



**Proposed Remedial Action Plan (PRAP)
for Amtrak Sunnyside Yard, Operable Unit 1
Proposed High Speed Trainset Facility (HSTF) Building**

Public Meeting, Comment Period Announced

**Public Meeting Invitation
Tuesday, June 24, 1997 at 6:00 PM
New York State Department of Environmental Conservation, Region 2
Room 108, Hunters Point Plaza
47-40 21st Street, Long Island City, Queens, New York**

The NY State Departments of Environmental Conservation and Health (NYSDEC and NYSDOH) will discuss the proposed Remedial Plan (PRAP) for the Amtrak Sunnyside Yard, Operable Unit 1. The NYSDOH and NYSDOH representatives will :

- describe results of site investigations;
- explain the Proposed Remedial Action Plan (PRAP);
- answer your questions about the PRAP; and,
- receive your verbal or written comments about the proposal.

Public Comment Period - June 13, 1997 to July 13, 1997

The NYSDEC in cooperation with the NYSDOH has proposed action to address hazardous waste contamination for a portion of the site selected for the construction of the HSTF Service and Inspection Building at the Amtrak Sunnyside Yard in Queens, New York. The HSTF building is part of Amtrak's High Speed Line Project which will provide train service from Washington D.C. to Boston, including a three-hour service between New York and Boston.

The Proposed Action: calls for excavation and offsite disposal of contaminated soil and placement of clean soil. The proposal is described in the site's "Proposed Remedial Action Plan" (PRAP). The PRAP was developed following detailed investigations of the Yard and a focussed investigation of the HSTF building construction site. The PRAP and all investigation reports are available for review at the following repositories:

Queens Public Library
Sunnyside Branch
43-06 Green Point Avenue
Long Island City, NY 11104
Att.: Ms. Sandra King 718-784-3033

NYSDEC Region 2 Office
47-40 21st Street,
Long Island City, NY 11101
M-F 10:00 AM to 5:00 PM - By appointment
Att.: Mr. Hari Agrawal 718-482-4995

Your Opportunity to Comment on the Proposed Remedy: Release of the PRAP begins a process to finalize remedy selection for the Amtrak Sunnyside Yard, OU 1 site. *Your comments and input about the proposed remedy are important and encouraged.*

Your oral and written comments about the PRAP are welcome at the public meeting (see sidebar) and during a public comment period which runs until July 13, 1997. Written comments may also be sent until the end of the comment period by addressing them to:

Mr. Hari Agrawal, P.E.
NYSDEC Region 2 Office
47-40 21st Street, Long Island City, NY. 11101

What Happens Next: All comments received during the public comment period will be considered as the remedy for the Amtrak Sunnyside Yard, OU 1 site is finalized. Public input will be factored into a Record of Decision (ROD) which will describe the remedy selected and why it was chosen. A Responsiveness Summary will be prepared to provide response to public comments received. Work will then continue to design the selected remedy.

You may contact the following persons for more information:

Meeting/Comment Period/PRAP:

Mr. Hari Agrawal, P.E.
NYSDEC, Region 2 Office
47-40 21st Street, Long Island City, NY. 11101
718-482-4995

Health-Related Concerns:

Wendy Kuehner
NYSDOH, Empire State Plaza
2 University Place, Albany, NY 12203
800-458-1158

Summary of Proposed Remedial Action

Operable Unit 1 (OU 1) is a small portion (approximately 790 ft. X 60 ft.) of the Amtrak Sunnyside Yard designated for the construction of a High Speed Trainset Facility (HSTF) Service and Inspection Building. The Proposed Remedial Action Plan (PRAP) for OU 1 is excavation and offsite disposal of contaminated soils. The proposed method was selected following detailed investigation of contamination across the entire Sunnyside Yard plus a focussed investigation of the proposed construction site, and a study of alternatives for remediating the contamination. The major elements of the proposed action plan are as follows:

- relocation of railroad tracks to prepare for excavation of contaminated soils;
- removal and disposal of approximately 185 cubic yards of concrete;
- excavation and offsite disposal of approximately 485 cubic yards of contaminated soils;

- backfill of excavation with clean fill; and,
- post excavation sampling.

The selected remedy is for remediation of contaminated soils above the groundwater table. Groundwater itself is not a part of this PRAP, and will be addressed on a sitewide basis as part of another operable unit.

Costs and Funding for the Proposed Remedy

The construction costs for the proposed remedy are estimated at \$270,000. The owner of the site plans to design and implement the proposed remedy. If the owner does not fulfil this commitment, costs would be incurred under the 1986 Environmental Quality Bond Act. NYSDEC might then try to recover the costs from the owner or potentially responsible parties.

Site Investigations and Analysis of Remedial Alternatives

A yardwide remedial investigation, which is still in progress, has so far been conducted in two phases. Phase I was conducted between October 1990 and March 1991. Phase II was conducted between August 1992 and August 1994. In addition, certain focussed investigations have also been conducted. The Report titled Phase II Remedial Investigation, Volumes I Through V, dated February 1995 summarizes Phase I, Phase II, and all other investigations conducted as of that date. This report should be considered a "DRAFT" Report, because the NYSDEC plans to require additional investigation before accepting the conclusions of this report.

The investigation for OU 1, the proposed construction site for the HSTF Building was conducted in April 1996, and the results are summarized in "Limited Phase II Site Environmental Assessment Report, dated December 1996. In view of the extensive data already collected through the Phase I and Phase II investigations, only a limited scope, focussed investigation was necessary for OU 1.

The investigation for OU 1 shows that only polycyclic aromatic hydrocarbons (PACS) are present above the recommended site specific clean up levels established for the site. Polychlorinated Biphenyls (PCBs), certain Volatile Organic Compounds (VOCs), and certain metals are also present in OU 1, but at concentrations below the site specific clean up levels.

The Remedial Alternatives are discussed in detail in the report titled "Operable Unit 1 Feasibility Study". As may be noted, the site specific conditions and Amtrak's proposed construction plans were taken into account in the development of remedial alternatives. The proposed remedy is protective of human health and the environment.

Site History

The Sunnyside Yard was originally constructed in the early 1900's by the Pennsylvania Railroad tunnel and Terminal Company, a subsidiary of the Pennsylvania Railroad, later known as the Penn Central Transportation Company. On April 1, 1976, the Consolidated Rail Corporation (Conrail) acquired the Yard, and the same day conveyed it to Amtrak, which has continued to operate it as a storage and maintenance facility. The yard has widespread contamination from petroleum and polychlorinated biphenyls (PCBs). Petroleum disposal, apparently, occurred over a period of time due to leaks from several underground storage tanks (USTs) containing diesel fuel and #2 fuel oil. PCBs are believed to have been disposed as a result of accidental leaks from stationary transformers, and from transformers mounted on cars and locomotives. The transformers mounted on cars and locomotives occasionally leaked PCBs as a result of pressure build-up, or as a result of strikes by stones on the track to the under belly transformers.

A plume of free product approximately 200 ft. in diameter and of non-uniform thickness, up to several feet thick in certain locations, overlies the groundwater table in Area 1. A passive collection system put in place since 1989 has recovered approximately 5000 gallons of this product. More than 65,000 gallons of this thick petroleum remain in place and require further investigation and study to determine the most feasible means of removal and disposal.

The area covered by this Operable Unit is in the vicinity of this plume, but is not known to contain any free product.

PROPOSED REMEDIAL ACTION PLAN

AMTRAK SUNNYSIDE YARD

Operable Unit 1: Proposed High Speed Trainset Facility (HSTF) Building
Queens, New York
Site No. 241006
Issued: June 1997

SECTION 1: PURPOSE OF THE PROPOSED PLAN

The New York State Department of Environmental Conservation (NYSDEC) in consultation with the New York State Department of Health (NYSDOH) is proposing excavation and offsite disposal of contaminated Soils from a parcel of land 790 ft x 60 ft. in size, designated for the proposed construction of a High Speed Trainset Facility (HSTF) Service and Inspection (S&I) Building. This remedy is proposed to address the threat to human health and the environment created by the presence of free petroleum and or its constituents, polychlorinated biphenyls, and certain metals. Operable Unit 1 is a small portion of the Amtrak, Sunnyside Yard facility, which is listed as a class 2 site on the registry of Inactive Hazardous Waste Disposal Sites, where an extensive soil and groundwater study has already been done as part of an Remedial Investigation and Feasibility Study, collectively known as an RI/FS. More work needs to be done as part of this sitewide RI/FS:

This Proposed Remedial Action Plan (PRAP) identifies the preferred remedy, summarizes the other alternatives considered, and discusses the rationale for this preference. The NYSDEC will select a final remedy for the site only after

careful consideration of all comments submitted during the public comment period.

The NYSDEC has issued this PRAP as a component of the citizen participation plan developed pursuant to the New York State Environmental Conservation Law (ECL) and 6 NYCRR Part 375. This document summarizes the information that can be found in greater detail in the LIMITED PHASE II ENVIRONMENTAL SITE ASSESSMENT REPORT dated December 3, 1996. In view of the planned use of the site (Construction of a Service and Inspection building) and because a great amount of information about the entire Sunnyside Yard has already been gathered, this Limited Phase II Report serves the purpose of a focussed RI report. Also, since a remedy for this site is greatly influenced by the proposed site use, the Feasibility Study Report dated March 1997 has been prepared to demonstrate compliance with statutory requirements. A list of all reports is also appended to this PRAP.

[The Sunnyside Yard has been extensively investigated in the past through phased studies and all these previous investigations are summarized in a February 1995 Report titled Phase II Investigation Volume I Through V. This Report should be considered a "DRAFT", because the Department plans to require

additional investigation before accepting the conclusions of this Report.]

The NYSDEC may modify the preferred alternative or select another alternative based on new information or public comments. Therefore, the public is encouraged to review and comment on all of the alternatives identified here.

To better understand the site, and the alternatives evaluated, the public is encouraged to review the project documents which are available at the following repositories:

New York State Department of Environmental Conservation:
Hunters Point Plaza, 2nd floor
47-40 21st street
Long Island City, NY 11101
Attn: Mr. Hari Agrawal, P.E.
Phone Number: 718-482-4995, 9 a.m. to 4 p.m.

Queens Public Library
Sunnyside Branch
43-06 Green Point Avenue
Long Island City, N.Y. 11104
Att.: Ms. Sandra King
Phone Number: 718-784- 3033

Written comments on the PRAP can be submitted to Mr. Hari Agrawal, P.E., Project Manager at the above address.

DATES TO REMEMBER:

June 13, 1997 to July 13, 1997 - Public comment period on Investigation Report, PRAP, and preferred alternative.

June 24, 1997 at 6:00 PM - Public meeting at New York State Department of Environmental Conservation, Room 101, Hunters Point Plaza, 47-40 21st Street, Long Island City, New York 11101.

SECTION 2: SITE LOCATION AND DESCRIPTION

Amtrak, Sunnyside Yard is located in an urban area in northwestern Queens County, New York, and is surrounded by commercial, industrial and residential areas (See Figure 1). The Yard occupies 105 acres and functions as a maintenance facility for electric and diesel locomotives. The yard consists of 38 tracks; several buildings; a car washing facility; a demolished engine shop where locomotives used to be serviced; and a metro shop where the train compartments are serviced.

Amtrak has undertaken an ambitious "High Speed Project" which will provide High Speed Train Service from Washington, D.C. to Boston including three-hour service between New York and Boston. The project calls for construction of two maintenance facilities in Boston and Washington, D.C. Amtrak is considering building a third maintenance facility on its property at Sunnyside Yard. Remediation of soils above the water table within the footprint of this proposed facility (790' x 60' in area) and designated as High Speed Trainset Facility Service and Inspection Building (HSTF SI Building), is Operable Unit 1 and the subject of this PRAP. The groundwater underneath the building is not the subject of OU 1, and will be addressed as a separate operable unit.

Soil and groundwater data sitewide has already been collected through phased studies and are documented in the Report titled Phase II Remedial Investigation, Volumes I Through V. More data will be collected to complete the groundwater investigation. The groundwater underneath OU 1 will therefore be addressed later as a part of another operable unit, specifically, OU 6.

The Sunnyside Yard, is so large, the access problematic, and the contamination so widespread that it is best to segment it into several Operable units (See Figure 2). A brief description of the various operable units is as follows:

Operable Unit 1: OU 1 is designated as the soils above the water table within the footprint of the High Speed Trainset Facility Service and Inspection (HSTF S&I) Building, and is the subject of this PRAP (See Figure 3).

Operable Unit 2: OU 2 is designated as the soils above the water table within the footprint of the HSTF S&I ancillary structures (i.e. the access road and utilities route, the parking area, the construction easement area which surrounds the building)..

Operable Unit 3: OU 3 is designated as the soils and separate-phase petroleum above the water table in Area 1* of the Yard.

* The Remedial Investigation of the Sunnyside Yard was divided into sixteen (16) areas of concern based on past site use and reports of known or suspected contamination. These are described in Section 4.1 below.

Operable Unit 4: OU 4 is designated as the soils above the water table in the remainder of the Yard.

Operable Unit 5: OU 5 is designated as the sewer system beneath the Yard.

Operable Unit 6: OU 6 is designated as the saturated soils and the groundwater beneath the Yard.

SECTION 3: SITE HISTORY

3.1: Operational/Disposal History

The Sunnyside Yard was originally constructed in early 1900's by the Pennsylvania Railroad tunnel and Terminal Company, a subsidiary of the Pennsylvania Railroad, later known as the Penn Central Transportation Company. On April 1, 1976, the Consolidated Rail Corporation (Conrail) acquired the Yard, and the same day conveyed it to Amtrak, which has continued to operate it as a storage and maintenance facility. Prior The Yard has widespread contamination from petroleum and polychlorinated bi-phenyls (PCBs). Petroleum disposal, apparently, occurred over period of time due to leaks from several underground storage tanks (USTs) containing diesel fuel and #2 fuel oil. PCBs are believed to have been disposed as a result of accidental leaks from stationary transformers, and from transformers mounted on cars and locomotives. The transformers mounted on cars and locomotives occasionally leaked PCBs as a result of pressure build-up, or as a result of strikes by stones on the track to the under belly transformers. Specific dates of disposal are not known.

3.2: Remedial History

Amtrak records indicate that between 1977 and 1986 there were at least six releases of PCBs from the transformers all of which are believed to have been remediated to less than 50 ppm, the prevailing standard at the time. It appears there were other releases of PCBs that were not remediated. Diesel and #2 fuel oil leaks from USTs occurred for an unknown period until 1984. A plume of free product approximately 200ft. in diameter and of non-uniform thickness, up to several foot thick in certain locations, overlies the groundwater table in Area 1. A passive collection system put in place since 1989 has recovered approximately 5000 gallons of this product. More than 65,000 gallons of this thick petroleum remain in place and require further

investigation and study to determine the most feasible means of removal and disposal.

The area covered by this Operable Unit is in the immediate vicinity of this plume, but is not known to contain any free product.

SECTION 4: CURRENT STATUS

In response to a determination that the Sunnyside Yard contains hazardous waste that presents a significant threat to human health and the environment, Amtrak has conducted a sitewide Remedial Investigation. The Department has concluded that more work is necessary to complete this investigation and that this can best be brought to a close by segmenting the entire investigation into six (6) operable units. These operable units were described in Section 2. A feasibility study will be conducted for each Operable Unit. OUs 1 and 2 have been created to allow timely construction of the HSTF building.

4.1: Summary of the Yardwide Remedial Investigation (Excluding OUs 1 and 2)

A yardwide remedial investigation, which is still in progress, has so far been conducted in two phases. Phase I was conducted between October 1990 and March 1991. Phase II was conducted between August 1992 and August 1994. In addition, certain focussed investigation have also been conducted.

The report titled Phase II Remedial Investigation, Volume I of V, dated February 1995 summarizes Phase I and all other investigations conducted as of that date.

The Phase I investigation was targeted into sixteen (16) areas of concern (AOC) based on inspections and knowledge of the Yard. The

main objectives of the Phase I investigation were: 1) to define the nature and extent of the free product plume in Area 1, the area east of the Engine House where USTs were located ; 2) to identify and determine the nature and extent of contamination in the other 15 areas of concern; and, 3) to determine hydrogeologic conditions at the Yard. (See Appendix A for a brief description of the 16 AOC and a summary of the Phase I and Phase II Investigation.)

Remedial Investigation For OU 1:

OU 1 is the subject of this PRAP. In view of the extensive data collected during Phase I & II investigations, only a limited focussed investigation was necessary. The investigation of the proposed HSTF building construction site was conducted in April 1996, and the results are summarized in "Limited Phase II Site Environmental Assessment Report, dated December 1996. Since OUI is in the vicinity of Area 1 where there is a plume of free floating petroleum laced with PCBs, the Limited Phase II investigation had three objectives:

1. Confirm the lateral extent of the Separate-Phase petroleum. (When a petroleum product, such as heating oil or diesel fuel enters subsurface, it moves downwards by gravity. A part of it will be retained by the soil by the capillary forces. The remaining excess petroleum beyond the retention capacity of the soil will float on top of the groundwater in free phase, also known as separate phase.)
2. Delineate the extent of contamination in the immediate vicinity of and within the foot-print of the proposed HSTF S&I building.
3. Determine groundwater quality around the proposed HSTF S&I building.

Five (5) hand borings (Temporary Piezometers TP-1 through 5) were completed to

approximately 2 feet below the water table to check for the presence of free petroleum in the immediate vicinity of HSTF building. Ten (10) soil borings were advanced (8 within the footprint and 2 outside the building) up to a depth of 9 feet below the land surface and soil samples were collected to delineate the extent of contamination. Five (5) monitoring wells were installed outside the footprint of the proposed building to check for water quality and water levels during construction dewatering, if necessary.

To determine if the soil media contained contamination at levels of concern, the RI analytical data was compared to NYSDEC TAGM 4046 soil cleanup guidelines which serve as Standards, Criteria, and Guidance (SCGs) for the protection of groundwater, background conditions, and risk based remediation criteria.

After comparing remedial investigation results for OU-1 to TAGM 4046 values, and considering the site's present and future use as rail yard, the NYSDEC in consultation with the State Health Department (NYSDOH) established the following Cleanup Criteria:

PCBs: 25 ppm for both surface and subsurface soils.

Semi-volatiles: 10 ppm total carcinogenic PAHs for both surface and subsurface soils.

Lead: 1,000 ppm for both surface and subsurface soils.

To protect Yard employees from coming in contact with PCBs in surface soils, the NYSDOH has specified that the 25 ppm PCBs criteria will apply provided the following restrictions are enacted:

1. Access is restricted to employees by maintaining the existing perimeter fences and guards;

2. The facility will continue to be operated as a rail yard;

3. The majority of the rail yard is covered and shall continue to be covered with ballast, minimizing the potential for surficial runoff transporting PCBs offsite and the trekking of PCB contaminated soils into buildings or off-site by employees or vehicles.

Following clean up of materials with PCBs greater than 25 ppm, average surficial levels of PCBs remaining will be substantially less than 25 ppm.

4.1.1 Nature of Contamination:

Yardwide, PCBs and Petroleum spills are the main concerns at the Sunnyside Yard. PCBs, nine (9) Semi-volatiles (mostly petroleum PAHs), eight (8) Volatile Organic Compounds (VOCs) and twelve (12) metals were detected in soils above the recommended soil cleanup guidance numbers suggested in the Department's TAGM 4046. The likely sources of PCBs at the Sunnyside Yard include accidental leaks from stationary transformers and motive power transformers mounted on locomotives. The sources of Petroleum contamination are diesel, heating oil, and gasoline underground storage tanks (USTs) which leaked in the past. The presence of metals above the background levels cannot be attributed to any specific source.

In OU 1, the following contaminants were detected:

VOCs - One or more of the following volatile organic compounds were detected in each of the soil samples: acetone, methylene chloride, chloroform, toluene, ethyl benzene, and xylene. The last three are petroleum constituents, other VOCs may have been used as solvents. Exposure to these VOCs can affect the liver, kidney and central nervous system. However,

none of these volatiles were present above the recommended soil clean up levels.

PAHs - Polycyclic aromatic hydrocarbons (PAHs) are semivolatile organic compounds. These are frequently produced as combustion by-product, and are found in petroleum and coal product residues. PAHs are of concern because they include known and potential carcinogens. Exposure to high levels of PAHs can cause lung and kidney tumors.

PCBs - PCBs were detected in low concentrations in most samples. PCBs are classified as probable carcinogens that persist in environment for a long time. PCBs cause toxic effects in animals and humans. This can range from physiological disturbances in humans to loss of life in lower micro-organisms.

Metals - Six (6) metals were detected in soils at concentrations above the TAGM 4046 recommended soil clean up levels or background levels. Of all these, lead is the main contaminant of concern because it is a carcinogen that affects kidney and lungs.

4.1.2 Extent of Contamination

Yardwide: The PCBs and petroleum are present in soils across most of the Yard, but the concentrations are highest in Areas 1, 4, 8, 9 and 17. There is a separate phase petroleum plume in Area 1 with up to 127 ppm of PCBs. Maximum concentrations of PCBs detected in surface soils were 31,000 ppm in Area 8. Lead was detected at a maximum concentration of 1300 ppm. PCBs were also found in sewers at concentrations of up to 149 ppm in sediments and up to 0.91 ppb in water. See Table 1 for details.

OU 1: PCBs were detected in 16 of the 19 soil samples; all but one were less than 1ppm. The maximum concentration was 2 ppm. No VOCs were detected above the TAGM 4046 RSCOs.

Several SVOCs were detected, but only six (all PAHs) were detected above the TAGM 4046 Recommended Soil Clean Up Objectives (RSCOs). See Table 2 for details.

As stated before, groundwater quality underneath OUI will be addressed later as part of OU 6.

4.2 Summary of Human Exposure Pathways:

An exposure pathway is how an individual may come into contact with a contaminant. The five elements of an exposure pathway are 1) the source of contamination; 2) the environmental media and transport mechanisms; 3) the point of exposure; 4) the route of exposure; and 5) the receptor population. These elements of an exposure pathway may be based on past, present, or future events.

Sunnyside Yard is a restricted access rail yard, an industrial facility, located in a busy urban area. Therefore, potential exposure to human receptors is the only concern. Exposure scenario would apply only to Yard workers.

A separate Risk Assessment was not necessary for OU1, because a Risk Assessment was conducted for the entire Yard, and the contaminant concentrations in OU1 are lower than concentrations found in other portions of the Yard. The clean up numbers established for OU 1 are consistent with numbers used for similar sites elsewhere in the State, and are believed to be protective of human health and the environment.

4.4 Summary of Environmental Exposure Pathways:

As stated above, Sunnyside Yard is an industrial facility located in a busy urban area. Environmental exposure pathways were therefore not considered.

SECTION 5: ENFORCEMENT STATUS

Potentially Responsible Parties (PRPs) are those who may be legally liable for contamination at a site. This may include past or present owners and operators, waste generators, and haulers.

On September 21, 1989, The NYSDEC entered into an order on consent with Amtrak and New Jersey Transit which provides for Amtrak to conduct under NYSDEC's oversight a remedial investigation and a feasibility study (RI/FS).

<u>Date</u>	<u>Index No.</u>	<u>Subject of Order</u>
9/21/89	W2-G081-87-06	RI/FS

A revision to the above consent order is currently being negotiated to recognize segmentation of the entire investigation into the various operable units as discussed above.

SECTION 6: SUMMARY OF THE REMEDIATION GOALS

Goals for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375-1.10. The overall remedial goal is to meet all Standards, Criteria, and Guidance (SCGs) and be protective of human health and the environment.

At a minimum, the remedy selected should eliminate or mitigate all significant threats to the public health and to the environment presented by the hazardous waste disposed at the site through the proper application of scientific and engineering principles.

The goals selected for this site are:

- Reduce, control, or eliminate to the extent practicable the contamination present in the soils above the water table

within the footprint of the proposed HSTF S&I building.

- Eliminate the threat to surface waters by eliminating any contaminated sediments and soils on site.
- Mitigate continuing impacts to contaminated groundwater.

SECTION 7: SUMMARY OF THE EVALUATION OF ALTERNATIVES

The selected remedy should be protective of human health and the environment, be cost effective, comply with other statutory laws and utilize permanent solutions, alternative technologies or resource recovery technologies to the maximum extent practicable. Potential remedial alternatives for the Sunnyside Yard were identified, screened and evaluated in a Feasibility Study. This evaluation is presented in the report entitled Operable Unit 1 Feasibility Study, Dated April 18, 1997.

A summary of the detailed analysis follows. As used in the following text, the time to implement reflects only the time required to implement the remedy, and does not include the time required to design the remedy, procure contracts for design and construction or to negotiate with responsible parties for implementation of the remedy.

7.1: Description of Alternatives

As stated above, Operable Unit 1 has limited focuss. The potential remedies are intended to address the soil contamination above the water table within the foot-print of the HSTF S&I building.

Alternative I - No Action:

The no action alternative is evaluated as a procedural requirement and as a basis for comparison. It requires continued monitoring only, allowing the site to remain in an unremediated state. This alternative would leave the site in its present condition and would not provide any additional protection to human health or the environment.

No Action is not a viable option because if the HSTF building is not constructed, the yard workers would potentially continue to be exposed to PAH contaminated soil. As such, the cost for this Alternative was not developed.

Alternative II - Excavation, Solid-Phase Biological Treatment and On-Site Disposal

Solid-Phase Biological treatment has been shown to be highly effective in biodegradation of PAHs in soil. The removal rates in various studies are reported to be as high as 98 percent. This Alternative involves relocation of railroad tracks (trackwork) to provide access to the contaminated area; concrete removal and disposal; excavation of contaminated soil down to the water table; backfilling of excavation with clean fill; construction of solid-phase-biological treatment unit; decommissioning of the treatment unit; and, onsite re-use of the treated soil. It is estimated that 185 cubic yards of concrete and 485 cubic yards of contaminated soil would need to be excavated. The excavation would be done by hand due to the suspected presence of utilities. Approximately 760 cubic yards of structural fill would be backfilled to compaction.

Estimated cost	\$343,100.
Time to implement	1 year

Although it is difficult to estimate the time required for PAHs to biodegrade, it is expected that this Alternative can be implemented within the project mandated time frame of one year.

Alternative No. III - Soil Excavation and Offsite Disposal

This alternative consists of hand excavation and off-site disposal of PAH-contaminated soils. The major elements of this Alternative include: trackwork to gain access to the contaminated area; removal and disposal of approximately 148 cubic yards of concrete; excavation and disposal of approximately 485 cubic yards of contaminated soil (down to the water table which is 3 ft. Below the ground surface); off-site disposal of excavated soil (estimated to be); and, back-filling of excavation with clean fill.

Estimated cost	\$270,000.
Time to implement	6 months - 1 year

7.2 Evaluation of Remedial Alternatives

The criteria used to compare the potential remedial alternatives are defined in the regulation that directs the remediation of inactive hazardous waste sites in New York State (6NYCRR Part 375). For each of the criteria, a brief description is provided followed by an evaluation of the alternatives against that criterion. A detailed discussion of the evaluation criteria and comparative analysis is contained in the Feasibility Study.

As stated before the purpose of this operable unit is to address the contamination in soils only and while the remedies under consideration are intended to protect Yard workers as well as the environment, this operable unit does not address contamination that may be present in other media. Specifically, groundwater, surface water, and sewers are not addressed by this Operable Unit, and accordingly, SCGs applicable to these media are not discussed here.

1. Compliance with New York State Standards, Criteria, and Guidance (SCGs). Compliance

with SCGs addresses whether or not a remedy will meet applicable environmental laws, regulations, standards, and guidance.

The contaminated media of concern for this operable unit is soils above the water table and the main contaminants of concern are PAHs. The relevant SCGs are:

- OSHA standards at 29CFR 1910, 1904, and 1926 - these apply to hazardous/construction safety and require employers to communicate risks at the workplace to employees.
- Federal RCRA requirements at 40CFR260 through 268 - these apply to generation, handling, treatment, storage, and disposal of hazardous waste.
- NYSDEC TAGM 4046 - this guidance document provides a basis and a procedure to determine recommended soil cleanup levels at hazardous waste sites.

Alternative 1, the No Action Alternative would potentially not satisfy OSHA standards. It would also not meet TAGM 4046 guidelines which state that the total carcinogenic SVOCs in soils should be less than 10 ppm. Both Alternatives II and III would satisfy the above identified SCGs.

2. Protection of Human Health and the Environment. This criterion is an overall evaluation of the health and environmental impacts to assess whether each alternative is protective.

The No Action Alternative would not satisfy this criteria because a lack of action would continue to subject the Yard workers to the contamination.

Both Alternatives II and III would be protective of human health and the environment.

3. Short-term Effectiveness. This criterion evaluates the potential short-term adverse impacts of the remedial action upon the community, the workers, and the environment during the construction and/ or implementation.

Both Alternatives II and III involve excavation of contaminated soil. In Alternative II the soil would be biologically treated onsite whereas in Alternative III, the contaminated soil is hauled away to a secure landfill. Alternative II would have no impacts to the community since the Yard is an industrial facility and the excavated soil would not leave the site. Alternative III would have no impacts to the community either, because the contaminated soil can be safely transported to a secure facility. The difference in time needed to implement Alternative II (9 months) or Alternative III (2 ½ months) is not substantial. This criterion therefore does not favor one Alternative over the other.

4. Long-term Effectiveness and Permanence. This criterion evaluates the long-term effectiveness of the remedial alternatives after implementation.

Alternative II would fully meet this criterion in that the soil-phase biological treatment would permanently degrade PAHs present in the soil. Alternative III would not treat the contaminated soil, but the contaminated soil would be removed. The criterion would be therefore effectively met, in that there would be no remaining risks and no continuing controls needed to limit the risk. Thus, both Alternatives would equally satisfy the criterion.

5. Reduction of Toxicity, Mobility or Volume. This criterion clearly favors Alternative II in that

the biological treatment would permanently and significantly reduce the toxicity, mobility or volume of the wastes at the site. Alternative III (Disposal to a secure landfill), on the other hand would not involve any treatment.

6. Implementability. Amtrak construction plans require that a remedy be implementable within one year. Alternatives II - degradation of PAHs by bioremediation - would be complete in no longer than a year, and will therefore be considered implementable. Alternative III - excavation and offsite removal would be completed in less than one year, and would be considered highly implementable. Considering the potential economic impacts of a delay, this criterion favors Alternative II over Alternative III.

7. Cost. Since Alternative II and III would both be implemented in relatively a short time - within a time frame of one year - all costs are based on today's dollars without any present worth considerations. No O&M costs are involved in either of the two Alternatives.

Alternative II	\$343,100
Alternative III	\$270,700

Based on cost, Alternative III would be preferred.

8. Community Acceptance - Alternative II would require air monitoring during the Bioremediation of the soil. Alternative III - offsite disposal - would likely receive higher community acceptance. Concerns of the community regarding the RI/FS reports and the Proposed Remedial Action Plan will be evaluated. A "Responsiveness Summary" will be prepared that describes public comments received and how the Department will address the concerns raised. If the final remedy selected differs significantly from the proposed remedy, notices to the public will be issued describing the differences and reasons for the changes.

SECTION 8. SUMMARY OF THE PREFERRED ALTERNATIVE

The evaluation of Alternatives clearly shows that both Alternative II and III would satisfy the site specific clean up criteria. Alternative III, excavation of contaminated soil down to the water table within the foot-print of the building and disposal at a secure landfill, is preferred due to its lower cost and higher implementability.

The major elements of the preferred remedy are as follows:

- relocation of railroad tracks to prepare for excavation of contaminated soils;
- concrete removal and disposal;
- soil excavation;
- off-site disposal;
- backfill of excavation with clean fill; and,
- post excavation sampling.

Table 1. Nature and Extent of Soil Contamination - Operable Unit 1

Class	Contaminant of Concern	Concentration Range (ppm)^a	NYSDEC Site-Specific Cleanup Level (ppm)^a	Frequency Exceeding Cleanup Level
SVOCs ^b	Carcinogenic PAHs ^c	ND ^d - 16.5	10 ^e	1 of 19

- a. ppm - parts per million
- b. SVOC - Semivolatile Organic Compounds
- c. PAH - Polycyclic Aromatic Hydrocarbons
- d. ND - non detect
- e. Cleanup level for total carcinogenic PAHs

Table 2. Nature and Extent of Soil Contamination - Operable Unit 2

Class	Contaminant of Concern	Concentration Range (ppm)^a	NYSDEC Site-Specific Cleanup Level (ppm)^a	Frequency Exceeding Cleanup Level
None	None	NA ^b	NA	NA

a. ppm - parts per million

b. NA = not applicable

Table 3. Nature and Extent of Soil Contamination - Operable Unit 3

Class	Contaminant of Concern	Concentration Range (ppm) ^a	NYSDEC Site-Specific Cleanup Level (ppm) ^a	Frequency Exceeding Cleanup Level
PCBs ^b	Total PCBs	0.023 - 73	25	1 of 16
Metals	Lead	ND ^c - 1,080	1,000	1 of 12

a. ppm - parts per million

b. PCBs - Polychlorinated biphenyls

c. ND - non detect

Table 4. Nature and Extent of Soil Contamination - Operable Unit 4

Class	Contaminant of Concern	Concentration Range (ppm) ^a	NYSDEC Site-Specific Cleanup Level (ppm) ^a	Frequency Exceeding Cleanup Level
SVOCs ^b	carcinogenic PAHs ^c	ND ^d - 46.3	10 ^e	2 of 23
PCBs ^f	Total PCBs	ND - 31,000	25	8 of 84
Metals	Lead	ND - 1,290	1,000	2 of 44

- a. ppm - parts per million
- b. SVOCs - Semivolatile Organic Compounds
- c. PAH - Polynuclear Aromatic Hydrocarbons
- d. ND - non detect
- e. Cleanup level for total carcinogenic PAHs
- f. PCBs - Polychlorinated biphenyls

Table 5. Nature and Extent of Contamination - Operable Unit 5

Media	Class	Contaminant of Concern	Concentration Range (ppm) ^a	NYSDEC Standard ^b	NYSDEC Site-Specific Cleanup Level	Frequency Exceeding Cleanup Level
Sewer Water	PCBs ^c	Total PCBs	ND ^d - 0.020 (unfiltered)	0.0003	*	**
		Total PCBs	0.000015 - 0.0001 (filtered)	0.0003	*	**
Sewer Sediment	PCBs	Total PCBs	0.170 - 148.9	NA ^e	*	**

a. ppm - parts per million

b. NYSDEC Standard - New York State Department of Environmental Conservation Technical and Operational Guidance Series (1.3.8) New Discharges to Publicly Owned Treatment Works

c. PCBs - Polychlorinated biphenyl

d. ND - non detect

e. NA - not available

* no site-specific cleanup levels established by NYSDEC

** frequency to be determined upon receiving site-specific cleanup levels

Table 6. Nature and Extent of Ground-Water Contamination - Operable Unit 6

Class	Contaminant of Concern	Concentration Range (ppb) ^a	NYSDEC Standard ^b (ppb) ^a	NYSDEC Site-Specific Cleanup Level	Frequency Exceeding Cleanup Level
VOCs ^c	Trichloroethene	ND ^d - 75	5	*	**
	1,2-Dichloroethene	ND - 46	5	*	**
	Tetrachloroethene	ND - 23	5	*	**
PCBs ^e	Total PCBs	ND - 8.9	0.1	*	**
Metals	Antimony	ND - 46.9	3	*	**
	Barium	18.1 - 1,020	1,000	*	**
	Beryllium	ND - 3.7	3	*	**
	Chromium	ND - 146	50	*	**
	Copper	ND - 421	200	*	**
	Iron	.377 - 152,000	300	*	**
	Lead	ND - 207	25	*	**
	Magnesium	1,540 - 49,800	35,000	*	**
	Manganese	85 - 9,410	300	*	**

Class	Contaminant of Concern	Concentration Range (ppb) ^a	NYSDEC Standard ^b (ppb) ^a	NYSDEC Site-Specific Cleanup Level	Frequency Exceeding Cleanup Level
Metals	Sodium	4,470 - 213,000	20,000	*	**
	Zinc	ND - 696	300	*	**

a. ppb - parts per billion

b. NYSDEC Standard - New York State Department of Environmental Conservation Technical and Operational Guidance Series (1.1.1 TOGS)

c. VOCs - Volatile Organic Compounds

d. ND - non detect

e. PCBs - Polychlorinated biphenyl

* no site-specific cleanup levels provided by NYSDEC

** frequency to be determined upon receiving site-specific cleanup levels

APPENDIX

SUMMARY OF THE PHASE I INVESTIGATION

Area 1 - This area around the Engine House includes nine abandoned USTs; locomotive fueling area; Engine House; and, the Metro Shop. Phase I confirmed that a free product plume exists in this area. The free product exceeds 4 ft. in depth; extends northward to the property boundary; and, contains PCBs up to 122.673 ppm. Phase I also established that Area 1 discharges surface water and groundwater from several of its sources into the primary sewer system. PCBs were detected in two shallow monitoring wells (MW-13 and MW-22). The deep monitoring well MW-23 had petroleum constituents, but had no PCBs.

Area 2 - This is the Material Control Area. Phase I found that an UST exists in this area which may have leaked.

Area 3 - There are three(3) 750 gallon USTs present in this area that dispense gasoline. High total petroleum hydro carbons (TPH) were found in some track areas, but no significant impact from the USTs to the underlying soils or groundwater was found.

Area 4 - A 20,000 gallon UST is located here that supplies no. 2 fuel oil to the facility boiler. High TPH concentrations were found in both shallow and deep soils. The tank may have leaked.

Area 5 - Two PCBs transformers are located in this area. No PCBs or PHC sources appear to be present here.

Area 6 - Formerly known as Oil House, oil was once found floating here. The area was later capped. PHCs in surface soils were found up to 13,690 ppm, but no free product was found in the down gradient well.

Area 7 - This is a former empty drum storage area where PHC concentrations were less than 500 ppm. This does not appear to be a source of petroleum contamination, although a saturated soil sample had some sheen.

Areas 8A, 8B, and 8C -All these three are potential source areas. PCBs transformers were located here and PCBs were found in both surface and subsurface soils

Area 9 - Compressor and transformers are located in a two storey structure here. High concentrations of PHC were found in soils (upto 162,860ppm) and in groundwater (upto 2.2ppm). Oil leaks from compressors have impacted soil and groundwater.

Area 10 - The soils in this area around Transformer Substation 44 were found to be heavily stained. Phase I results showed soils have been impacted by petroleum and PCBs.

PHASE I SUMMARY Continued:

Area 11 - This former empty drum storage area was found to have some petroleum impacts, typical of the entire Yard, but did not appear to have impacted the groundwater quality.

Area 12 - This Car Wash Area did not appear to be a source of either petroleum or PCBs, although low levels of both PHCs and PCBs, typical of the entire Yard, were found in soils.

Area 13 - Soils in this former storage area were found to contain low levels of PHCs and PCBs (upto 5ppm).

Area 14 - No PCBs were found in soils in this former empty drum storage area.

Area 15 - In this former drum storage area, surface soils were found to contain upto 3,480ppm of PHCs and less than 1ppm of PCBs. GW in this area (MW-25) was found to contain 2.85ppb of PCBs.

Area 16 - This area near the old abandoned REA Building was investigated because several USTs were located in this area. (The USTs were emptied in 1989.) Low concentrations of PCE were found in a downgradient well (MW-32), but the area did not appear to be a source of petroleum or PCBs contamination.

Two other areas of concern were identified during the Phase I. One, the area known as 68 Spur, located west of Area 13, was used for Vehicle repair and fueling; and the other, a temporary transformer storage area near the southwest corner of the Wheel House Complex was found to have stained soils. PHC concentrations in the 68 Spur area were typical of the Yard, and no PCBs were found. The PHC and PCBs concentrations in the second area were as high as 14,267ppm and 1.91ppm respectively.

As a result of the Phase I findings, a Phase II Investigation was done :1) to confirm the results of Phase I and further delineate the extent of contamination; 2)to investigate if the contaminants were migrating offsite through the site sewer system and/ or through the dissolved phase in groundwater. More than 60 monitoring wells and 300 soil borings have been installed as part of these investigations.

SUMMARY OF THE PHASE II INVESTIGATION

- ◆ Areas 1, 8, 9, and 17 are heavily contaminated with petroleum and PCBs
- ◆ No further action is needed in Areas 2 through 6 and in areas 10 through 16
- ◆ PCBs are present in sewer water and sediments
- ◆ PCBs were detected in some wells, but their presence is attributed to contaminated sediments
- ◆ The free product plume is limited to Area 1 and not moving beyond the property boundary.
- ◆ Further investigation is needed in Area 1 and 7
- ◆ The Sewer System needs to be further investigated

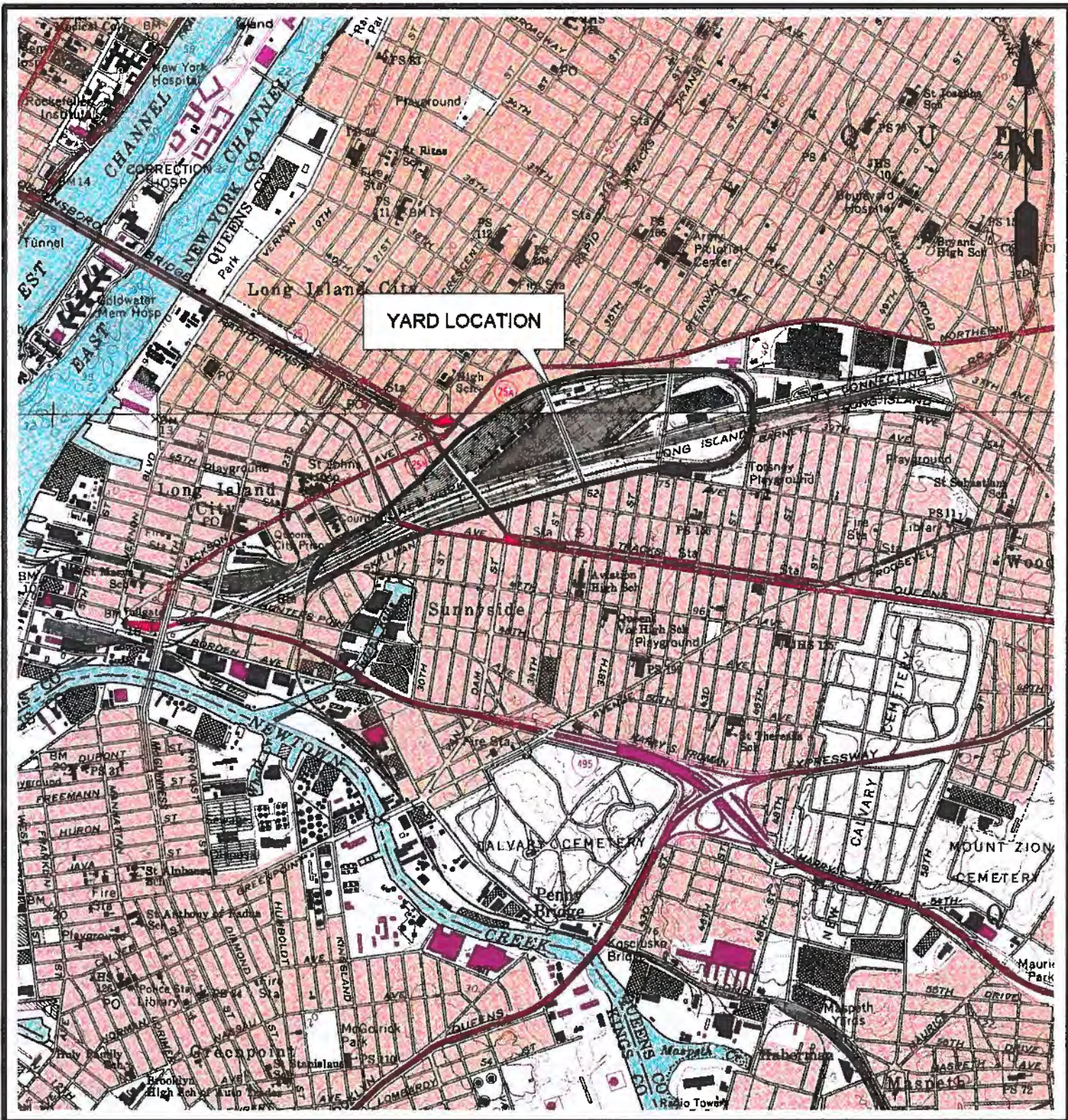
The Department believes that further investigation is needed to support the conclusions of the Phase II report. A site wide sewer investigation has been continuing, and a report titled "Summary of The Results For The June-July 1996 Sampling Program and Recommended Scope of Work" was issued November 1, 1996.

AMTRAK SUNNYSIDE YARD, SITE CODE 241006

LIST OF AVAILABLE RI/FS REPORTS

1. Geraghaty & Miller Report dated June 1986
2. Phase I RI Work Plan dated March 14, 1989
3. Same as above - Revised February 27, 1990
4. Work Plan For The Removal Of The UST Located At The Receiving Area (Area 2) dated March 4, 1991
5. Results of Underground Storage Tank Investigation - Area 2 dated October 23, 1992
6. Phase I RI Report dated January 22, 1992 (3 Volumes)
7. Phase II RI Work Plan dated August 5, 1992
8. Results Of The UST Investigation - Area 2 dated October 23, 1992
9. Addendum to Phase II Work Plan dated May 28, 1993
10. Revision to above (Phase II WP) dated August 4, 1993
11. Work Plan for Additional Investigation of Sewer System dated June 17, 1993
12. Same as above - revised August 10, 1993
13. Work Plan for Additional Delineation of Area 8, 9, and 17 dated July 28, 1993
14. Results of above - dated October 6, 1994
15. Work Plan for the Preparation of IRM Design Report & Preliminary Remedial Design for Area 1 - dated June 27, 1994
16. Results of Sewer Sampling And Oil Water Separator Inspection and Evaluation - dated September 6, 1994
17. .Phase II RI Report dated February 15, 1995 (5 Volumes)
18. Work Plan For Soil Sampling To Support The SFCS Construction Project dated January 6, 1994.

19. Same as above - revised February 22, 1994
20. Results of the Soil Sampling to Support the SFCS Construction Project dated October 6, 1994.
21. The Results of Soil Sampling Above the Duct Line Trench Route To Support The Static Frequency Converter Station (SFCS) Construction Project - dated January 12, 1995
22. Letter Report on SFCS Water and Sewer Line Soil Sampling
23. Letter Report on SFCS Fibre Optic Line cated February 23, 1995
24. Waste Sampling And Handling Plan - dated February 3, 1995
25. Base Line Risk Assessment - dated February 1995 (3 Volumes)
26. Cost Estimates For PCB Soils - a Letter Report dated September 20, 1995
27. Soil Quality Sampling Performed at Sunnyside Yard, Queens, New York - Letter Report dated October 31, 1995
28. Comstock Safety Program
29. Supplement for Phase II Remedial Investigation Report dated May 30, 1996
30. Limited Phase II Environmental Site Assessment Report dated December 3, 1996
31. Summary of the Results for the June - July 1996 Sewer Sampling Program and Recommended Scope of Work - dated November 1, 1996
32. Site Specific Cleanup Levels - Letter Report dated January 22, 1997
33. Scope of Work For The Focused Remedial Investigation Of Operable Unit 2 dated January 31, 1997
34. Work Plan For The Phase III Interim Remedial Measure System in Operable Unit 4 - dated March 21, 1997
35. Operable Unit 1 Feasibility Study dated April 18, 1997



SOURCE:
CENTRAL PARK AND BROOKLYN, NEW YORK
QUADRANGLE 7.5 MINUTE SERIES (TOPOGRAPHIC)



YARD LOCATION MAP

SUNNYSIDE YARD, QUEENS, NEW YORK

Prepared For:
AMTRAK

ROUX ROUX ASSOCIATES INC. Environmental Consulting & Management	Compiled by: D.L.	Date: 4/87	FIGURE 1
	Prepared by: R.R.	Scale: 1"=2,000'	
	Project Mgr: D.L.	Status: Final	
	File No: 82119001	Project: 05552E03	

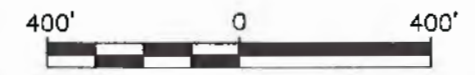
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EXPLANATION	
	LOCATION OF RAILROAD TRACK
	DIRECTION OF SEWER FLOW
	APPROXIMATE LOCATION OF SEWER
	GRATE COVER CATCH BASIN LOCATION
	SOLID COVER MANHOLE LOCATION
	GRATE COVER MANHOLE LOCATION
	LOCATION AND DESIGNATION OF PREVIOUSLY DETERMINED AREA OF CONCERN
	APPROXIMATE PROPERTY BOUNDARY
	OU-1
	OU-2
	OU-3
	OU-4
	OU-5

NOTES:

1. LOCATIONS AND DIAMETERS OF SEWER COMPONENTS BASED UPON A REVIEW OF AMTRAK-SUPPLIED ENGINEERING DIAGRAMS AND LIMITED FIELD SURVEY.
2. OU-5, GROUND WATER BENEATH THE YARD, IS NOT SHOWN.



Title:			
LOCATION OF OPERABLE UNITS			
SUNNYSIDE YARD, QUEENS, NEW YORK			
Prepared For: AMTRAK			
ROUX ROUX ASSOCIATES INC Environmental Consulting & Management	Compiled by: H.G.	Date: 4/97	FIGURE 2
	Prepared by: R.K.	Scale: AS SHOWN	
	Project Mgr: H.G.	Status: FINAL	
	File No: 52119005	Project: 05552Y03	

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