Work for Proposed Cleanup Level of Less Than 50 ppm Polychlorinated Biphenyls, Sunnyside Yard, Queens, New York**

Area of Concern	Total Volume (cu. yd.)	RCRA Hazardous (cu. yd)	TSCA Hazardous (cu. yd)	Track Work (lf)
Area 1	115	0	115	110
Area 2	0	0	0	0
Area 8	175	0	175	255
Area 9	10	0	10	0
Area 17	25	10	15	0
<b>TOTAL</b>	<b>325</b>	<b>10</b>	<b>315</b>	<b>365</b>

cu. yd - cubic yard  
lf - linear feet



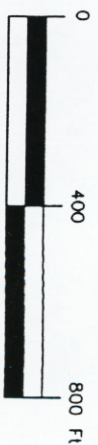


AREAS OF CONCERN

EXPLANATION

SITE MAP

Title:



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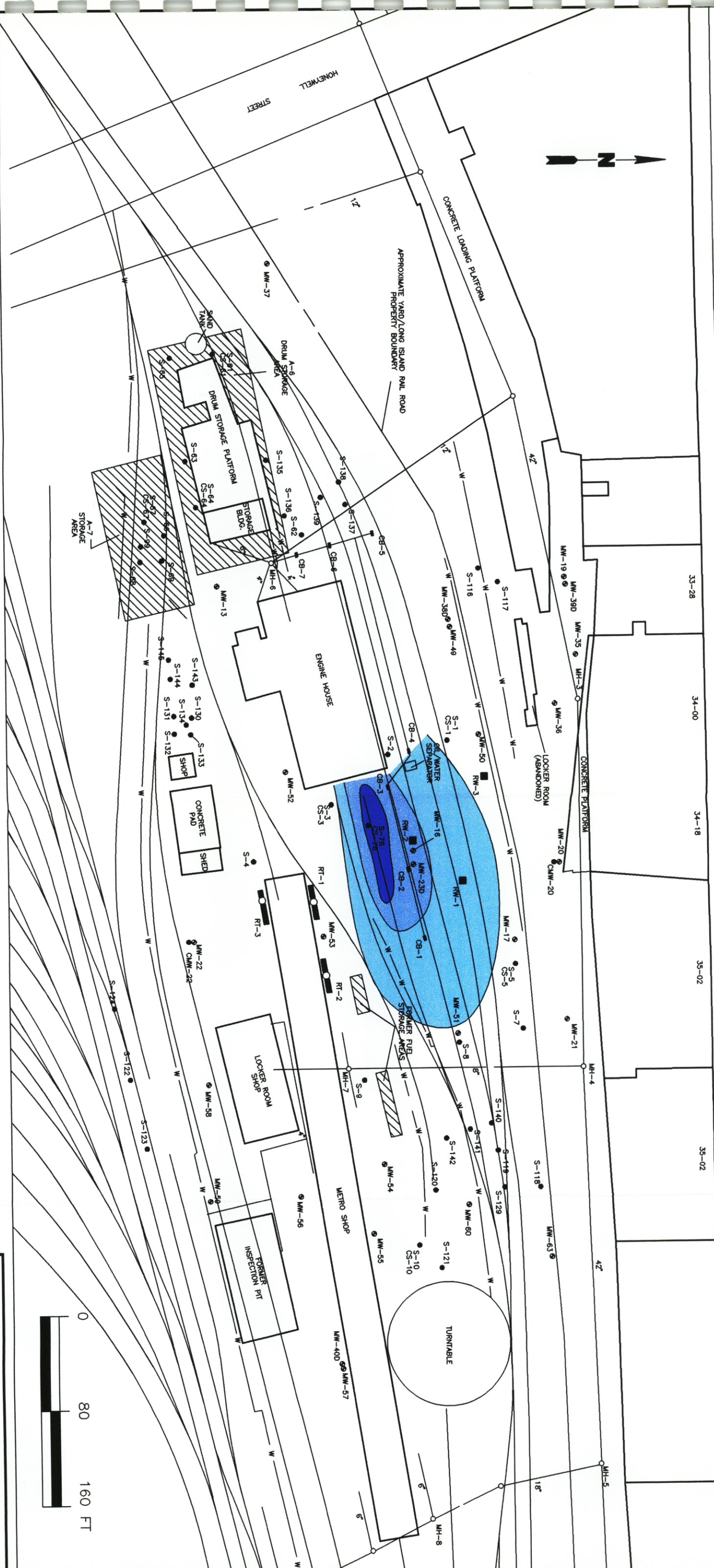
AMTRAK  
SUNNYSIDE YARD, QUEENS, NEW YORK

<b>ROUX</b> ROUX ASSOCIATES INC Environmental Consulting & Management	Compiled by: L.W.	Date: 9/95	FIGURE 1
	Prepared by: G.M.	Scale: SHOWN	
	Project Mgr: J.D.D.	Revision:	
	File No: 05545001	Project No: 055451	

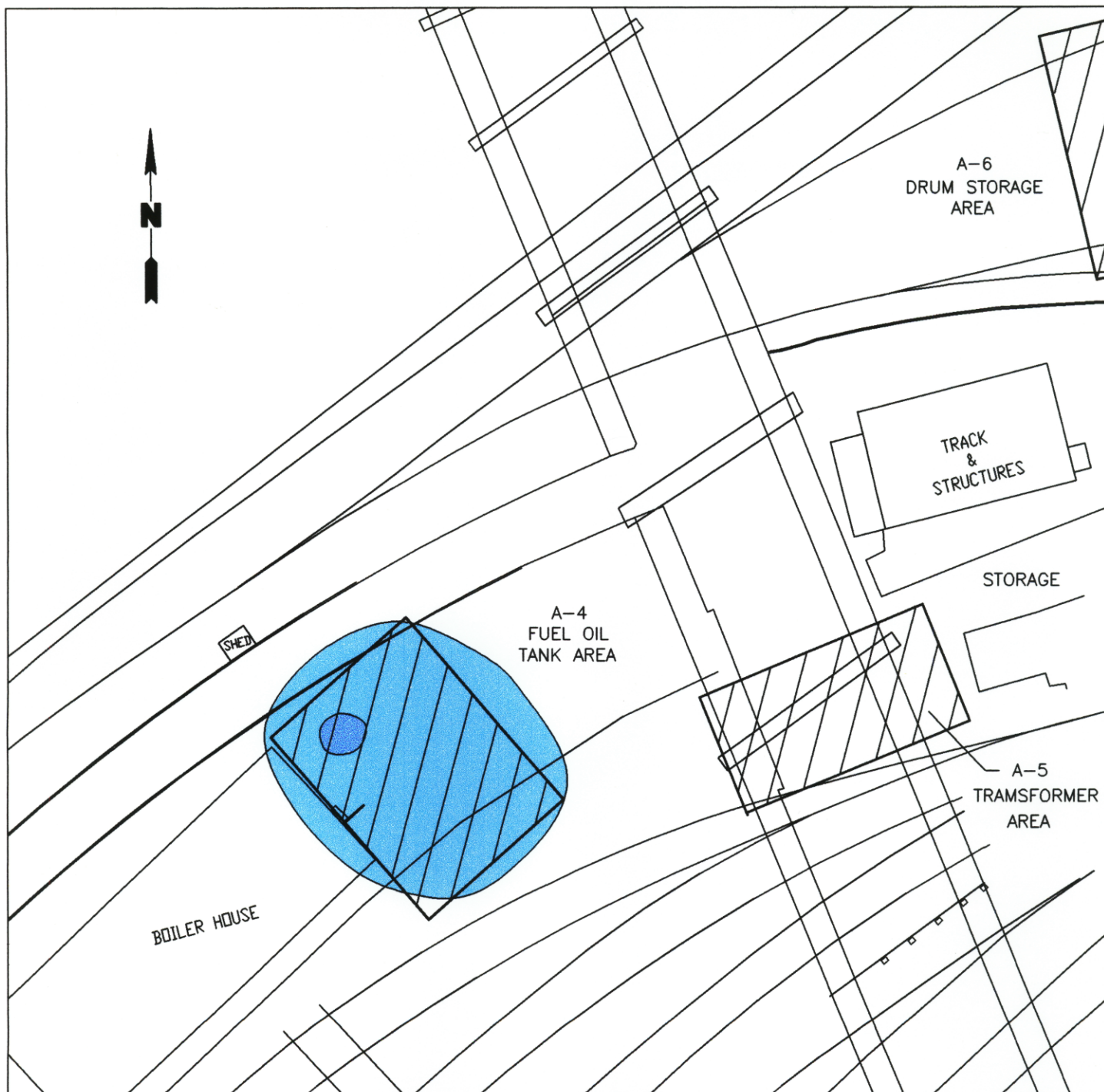




- EXPLANATION**
- MW-22 ● EXISTING MONITORING WELL LOCATION AND DESIGNATION
- RW-2 ■ EXISTING RECOVERY WELL LOCATION AND DESIGNATION (INTERIM REMEDIAL MEASURE)
- RT-1 ■ RECOVERY TRENCH LOCATION AND DESIGNATION (INTERIM REMEDIAL MEASURE)
- S-1 ● EXISTING SOIL BORING LOCATION AND DESIGNATION
- CS-1 ● EXISTING SOIL BORING LOCATION AND DESIGNATION
- 42' ○ APPROXIMATE LOCATION AND DIAMETER OF SEWER, TAKEN FROM ENGINEERING DIAGRAMS
- MH-6 ○ SEWER MANHOLE LOCATION AND DESIGNATION
- CB-2 ■ CATCH BASIN LOCATION AND DESIGNATION
- W ——— APPROXIMATE LOCATION OF RETAINING WALL
- AREAS OF CONCERN
- REPRESENTS POLYCHLORINATED BI-PHENYLS (PCBs) IN SOIL AT CONCENTRATIONS FROM 10 PPM TO LESS THAN 25 PPM
- REPRESENTS PCBs IN SOIL AT CONCENTRATIONS FROM 25 PPM TO LESS THAN 50 PPM
- REPRESENTS PCBs IN SOIL AT CONCENTRATIONS GREATER THAN 50 PPM







# EXPLANATION



AREAS OF CONCERN



REPRESENTS POLYCHLORINATED BIPHENYLS (PCBs) IN SOIL AT CONCENTRATIONS FROM 10 PPM TO LESS THAN 25 PPM



REPRESENTS PCBs IN SOIL AT CONCENTRATIONS FROM 25 PPM TO LESS THAN 50 PPM



Title:

## EXTENT OF REMEDIATION FOR POLYCHLORINATED BIPHENYLS IN SOIL AREA 4

Prepared For: AMTRAK  
SUNNYSIDE YARD, QUEENS, NEW YORK

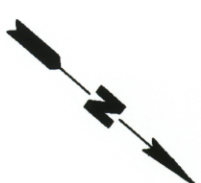
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Environmental Consulting  
& Management

Compiled by: L.W.	Date: 9/95
Prepared by: G.M.	Scale: SHOWN
Project Mgr: J.D.D.	Revision:
File No: 05545007	Project No.: 05545Y

FIGURE

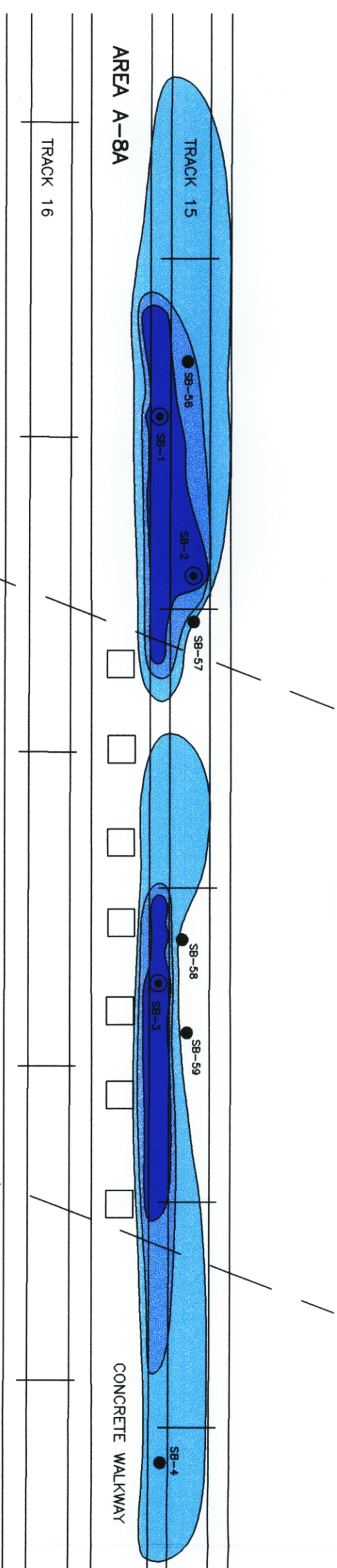
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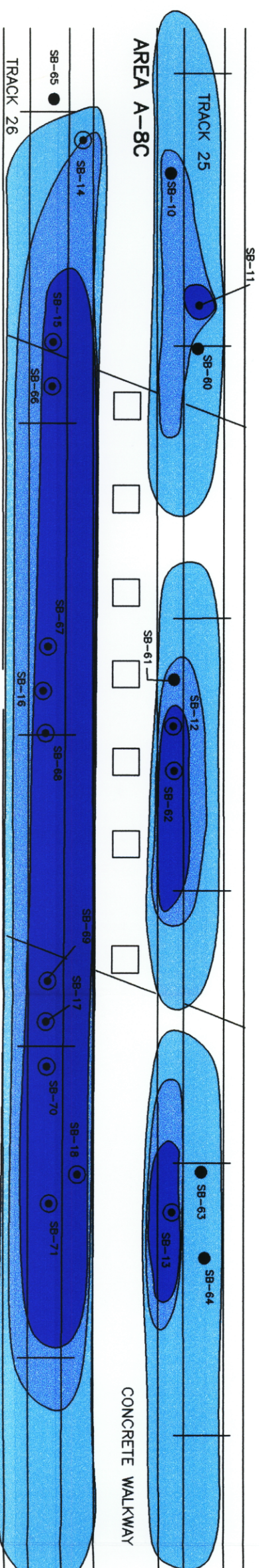


EXPLANATION

- ☐ HONEYWELL STREET BRIDGE SUPPORT
- SB-# ● LOCATION AND DESIGNATION OF SOIL BORING
- REPRESENTS POLYCHLORINATED BIPHENYLS (PCBs) IN SOIL AT CONCENTRATIONS FROM 10 PPM TO LESS THAN 25 PPM
- REPRESENTS PCBs IN SOIL AT CONCENTRATIONS FROM 25 PPM TO LESS THAN 50 PPM
- REPRESENTS PCBs IN SOIL AT CONCENTRATIONS GREATER THAN 50 PPM



EXTENT OF  
HONEYWELL STREET  
BRIDGE



Title:

EXTENT OF REMEDIATION  
FOR POLYCHLORINATED  
BIPHENYLS IN SOIL  
IN AREA 8

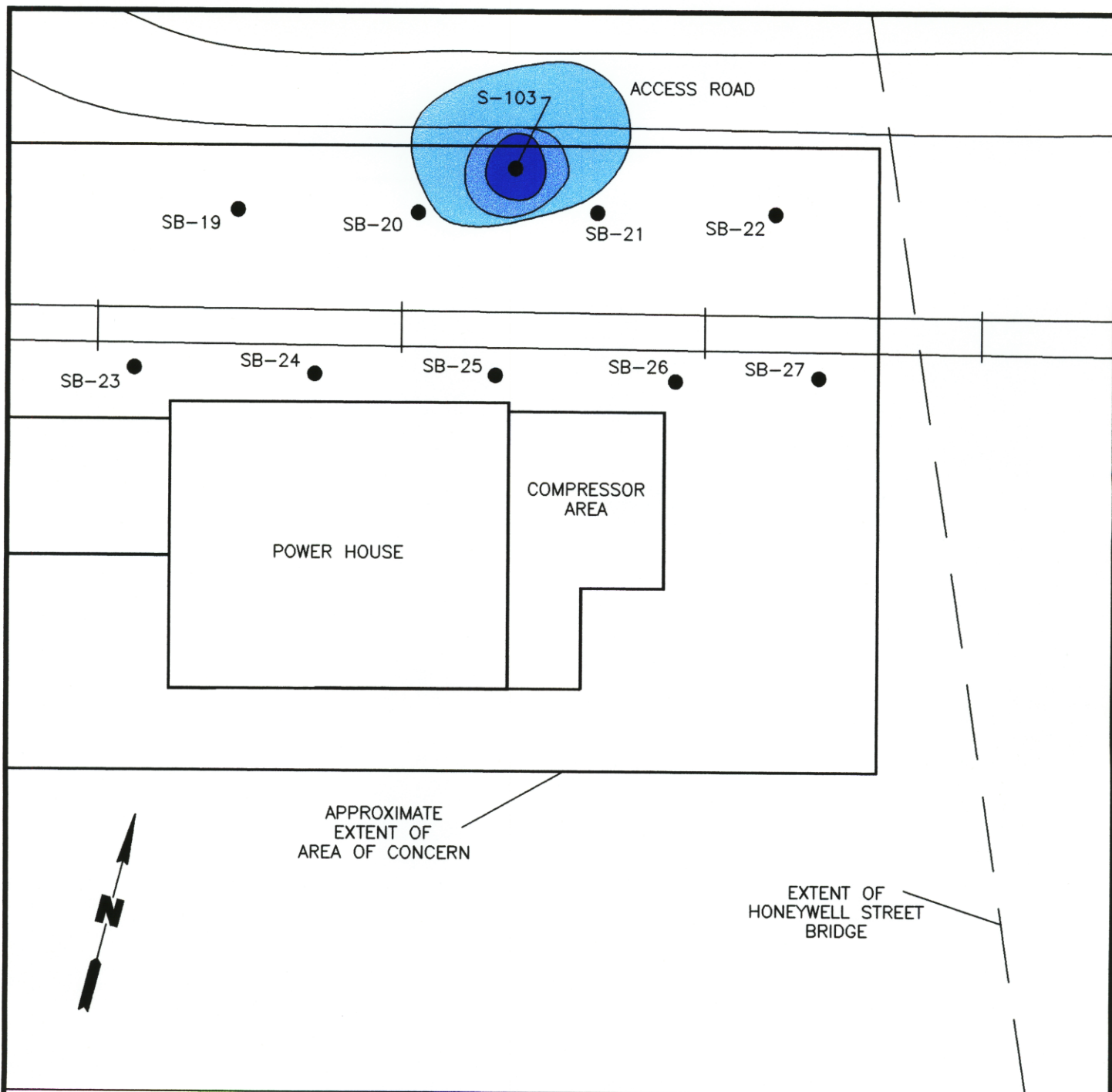


Prepared For:

AMTRAK  
SUNNYSIDE YARD, QUEENS, NEW YORK

<b>ROUX</b> Environmental Consulting & Management	Compiled by: L.W.	Date: 9/95	FIGURE 4
	Prepared by: G.M.	Scale: SHOWN	
	Project Mgr: J.D.D.	Revision:	
	File No: 05545004	Project No.: 055451	





#### EXPLANATION

SB-19 ● SOIL BORING LOCATION AND DESIGNATION

 REPRESENTS POLYCHLORINATED BIPHENYLS (PCBs) IN SOIL AT CONCENTRATIONS FROM 10 PPM TO LESS THAN 25 PPM

 REPRESENTS PCBs IN SOIL AT CONCENTRATIONS FROM 25 PPM TO LESS THAN 50 PPM

 REPRESENTS PCBs IN SOIL AT CONCENTRATIONS GREATER THAN 50 PPM



Title:

### EXTENT OF REMEDIATION FOR POLYCHLORINATED BIPHENYLS IN SOIL AREA 9

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SUNNYSIDE YARD, QUEENS, NEW YORK

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Environmental Consulting  
& Management

Compiled by: L.W.

Date: 9/95

Prepared by: J.R.

Scale: SHOWN

Project Mgr: J.D.D.

Revision:

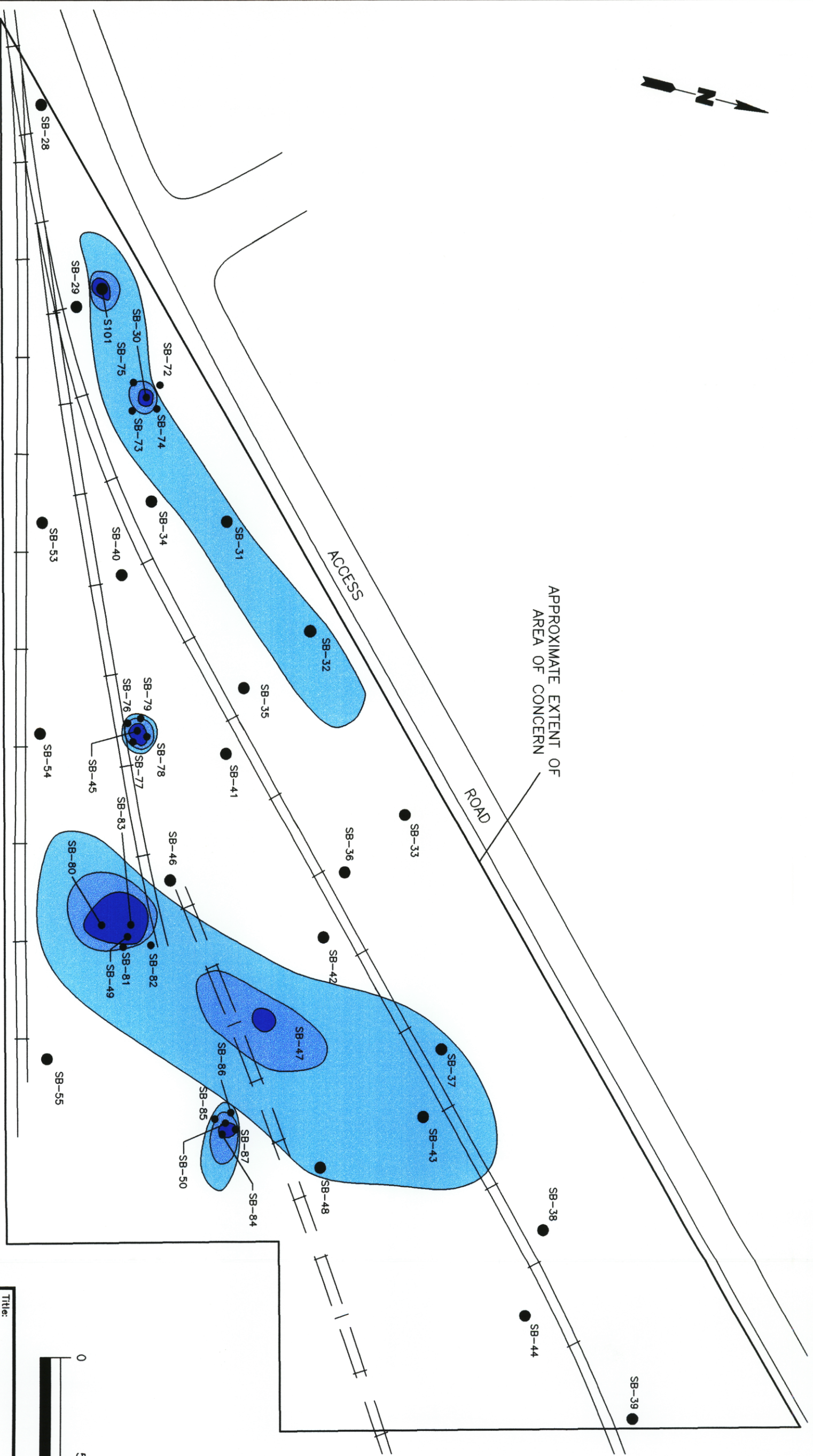
File No: 05545003

Project: 05545Y

FIGURE

5





APPROXIMATE EXTENT OF  
AREA OF CONCERN

ROAD

ACCESS

EXPLANATION

- SB-28 LOCATION AND DESIGNATION OF SOIL BORING
- REPRESENTS POLYCHLORINATED BIPHENYLS (PCBs) IN SOIL AT CONCENTRATIONS FROM 10 PPM TO LESS THAN 25 PPM
- REPRESENTS PCBs IN SOIL AT CONCENTRATIONS FROM 25 PPM TO LESS THAN 50 PPM
- REPRESENTS PCBs IN SOIL AT CONCENTRATIONS GREATER THAN 50 PPM

Title:

EXTENT OF REMEDIATION  
FOR POLYCHLORINATED  
BIPHENYLS IN SOIL  
IN AREA 17

Prepared For:

SUNNYSIDE YARD, QUEENS, NEW YORK

AMTRAK



<b>ROUX</b>		Compiled by: L.W.	Date: 9/95	FIGURE 6
ROUX ASSOCIATES INC		Prepared by: G.M.	Scale: SHOWN	
Environmental Consulting & Management		Project Mgr: J.D.D.	Revision:	
File No: 05545006		Project No.: 055451		