A. INTRODUCTION AND METHODOLOGY

This chapter examines the potential for impacts related to contaminated soil and groundwater. It assesses the soil and groundwater conditions in locations potentially affected by the project (i.e., the project alignment and locations affected by the relocated Metro-North Railroad [MNR] and New York & Atlantic Railway [NYAR] facilities). It then considers the potential impacts to worker safety, public health, and the environment from any potential contaminants identified, and identifies mitigation measures to be employed by the project.

For each area that would be affected by the project, the analysis begins by considering the location, type, and extent of contaminated materials that may be present in the soil or groundwater because of past or present uses either on or adjacent to the site. As described below, this assessment was conducted through a review of historic maps and regulatory records and extensive site visits and soil and groundwater sampling. The analysis then considers the project's potential to encounter any potentially contaminated soil and groundwater identified. This evaluation focuses on construction activities,* since the construction work for the project would disturb the soil and, in some locations, the groundwater. Construction activities are considered with respect to soil and groundwater conditions to assess any potential risks to public health, safety, and the environment. Finally, the chapter also describes mitigation measures to be employed to avoid potential impacts related to contaminated materials. It also describes how those measures would also avoid potential impacts associated with contaminated materials once the project is completed and operational.

LOCATIONS OF POTENTIAL CONCERN

This Environmental Impact Statement (EIS) examines three alternatives: the No Action Alternative; the Transportation Systems Management (TSM) Alternative, and the Preferred Alternative. Under the No Action Alternative, existing train storage yards would be expanded and a new yard may be created independent of the project. Potential storage yard sites under consideration for the No Action Alternative were also examined under the Preferred Alternative. The TSM Alternative would involve considerably less subsurface work than the Preferred Alternative, and the issues would be those typically found in an older urban area. The range of contaminants and potential for impact with the No Action and TSM Alternatives would be well within the "envelope" of concerns and mitigation actions associated with the Preferred Alternative. Therefore, locations of concern focus on the Preferred Alternative only, as discussed below.

The Preferred Alternative raises potential issues related to contamination in locations where soils or groundwater would be disturbed. In Manhattan, where the below-grade portions of Grand Central Terminal (GCT) are predominantly in bedrock, little soil would be encountered

* Construction activities are described in detail in Chapter 17, "Construction and Construction Impacts."

during construction. In locations where excavation or limited cut-and-cover work through soil would be required, an assessment of contaminated materials was conducted to determine whether the soil underlying the existing Metro-North tracks may have been contaminated by past rail activities. It is not expected that contamination would be found in sections where hard-rock tunneling techniques would be utilized, as the bedrock in Manhattan is relatively unfractured and impervious, reducing the potential for the downward migration of water or other liquids that may transport contaminants into the bedrock. However, for the same reason, there may be perched water tables at the soil/bedrock interface that could require the installation of product recovery wells if petroleum or other contaminated groundwater is encountered during construction.

In Queens at Yard A and Harold Interlocking, construction activities would include excavation and soft-ground tunneling techniques. Due to historic uses as rail yards, as well as the presence of numerous industrial facilities around the yards, contaminated soil and/or groundwater are likely to be found on-site. In fact, Amtrak's Sunnyside Yard has been designated by the New York State Department of Environmental Conservation (NYSDEC) as a Class II Inactive Hazardous Waste Site (significant threat to *human* health *and/or the environment and where* action is required), even though only a small fraction of the yard near Northern Boulevard and 38th Street is significantly contaminated (conditions at Sunnyside Yard are described later under "Existing Conditions"). An assessment of potential concerns related to contaminated materials at Yard A/Arch Street Yard, Harold Interlocking, and Sunnyside Yard was conducted for this EIS. As described later in this chapter, special care would be taken at Sunnyside Yard, including ongoing coordination with Amtrak and NYSDEC, to ensure that the project would not interfere with any remediation efforts at the yard. In addition to using special construction techniques at Yard A, the project would construct tunnels deep beneath Sunnyside Yard to avoid affecting contaminated areas in any way.

Metro-North's Madison Yard and NYAR's operations in Yard A would be relocated to several locations (Highbridge Yard in the Bronx; and Fresh Pond Yard and Blissville or Maspeth Yard in western Queens), all of which have been or are currently used for rail activities. While the construction at each of these facilities would, for the most part, not involve extensive subsurface work, there is still potential for the disturbance of contaminated soil and to a lesser extent groundwater. Therefore, each of these sites was assessed for potential impacts related to contaminated materials. The site on Roosevelt Island that would be excavated to construct a substation facility for project's tunnel was also considered with respect to the potential for contaminated soils or groundwater.

As described in Chapter 2 ("Project Alternatives"), with the Preferred Alternative in place, additional space would be required for nighttime storage of rail cars. Although construction activities required for new yards would consist mainly of surface work, there is still potential for the disturbance of contaminated soil and, to a lesser extent, groundwater. Thus, each of *the seven illustrative* sites *evaluated in this FEIS* was assessed for potential impacts relating to contaminated materials.

POTENTIAL CONTAMINANTS OF CONCERN

Soil and groundwater beneath a site can become contaminated because of past or present uses on the site or on adjacent properties. Most of the sites affected by the project are currently in railroad use. Normal operations at rail yards—including maintenance and routine operations—can over time lead to contamination from minor spills, dripping and leaking of fluids, etc. In

addition to contamination resulting from the rail uses themselves, the project areas may also have been contaminated by past or current uses of neighboring properties, particularly since most of the affected sites are located in largely industrial and manufacturing areas. Some contaminants, like petroleum products, may have been released during spills and from leaking underground fuel tanks. Others, such as polycyclic aromatic hydrocarbons (PAHs), are associated with combustion (e.g., coal, ash) and have historically been used as fill throughout New York City. Some of the common contaminants of concern on rail yards and sites in industrial areas are discussed below.

- Polychlorinated Biphenyls (PCBs). Commonly used as a dielectric fluid in train-mounted or yard transformers, this pollutant is of special concern at some yard and train maintenance locations.
- Heavy metals, including lead, cadmium, chromium, and mercury. Widely used in many industries, including printers, foundries, and metal working facilities, and as components in paint, ink, petroleum products, and coal ash, these can be toxic to humans in high doses. Lead is also a component of paint on bridges, and can be found in elevated concentrations in soil near busy roadways as a result of the historic use of leaded gasoline. Heavy metals are of concern at the project areas because of rail maintenance activities and because of the surrounding industries.
- Volatile Organic Compounds (VOCs). These include aromatic compounds (such as benzene, toluene, ethylbenzene, and xylene [BTEX]), which are found in petroleum products used in vehicle repair and metal works, as well as many other industries; and chlorinated compounds (such as tricholoroethene and tetrachloroethene, common ingredients in solvents and cleansers) used in degreasing, dry cleaners, and other industrial facilities. Drinking water contaminated with VOCs or breathing or inhaling the vapors of VOCs can be toxic, and some VOCs can be flammable if the vapors are confined.
- Semivolatile Organic Compounds (SVOCs). These include PAHs, which are common constituents of partially combusted coal or petroleum-derived products, such as creosote used as a protective coating on rail ties and by chemical manufacturing facilities; coal and coal ash used as fill material; and phthalates, used in plastic manufacturing facilities. PAHs can pose long-term risks to human health.
- Pesticides and Herbicides. These are commonly used to eliminate rodents and/or insects, and vegetation from the rail yard, particularly between the tracks in the path of moving trains.
- Fuel Oil and Gasoline Storage Tanks. Many of the rail yards, businesses, and industries once located in the project areas contained above-ground storage tanks (ASTs) or underground storage tanks (USTs) for fuels. Some of these tanks may have been removed, and in some locations, spills and leaks associated with such tanks may have occurred. Other tanks, although no longer in use, may remain buried in place in the project areas. Existing businesses and gasoline stations neighboring the rail yards may have petroleum storage tanks that are in active use. The soils and groundwater in proximity to fuel oil and gasoline storage tanks may be contaminated because of past leaks or spills. Fuel oil and gasoline from off-site sources may have migrated to the project areas, contaminating soil and groundwater on-site.

- Asbestos. Steam pipes in GCT and in buildings at Sunnyside Yard that would be acquired by the project may be coated with asbestos. When asbestos fibers become airborne and are inhaled by an individual, the respiratory tract may be damaged.

METHODOLOGY

For each location where construction activities could disturb potentially contaminated materials, a preliminary site assessment (Phase I) was conducted. This included the Manhattan alignment, Sunnyside/Yard A complex, and the replacement yards. Each Phase I employed a four-part investigation—past and current historical land use review, contaminated materials database and records research, a site inspection, and interviews with knowledgeable personnel—to determine the potential presence of contaminated materials on or below the site as well as the need for further detailed subsurface site investigations (Phase II).

The review of past and current land use began with research to determine the past uses on or within one block of the site in question. The research involved examining historic maps (Sanborn real estate atlases and fire insurance maps dating back to late 1800's) and/or aerial photographs for such uses as gasoline stations, electric substations, gasworks, chemical works, and other industrial uses that historically could have resulted in contamination of underlying soil.

At the Long Island storage yard sites *being evaluated in this FEIS, preliminary hazardous materials site assessments (Phase Is)* were completed as part of the preparation of LIRR's preliminary Long-Term Operations and Maintenance Strategy.* These reports were reviewed and are summarized in this chapter. In cases where the Phase I reports covered a slightly different site configuration than is now being considered, applicable conclusions of the report have been used to evaluate the new yard site. In addition, *since no Phase I assessment was prepared for the Ronkonkoma site,* a site inspection and a review of historical aerial photos and regulatory databases were performed for *that* site to determine the potential presence of contaminated materials on or below the site as well as the need for further detailed subsurface site investigations.

Federal and state database and regulatory records were reviewed—including listings of hazardous materials spills, petroleum storage facilities, and state and federally listed hazardous waste sites—to determine the regulatory status of each site, adjacent properties, and properties within the surrounding area. Previous environmental reports for each yard, where available, were also reviewed.

A visual inspection of all accessible areas of each yard was performed to determine potential sources of contamination, including USTs; ASTs; objects that could potentially contain PCBs, such as transformers; and areas where hazardous materials were used, stored, treated, generated and/or disposed, such as maintenance facilities, debris piles, and areas of illegal dumping. The visual inspection also identified any staining, odors, or lack of vegetation, which can be signs of contamination.

Finally, interviews were conducted with knowledgeable individuals at NYSDEC, the Metropolitan Transportation Authority (MTA), the Long Island Rail Road (LIRR), Metro-North Railroad, Amtrak, and NYAR, and environmental personnel familiar with the ongoing remedial work at Sunnyside Yard. As described earlier, the project team is consulting with NYSDEC and Amtrak on an ongoing basis regarding issues related to contaminated materials at Sunnyside Yard.

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* Source: Environmental Planning & Management, Inc. for STV, Inc., Spring 1999.

Using this four-step preliminary site assessment (Phase I), areas of potential contamination were identified at each project location, and for sites that were accessible, a soil and groundwater testing program (Phase II) was designed and performed to evaluate the presence of contamination. The location and depth of soil samples, as well as the need for groundwater samples, were based on the proposed construction limits in each area. This included both shallow and deep sampling. A motorized drill rig was used to install deep soil borings, several of which were completed as permanent groundwater monitoring wells. Shallow soil borings (less than 4 feet) were installed using a drilling or hand auger and test pits were excavated using a backhoe. Soil and groundwater were tested for organic compounds, heavy metals, PCBs, and pesticides. The soil and groundwater samples were evaluated using the criteria described below.

REGULATORY LIMITS AND REGULATIONS/EVALUATION CRITERIA

The Phase I and II data were evaluated, focusing on whether the project could lead to exposure to contaminated materials that would result in an increased threat or risk to workers, public health, or the environment. The Phase II evaluations (soil and groundwater sampling) were used to determine the levels of various chemical constituents in soil and groundwater. These levels were then evaluated using criteria based on various regulatory limits, as appropriate for industrial sites. (Health-based criteria developed for residential areas and standards for drinking water were not used, since these are not appropriate for industrial sites that are not accessible to the general public on a regular basis.) These values serve as screening levels, with contamination identified at levels below the screening level not requiring further evaluation, and contamination above the screening level indicating the need for mitigation. (In addition, as described later in this chapter, any material that must be removed from a project site for disposal off-site will undergo a separate evaluation of contamination to meet off-site landfill requirements.) The criteria used to evaluate contaminants are described below and listed in Table 14-1.

Table 14-1
Project Evaluation Criteria

Matrix	Parameter	Threshold Level	Source
Soil	Lead	1,000 ppm	NYSDEC criteria at Sunnyside Yard
	Total VOCs	10 ppm	TAGM 4046
	Total SVOCs	500 ppm	TAGM 4046
	Individual SVOCs	50 ppm	TAGM 4046
	Total PCBs	25 ppm	NYSDEC criteria at Sunnyside Yard
	Total cPAHs	25 ppm	NYSDEC criteria at Sunnyside Yard
	Total Pesticides	10 ppm	TAGM 4046
Groundwater	Cadmium	690 ppb	NYC Sewer
	Copper	5,000 ppb	NYC Sewer
	Lead	2,000 ppb	NYC Sewer
	Mercury	50 ppb	NYC Sewer
	Nickel	3,000 ppb	NYC Sewer
	Zinc	5,000 ppb	NYC Sewer
	Numerous individual compounds	Various	NYSDEC Class I and SD Surface Water Standards

SOIL

- For lead, an evaluation criterion of 1,000 parts per million (ppm) was used, in accordance with values established by NYSDEC in effect at Sunnyside Yard (a New York State Inactive Hazardous Waste Site).
- For organic chemicals—i.e., VOCs, SVOCs, pesticides, and PCBs—comparisons were made with values obtained from NYSDEC guidance documents and criteria established by NYSDEC for Sunnyside Yard. The maximum criteria for classes of chemicals presented in NYSDEC's Technical and Administration Guidance Memorandum (TAGM) 4046 were used, as follows: total VOCs, 10 ppm; total SVOCs, 500 ppm; individual SVOCs, 50 ppm; and total pesticides, 10 ppm. (TAGM 4046 also has health-based criteria for specific chemicals, rather than classes of chemicals, but these are not appropriate for an industrial site that is not accessible to the general public. Health concerns during construction would be separately addressed by a Construction Contaminant Management Plan, as detailed below.) In addition to the criteria established by TAGM 4046, other criteria for organic chemicals established by NYSDEC for Sunnyside Yard were used. These are for total PCBs, 25 ppm; and total carcinogenic polycyclic aromatic hydrocarbons (cPAHs), 25 ppm.

GROUNDWATER

- For metals, total (unfiltered) levels were compared with New York City Sewer Ordinance requirements, and dissolved (filtered) levels were compared with NYSDEC-designated water quality standards of the closest surface water body (e.g., Highbridge data were compared with water quality standards applicable to the Harlem River).
- For organic chemicals (VOCs, SVOCs, and PCBs), levels were compared with NYSDEC-designated water quality standards of the closest surface water body. The New York City Sewer Ordinance also limits discharge of groundwater with oil and grease that would generally be visible as an oil sheen on the surface of the water.

Although all of Long Island (including Brooklyn and Queens) is a federal sole source aquifer, groundwater is not used as a source of drinking water at or near any of the project yards in New York City (or anywhere in Manhattan or the Bronx). It should be noted that the only part of New York City that uses groundwater for drinking water supply is in an area in southeast Queens, far removed from any of the project sites. As such, NYSDEC GA groundwater standards (i.e., drinking water standards) were not used for comparison at these locations. The entire drinking water supply in Nassau and Suffolk Counties is derived from the Island's groundwater. Thus, NYSDEC GA groundwater standards would be applied at *any* sites in Nassau and Suffolk Counties.

B. EXISTING CONDITIONS

The following assessment summarizes conditions at locations of interest, based on the results of the Phase I and II investigations. More information is provided in the hazardous materials reports that are supporting documents to this EIS.

NEW YORK CITY LOCATIONS

MANHATTAN ALIGNMENT

This site has been in railroad usage since the mid-19th century. Historical real estate atlases and drawings from MNR indicate an oil storage vault located at East 48th Street between Madison and Park Avenues; a rail car servicing pit and associated sump pit located in the Madison Yard; and several USTs containing gasoline, fuel oil, and other oils on the east side of this area.

A release of 90 gallons of PCB-containing oil from a transformer on the underside of a train was reported on the upper-level MNR tracks in 1993. This is listed on the state spills database as a "closed" spill, indicating that NYSDEC determined that the necessary remediation was performed.

Suspect friable asbestos-containing material (ACM) from spray-on fireproofing was noted on beams in GCT during the site inspection. Although most pipe-insulating materials were fiberglass, there may be asbestos associated with underground utilities, such as transit conduits.

Based on the preliminary site assessment, a comprehensive site investigation (Phase II) was performed that included the collection of 31 subsurface soil samples, six concrete chip samples from the Madison Yard area, and one sediment sample from near a drain in Madison Yard. The soil boring locations were selected to best assess the impact of railroad activities on areas where soil excavation for the project may be necessary. Concrete chip samples were collected in areas of Madison Yard where concrete staining was evident and analyzed for PCBs. Due to the large quantity of sediment remaining in the drains of the yard area, a sediment sample was collected to investigate whether any contaminants were present. None of the samples collected at GCT were analyzed for pesticides/herbicides.

The Phase II investigation found elevated levels of total SVOCs (2,514 ppm) at one soil boring location. Additionally, elevated total PAHs (26-948 ppm), were found in five boring locations at shallow depths (0-3.5 feet). At three locations, these chemicals were typical of coal or coal ash, but at two others, they were consistent with petroleum contamination. Elevated levels of lead were also detected between 1,000 and 12,000 ppm at five shallow boring locations. The results, presented as ranges, are shown below in Table 14-2.

SUNNYSIDE YARD

Sunnyside Yard was created for and has been occupied by railroad use since the first decade of this century. Activities here include maintenance and rail car repair facilities, switch towers, car-washing facilities, and transformer areas. The yard is listed as a Class II Inactive Hazardous Waste Site by NYSDEC and had widespread contamination from petroleum and PCBs. Petroleum contamination occurred over a number of years due to leaks from several USTs containing diesel and fuel oil. PCBs have likely leaked from stationary transformers and from transformers mounted on cars and locomotives. Previous subsurface investigations have established the presence of an approximately *75,000*-gallon plume of PCB-contaminated oil floating on the groundwater (this plume is "separate-phase" because it is floating separately in the groundwater) approximately 2 to 7 feet beneath Sunnyside Yard. As shown in Figure 14-1, this plume is in the northeast portion of the yard, near Northern Boulevard and 38th Avenue. Although the groundwater beneath Queens is designated as a sole source aquifer, groundwater in this part of Queens is not used as a potable source of water.

Table 14-2
Manhattan Alignment

	Units	Min.	Max.	Threshold Level	Source
SOIL					
Lead	ppm	10	**12,000**	1,000	Sunnyside
Total VOCs	ppm	ND	**36**	10	TAGM
Individual SVOCs	ppm	ND	**500**	50	TAGM
Total SVOCs	ppm	ND	**2,514**	500	TAGM
Total PCBs	ppm	ND	2	25	Sunnyside
Total cPAHs	ppm	ND	**748**	25	Sunnyside
Total pesticides	ppm	—	—	10	TAGM
GROUNDWATER*					

Notes:
* Because project construction activities would include boring through rock with low permeability and laying tracks in GCT, no testing of groundwater was performed.

ND	Not detected above detection limit.
—	Not analyzed.
Bold	Exceeds threshold level.
Sunnyside	Value from NYSDEC (Amtrak Sunnyside Inactive Hazardous Waste Site).
TAGM	NYSDEC Technical and Administrative Guidance Memorandum 4046 (1/24/94).

The surrounding area has been a major industrial and manufacturing center, interspersed with warehouse/distribution facilities since Sunnyside Yard was built. The adjacent properties have included metal-working facilities, mechanics and electronics manufacturers, and auto-related facilities. Several of these facilities are on state and federal regulatory listings *for known contamination—e.g., NYSDEC Inactive Hazardous Waste Sites or Voluntary Cleanup Sites or Petroleum Spill Sites.* Previous investigations indicate three plumes of chlorinated solvent-contaminated groundwater and one plume of BTEX (four chemicals associated with gasoline) in groundwater extending onto the project site, most likely from neighboring industrial facilities.

Lead paint may be present on the bridges, towers, and metal structures at Sunnyside Yard, as well as Yard A. Elevated concentrations of lead waste may also be present in soil under these structures. A review of state regulatory databases indicated that 200 pounds of lead were generated by the New York City Department of Transportation (NYCDOT) at the Honeywell Street bridge in 1996.

A site investigation was performed that included the completion of 39 shallow soil borings (less than 6 feet), and 14 deeper soil borings (up to 20 feet), four of which were completed as permanent groundwater monitoring wells. Boring and monitoring well locations were placed in the areas where historical uses and off-site facilities could potentially have affected soil and groundwater at the project site, limited to areas of proposed construction. Sampling locations are indicated in Figure 14-1.

Elevated levels of total PAHs were detected in soil samples at two locations in the yard, including one shallow sample in the loop track area (41 ppm), specifically in the vicinity of a plume of BTEX found during previous investigations, and one deeper sample in the Harold

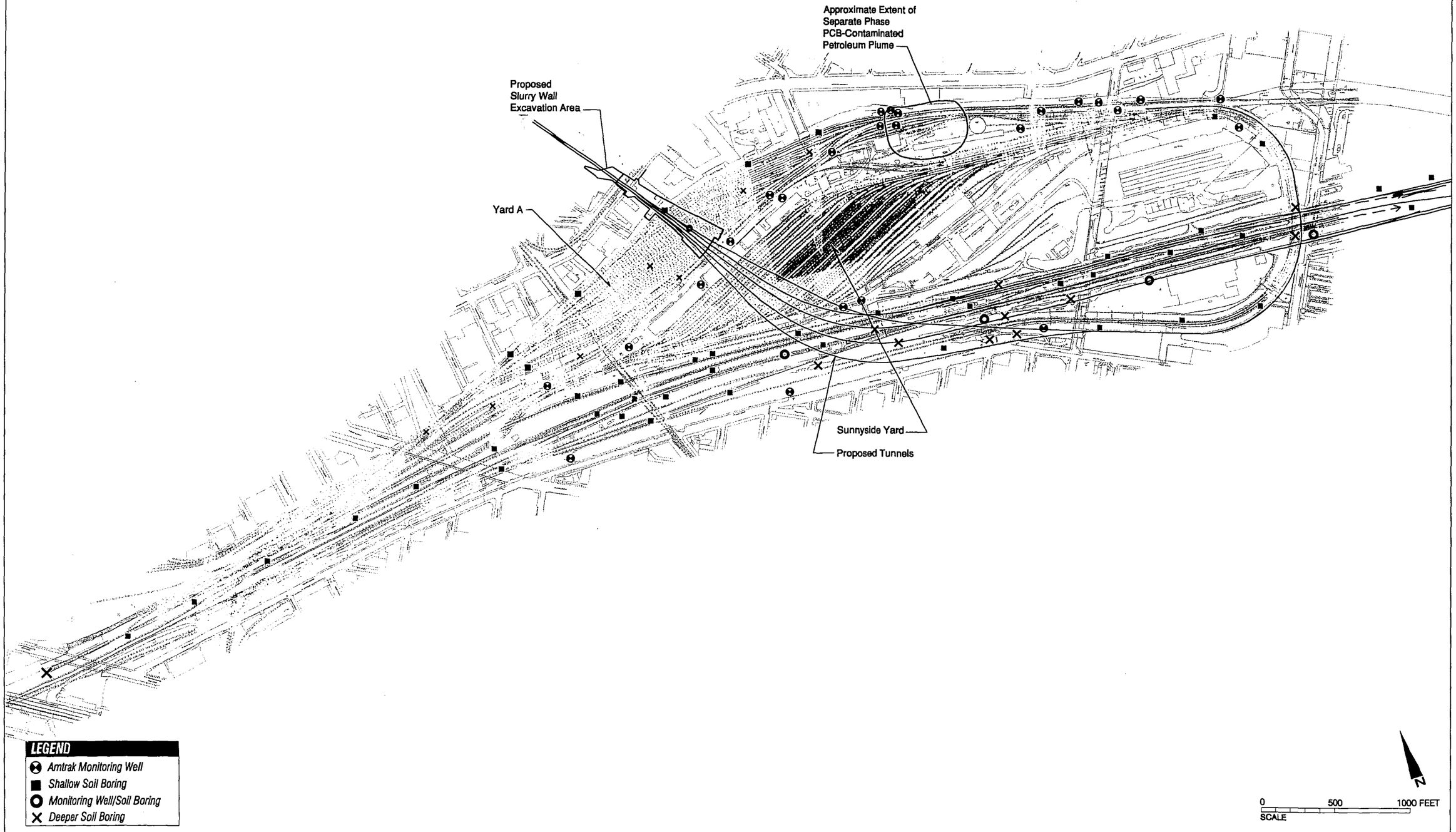

Figure 14-1

Sampling Locations at Yard A/Sunnyside Yard

Interlocking area (708 ppm). Elevated levels of total SVOCs (1,418 ppm) were also found in this sample. Results, presented as ranges, are shown below in Table 14-3.

Table 14-3
Sunnyside Yard

	Units	Min.	Max.	Threshold Level	Source
SOIL					
Lead	ppm	5.9	723	1,000	Sunnyside
Total VOCs	ppm	ND	0.4	10	TAGM
Individual SVOCs	ppm	ND	14	50	TAGM
Total SVOCs	ppm	ND	**1,418**	500	TAGM
Total PCBs	ppm	ND	1.3	25	Sunnyside
Total cPAHs	ppm	ND	**708**	25	Sunnyside
Total pesticides	ppm	—	0.04	10	TAGM
GROUNDWATER*					

Notes:

* Only compounds exceeding threshold levels are shown. No compounds exceeded New York City sewer ordinance or Class SD values.

ND	Not detected above detection limit.
—	Not analyzed.
Bold	Exceeds threshold level.
Sunnyside	Value from NYSDEC (Amtrak Sunnyside Inactive Hazardous Waste Site).
TAGM	NYSDEC Technical and Administrative Guidance Memorandum 4046 (1/24/94).
NYC Sewer	Title 15: Chapter 19 of Rules of the City of New York.
Class SD	New York State standards/guidance values (6 NYCRR 703).

YARD A/ARCH STREET YARD

Like Sunnyside Yard, Yard A/*Arch Street Yard* has been in rail use for more than 90 years, and maintenance operations have taken place since at least 1980. Several piles of debris and dumped material, including 55-gallon drums of unknown content, were observed throughout the site. Drums have the potential to leak their contents to surrounding soil, or liquid waste may have been dumped directly onto the soil.

In addition, several spills have been reported at adjacent properties to the north, including one spill of gasoline at a filling station, and one spill of creosote in the 1950's at the "Outlet City" site,* located on Queens Plaza South, adjacent to Yard A. In addition, a release of diesel fuel was reported at the New York City Transit (NYCT) building just north of Yard A in 1994 after an underground storage tank was discovered during an excavation. A second spill of an unknown quantity of diesel, kerosene, mineral spirits, and waste oil was reported at this facility in 1996. Both spills are listed on the state spills database as "active" spills. Previous reports revealed the presence of four plumes of contaminants in the groundwater beneath Yard A. In addition to a portion of the large plume of free-floating, PCB-containing oil (discussed above under "Sunnyside Yard"), they include three other plumes of dissolved contaminants at lower

* Also known as the QP site and the West Disinfecting Co.

concentrations—two plumes of chlorinated, solvent-contaminated groundwater extending under the project site, most likely originating from neighboring manufacturing facilities; and one plume of BTEX (four chemicals associated with gasoline) extending to the project site from a neighboring filling station.

The site investigation of Yard A/*Arch Street Yard* consisted of 14 soil borings, 7 of which were completed as groundwater monitoring wells (see Figure 14-1 for sampling locations). Elevated levels of SVOCs—in particular PAHs as naphthalene (2,000 parts per billion [ppb]), methyl-napthalene (1,100 ppb), acenaphthene (200 ppb), fluorene (83 ppb), and phenanthrene (66 ppb), and some methlphenols (75 ppb, total)—and VOCs (BTEX, 506 ppb, total) were detected in the groundwater samples at the monitoring well location adjacent to the Outlet City site. Elevated levels of VOCs (20 ppm) were also found in the soil sample at this location. Although the chemicals found would normally be associated with gasoline or other petroleum products, based on a detailed review of the on-site Outlet City data, they most likely represent creosote and not petroleum. The Outlet City site is currently undergoing remediation of creosote floating on groundwater under a voluntary cleanup agreement with NYSDEC. Remediation should be completed prior to 2010 as part of development resulting from the Long Island City (LIC) rezoning.

Elevated lead levels were detected in soil samples at three boring locations (at 1,200 to 2,440 ppm) at shallow depths (0-3 feet). One of these was located just north of the on-site maintenance facility, one was located in the vicinity of the Queens Boulevard bridge, and one in the vicinity of the Honeywell Street bridge. In addition, elevated lead levels were detected in two unfiltered groundwater samples (264,000 and 4,000 ppb), two of which were locations where elevated soil lead was also found, including the monitoring well in the vicinity of the Honeywell Street bridge and the monitoring well located just north of the maintenance facility. It is possible that both results are anomalous and are due solely to high turbidity, which would not be expected if dewatering and the settling of solids in the water were to occur at these locations, as levels were significantly lower in the filtered samples. Table 14-4, below, shows analytical results, presented as ranges.

BLISSVILLE YARD

Blissville Yard, now vacant, was in rail use for many years, and it is located in a major industrial and manufacturing area in Queens. During that time, the surrounding properties have included metal-working facilities, fuel oil distribution facilities, and chemical-manufacturing facilities. Two spills were reported at the Buckeye Pipeline facility, south of the project site. Nearly 2 inches of separate-phase gasoline was found at an existing monitoring well at this facility. Two spills were reported at adjacent auto repair facilities to the north, including one 100-gallon spill of fuel oil and one spill of an unknown quantity of petroleum. Several piles of debris and dumped material, including 55-gallon drums of unknown content, were observed throughout the site.

A site investigation was conducted consisting of seven shallow (less than 3 feet), hand-augered soil borings, as project-related work proposed at Blissville Yard would only disturb the surface. Boring locations were placed at approximately 250-foot intervals through the length of the yard. Lead was found at elevated levels (1,030 ppm) at one location in the central portion of the yard. Results, presented as ranges, are shown below in Table 14-5.

Table 14-4
Yard A

	Units	Min.	Max.	Threshold Level	Source
SOIL					
Lead	ppm	4.8	**2,440**	1,000	Sunnyside
Total VOCs	ppm	ND	**20**	10	TAGM*
Individual SVOCs	ppm	ND	14	50	TAGM
Total SVOCs	ppm	0.8	39	500	TAGM
Total PCBs	ppm	ND	0.03	25	Sunnyside
Total cPAHs	ppm	ND	23	25	Sunnyside
Total pesticides	ppm	ND	0.07	10	TAGM
GROUNDWATER**					
Lead	ppb	5.5	**264,000**	2,000	NYC Sewer
Zinc	ppb	7.2	**44,600**	5,000	NYC Sewer
Benzene	ppb	ND	**16**	10	Class SD*
Ethylbenzene	ppb	ND	**150**	41	Class SD*
Xylene	ppb	ND	**340**	170	Class SD*
Naphthalene	ppb	ND	**2,000**	140	Class SD*
2-Methylnapthaler	ppb	ND	**1,100**	38	Class SD*
Acenaphthene	ppb	ND	**200**	60	Class SD*
Fluorene	ppb	ND	**83**	23	Class SD*
Phenanthrene	ppb	ND	**66**	14	Class SD*
Dissolved copper	ppb	1.1	**12**	5.6	Class SD
Dissolved nickel	ppb	1.5	**272**	74	Class SD
Dissolved zinc	ppb	8.3	**196**	95	Class SD

Notes:

* Analyte detected in soil/groundwater samples from the location adjacent to Outlet City.

** Only compounds exceeding threshold levels are shown.

ND	Not detected above detection limit.
Bold	Exceeds threshold level.
Sunnyside	Value from NYSDEC (Amtrak Sunnyside Inactive Hazardous Waste Site).
TAGM	NYSDEC Technical and Administrative Guidance Memorandum 4046 (1/24/94).
NYC Sewer	Title 15: Chapter 19 of Rules of the City of New York.
Class SD	New York State standards/guidance values (6 NYCRR 703).

Table 14-5
Blissville Yard

	Units	Min.	Max.	Threshold Level	Source
SOIL					
Lead	ppm	509	**1,030**	1,000	Sunnyside
Total VOCs	ppm	0	0.11	10	TAGM
Individual SVOCs	ppm	ND	4.8	50	TAGM
Total SVOCs	ppm	0.79	29	500	TAGM
Total PCBs	ppm	ND	ND	25	Sunnyside
Total cPAHs	ppm	0.23	16	25	Sunnyside
Total pesticides	ppm	ND	0.03	10	TAGM
GROUNDWATER*					

Notes:
* Because project construction activities would consist of surface construction above the water table, no testing of groundwater was performed.

ND	Not detected above detection limit.
Bold	Exceeds threshold level.
Sunnyside	Value from NYSDEC (Amtrak Sunnyside Inactive Hazardous Waste Site).
TAGM	NYSDEC Technical and Administrative Guidance Memorandum 4046 (1/24/94).

MASPETH YARD

This site has been in railroad usage since before 1902. Historical real estate atlases indicate that a tool shed has occupied the site since the 1950's, and one vent pipe was observed adjacent to the tool shed during the site inspection. Two buildings and one gas tank were shown on maps from 1936 to 1950. Although no train maintenance activities are now performed at the yard, such activities may have been performed in the past.

One spill of 75 gallons of diesel fuel was reported on-site after an LIRR train collided with a tractor trailer at the intersection of Maspeth Avenue and Rust Street in 1995. This spill is still considered "active" by NYSDEC, indicating that it has not been fully remediated. Two additional spills were reported at off-site-adjacent properties, including a PCB oil spill in 1997 at the adjacent Con Edison substation and a petroleum spill after a tank failure at 1 Railroad Place, also known as 2 Galasso Place, located immediately southwest of the center of the yard. Free product (i.e., a separate layer of material floating on top of the groundwater) was found in at least one monitoring well that was subsequently installed at the neighboring bus facility, located at 3 Galasso Place. Groundwater conditions on the project site may have been affected by these facilities.

The site investigation consisted of seven soil borings, three of which were completed as groundwater monitoring wells. Lead was found at elevated levels at two boring locations (3,950 at 10- to 12-foot depth and 3,050 ppm at 2- to 4-foot depth) in the vicinity of the 3 Galasso facility, and at the boring location at the northwest corner of the yard (1,770 ppm at depths of 2-4 feet). Sampling near the area of the diesel fuel spill on-site did not indicate contamination. Groundwater conditions were below screening levels. Results, presented as ranges, are shown below in Table 14-6.

Table 14-6
Maspeth Yard

	Units	Min.	Max.	Threshold Level	Source
SOIL					
Lead	ppm	ND	**3,950**	1,000	Sunnyside
Total VOCs	ppm	ND	0.137	10	TAGM
Individual SVOCs	ppm	ND	18	50	TAGM
Total SVOCs	ppm	0.15	29.3	500	TAGM
Total PCBs	ppm	ND	ND	25	Sunnyside
Total cPAHs	ppm	ND	9.95	25	Sunnyside
Total pesticides	ppm	ND	ND	10	TAGM
GROUNDWATER*					

Notes:

* Only compounds exceeding threshold levels are shown. No compounds exceeded New York City sewer ordinance or Class SD values.

ND	Not detected above detection limit.
Bold	Exceeds threshold level.
Sunnyside	Value from NYSDEC (Amtrak Sunnyside Inactive Hazardous Waste Site).
TAGM	NYSDEC Technical and Administrative Guidance Memorandum 4046 (1/24/94).
NYC Sewer	Title 15: Chapter 19 of Rules of the City of New York.
Class SD	New York State standards/guidance values (6 NYCRR 703).

FRESH POND YARD

Historical aerial photographs do not reveal evidence of significant environmental hazards on the project site or in the surrounding area. However, the site has been an active rail yard since at least 1910. No train maintenance facilities were located at Fresh Pond Yard, and a review of federal and state regulatory listings did not indicate any significant environmental hazards on the project site or surrounding areas.

No significant concerns based on the site history or surroundings were identified at Fresh Pond Yard, and the only work proposed would disturb the surface. To evaluate further potential for contamination in this area, six shallow (less than 3 feet), hand-augered borings were installed in the vicinity of proposed construction. Elevated levels of VOCs (23 ppm) consisting of trichloroethene and dichloroethene, common chlorinated solvents used in degreasing, were found at one boring location at the eastern portion of the parking lot. Table 14-7, below, shows analytical results, presented as ranges.

HIGHBRIDGE YARD

Highbridge Yard has been in railroad use for more than 100 years. Historical maps indicated rail car repair shops in several locations throughout the site. Rail car repair facilities may have contaminated underlying soil and groundwater with PCBs, waste oil, and diesel fuel. Eight fill caps and seven cut-off vent pipes associated with USTs were observed during the site visit (these tanks were subsequently removed by MNR in accordance with NYSDEC guidelines). Real estate atlases also revealed additional USTs. Old underground gasoline tanks may no longer be in

Table 14-7
Fresh Pond Yard

	Units	Min.	Max.	Threshold Level	Source
SOIL					
Lead	ppm	0.031	301	1,000	Sunnyside
Total VOCs	ppm	0.002	**23**	10	TAGM
Individual SVOCs	ppm	ND	4.4	50	TAGM
Total SVOCs	ppm	4	24	500	TAGM
Total PCBs	ppm	ND	ND	25	Sunnyside
Total cPAHs	ppm	1.92	8	25	Sunnyside
Total pesticides	ppm	ND	0.02	10	TAGM
GROUNDWATER*					

Notes:
* Because project construction activities would consist of surface construction above the water table, no testing of groundwater was performed.

ND	Not detected above detection limit.
Bold	Exceeds threshold level.
Sunnyside	Value from NYSDEC (Amtrak Sunnyside Inactive Hazardous Waste Site).
TAGM	NYSDEC Technical and Administrative Guidance Memorandum 4046 (1/24/94).

use, but have the potential to leak contents into the surrounding soil. Several piles of debris and dumped material, including 55-gallon drums of unknown content, were observed at the site. Previous investigations indicated elevated levels of methylene chloride and several SVOCs in groundwater samples. Trace levels of PCBs and SVOCs were also detected in several soil samples in previous investigations.

An initial site investigation was conducted consisting of two test pits and eight soil borings, three of which were completed as permanent groundwater monitoring wells. Boring and monitoring well locations were placed in the areas where historical uses and off-site facilities could potentially have affected soil and groundwater at the project site.

Elevated levels of benzene (21 ppb) were detected in groundwater samples from the monitoring well location in the vicinity of the former USTs and former repair shop. Phenanthrene, a PAH often associated with coal, or petroleum, was detected at elevated levels (2 ppb) in groundwater samples at one monitoring well location. Elevated levels of dissolved copper (7.2 ppb) were found in groundwater samples at a monitoring well location near the Major Deegan Expressway Testing and treatment may be required prior to disposal of groundwater to the Harlem River during any project dewatering activities. The regulatory values cited (Class I) represent conservative limits, and project discharge limits would be evaluated on a case-by-case basis in coordination with NYSDEC.

During test pit excavations on the east side of the railroad tracks, two 55-gallon drums were encountered, one of which was inadvertently ruptured. The drum contained a strong alkali (potassium hydroxide). The spill was immediately cleaned up and reported to NYSDEC and U.S. Environmental Protection Agency (EPA) in accordance with NYSDEC and EPA procedures. Other drums were noted or suspected in the northeastern portion of the site. It is suspected that the drum was dumped illegally at the site from an off-site source.

A second spill was reported during the Phase II investigation after evidence of petroleum contamination was observed during sampling. Nine tanks were subsequently closed and removed by Metro-North in accordance with state guidelines.

As part of the project's comprehensive program to sample, analyze, delineate, and quantify contamination—which will continue throughout preliminary design—additional site investigations were performed at Highbridge. These included a sitewide geophysical survey, an asbestos and lead paint survey, the installation of 25 new soil borings (five of which were completed as monitoring wells), and the collection of a sample from a clogged storm drain. The findings included: lead paint on the electrical towers and gate; asbestos in site buildings and debris piles; and additional geophysical anomalies in the vicinity of the area where drums were found in the earlier test pits, potentially representing additional drums.

Soil sampling revealed elevated levels of VOCs (56 ppm, total) consistent with petroleum at the southern end of the yard and elevated PAH levels (89 ppm, total) at a location closer to the middle of the yard. One sample from the northern end of the yard exceeded the hazardous waste threshold (unlike the earlier testing, this investigation measured leachable or Toxicity Characteristics Leaching Procedure [TCLP] lead rather than total lead). Soils exceeding this threshold would require off-site disposal at an approved hazardous waste landfill. The one sample from the clogged storm drain exhibited higher levels of VOCs, SVOCs and PCBs than were found elsewhere on the site, but unlike the other sampling locations, this sample is not likely to be representative of a significant volume of material.

Two of the monitoring wells (the one where 21 ppb of benzene was previously found and one new well at the north end of the site) had oil floating on the surface of the groundwater less than ⅛ inch, and benzene and naphthalene in the water samples. Levels of several SVOCs exceeded the Class I standards at two wells in the middle of the site. Levels of dissolved nickel exceeded Class I standards at one location on the east side of the mainline tracks, and levels of zinc exceeded Class I standards in 12 of the 19 wells. As discussed above, project-specific discharge limits would be developed in coordination with NYSDEC.

The results from both investigations, presented as ranges, are in Table 14-8.

ROOSEVELT ISLAND

This site has been occupied by a subway vent associated with the 63rd Street Tunnel since the 1970's. Prior to that, the project site was vacant, except for a structure of unknown purpose. The neighboring properties have included a quarry, a reservoir, residences, a laundry facility, a fire house, a garage, and two additional auto-related buildings. These would not be expected to have affected subsurface conditions on the project site. Further, it is likely that much of the soil at the project site was removed during the excavation of the on-site subway vent. No spills were reported within an a ⅛-mile radius of the project site, and State and Federal regulatory review did not reveal any significant environmental hazards on the project site or the surrounding area.

Soil and groundwater (if necessary) samples will be collected from locations consistent with excavation, dewatering (if necessary), and construction areas. This sampling will be necessary to determine the nature and extent of any contamination at this site for the purpose of providing disposal methods and mitigation measures in the Construction Contaminant Management Plan (CCMP).

Table 14-8
Highbridge Yard

	Units	Min.	Max.*	Threshold Level	Source
SOIL					
Lead	ppm	2.8	894	1,000	Sunnyside
TCCP Lead	ppm	ND	12	5	Haz. Waste
Total VOCs	ppm	ND	**56**	10	TAGM
Individual SVOCs	ppm	ND	29	50	TAGM
Total SVOCs	ppm	0.093	187	500	TAGM
Total PCBs	ppm	ND	0.12	25	Sunnyside
Total cPAHs	ppm	ND	**89**	25	Sunnyside
Total pesticides	ppm	ND	ND	10	TAGM
GROUNDWATER**					
Benzene	ppb	ND	**21**	10	Class I
Phenanthrene	ppb	ND	**19**	1.5	Class I
Naphthalene	ppm	ND	**30**	16	Class I
acenaphthene	ppm	ND	**20**	6.5	Class I
Fluorene	ppm	ND	**10**	2.5	Class I
Dissolved copper	ppb	ND	**7.2**	.5.6	Class I
Dissolved nickel	ppb	ND	**55**	8.2	NYC Sewer
Dissolved copper	ppb	ND	**310**	66	NYC Sewer

Notes:
* Excluding storm sewer sample which contained higher levels of individual SVOCs (260 ppm), total SVOCs (23,651 ppm), total PCBs (3.6 ppm), and total cPAHs (637 ppm).
** Only compounds exceeding threshold levels are shown.

ND	Not detected above detection limit.
Bold	Exceeds threshold level.
Sunnyside	Value from NYSDEC (Amtrak Sunnyside Inactive Hazardous Waste Site).
TAGM	NYSDEC Technical and Administrative Guidance Memorandum 4046 (1/24/94).
NYC Sewer	Title 15: Chapter 19 of Rules of the City of New York.
Class I	New York State standards/guidance values (6 NYCRR 703).
Haz Waste:	New York State Hazardous Waste regulations (6 NYCRR 371).

LONG ISLAND STORAGE YARDS

CERRO WIRE SITE

The project site consists of portions of the former Cerro Wire and Cable Company facility and possibly portions of the former Syosset Landfill. The Cerro facility was in operation from the early 1950's until 1986 and manufactured steel electrical conduits, hot rolled copper rods, and steel strips. NYSDEC listed the site as an inactive hazardous waste site in 1983 and, after closing, a decommissioning program was instituted. This involved a site cleanup of all structures and equipment, and disposal of all remaining process chemicals and hazardous materials. Subsequent decommissioning work and extensive soil and groundwater testing led NYSDEC to change the site's classification to that of a site which was properly closed but required continued management. After the site was acquired by New York News, Inc. in 1990, another series of soil

and groundwater tests was completed. In 1993, soil was removed from several areas in the wastewater treatment area of the site pursuant to a NYSDEC-approved remediation plan. Upon completion of the soil removal, the site was delisted by NYSDEC and reclassified as "DL"— requiring no further action.

The Syosset Landfill site was originally a sand and gravel mining operation. Excavated areas were subsequently used for solid waste disposal. From 1933 to 1967, the Syosset Landfill accepted commercial, industrial, residential, demolition, and agricultural wastes, plus sludges, ash, and scavenger cesspool waste. In 1967, the Town stopped using the landfill for residential wastes, although industrial wastes continued to be disposed of at the landfill until it was closed in 1975. The landfill was designated a Superfund site (that is, listed on the National Priority List for cleanup under the Comprehensive Environmental Response, Compensation, and Liability Act and the Superfund Amendments and Reauthorization Act) by EPA in 1983, and a nearby public drinking supply water well was abandoned. A series of both on- and off-site groundwater and landfill gas tests were completed from 1987 to 1994. Remediation measures—*including* capping the landfill, installing an additional gas venting system, and monitoring the air and groundwater quality— were instituted to mitigate on-site impacts. By 1996, the Syosset Landfill had been throughly investigated and remediated to the satisfaction of EPA. Additionally, EPA concluded that off-site remediation was not necessary.

BABYLON SITE

The Babylon site is fully developed with commercial and industrial businesses, as described in Chapter 3, "Land Use, Zoning, and Public Policy," and Chapter 5, "Economic Conditions." Several 55-gallon drums were observed at the porcelain reglazing facility on the site, one at the auto repair shop, one at the dry cleaner east of the site at Higbie Lane, and one at the vacant property close to Route 231 that was once a tank farm.

Evidence of USTs, such as fill caps and vent pipes, was observed at one of the residences and one of the small businesses. Four ASTs were observed at the operating tank farm (Nassau Blue Flame), including one 783,000-gallon tank and one 212,000-gallon tank containing No. 2 fuel oil or diesel, and two tanks labeled as out-of-service. This site is listed on state databases as having seven active tanks with capacities of between 275 and 840,000 gallons.

Two areas on the project site are listed on the Cornell Laboratory for Environmental Applications of Remote Sensing (CLEARS) database as potential hazardous waste sites, including Nassau Blue Flame and the former fuel oil tank farm. During the site inspection, six groundwater recovery wells and a soil remediation system were observed. It is unknown whether or not the remediation system is active. The porcelain facility and the dry cleaners are both listed on state databases as generators of spent halogenated solvents.

YAPHANK EAST SITE

A review of federal and state regulatory listings for the Yaphank East site did not indicate any significant environmental hazards on the project site. Three active spills were reported at the Department of Public Works (DPW) facility, including unknown quantities of No. 2 fuel oil, waste oil, and diesel. A residence located west of the site reported a spill of No. 2 fuel oil that affected groundwater. These spills are upgradient from the project site and would not be expected to impact subsurface conditions on-site. The DPW complex is also listed several times on the Petroleum Bulk Storage and Hazardous Waste Generators databases. Two sites in the study area were identified by the Suffolk County Department of Health Services, using the

CLEARS database, as potential hazardous waste disposal sites in the wooded area west of the project site. The sites consist of approximately 2 and 1.25 acres, and are likely the result of dumping.

YAPHANK WEST SITE

This site is predominantly a vacant, undeveloped property and is densely vegetated. Less than 25 percent of the site is cleared for agricultural purposes. A review of federal and state regulatory listings did not indicate any significant environmental hazards on the project site. However, one area was identified in the CLEARS database as a potential hazardous waste disposal site. This area was located at the northern boundary of the property, and is most likely the result of dumping.

RONKONKOMA SITE

Historical aerial photographs and a review of federal and state regulatory listings for the Ronkonkoma Site did not indicate any significant environmental hazards on the project site.

PILGRIM HOSPITAL SITE

The Pilgrim Hospital site consists of an existing rail line, undeveloped land, and a former power plant and two warehouse buildings associated with the former Pilgrim State Psychiatric Hospital Facility in Brentwood, Suffolk County. Additional structures associated with the former hospital include a former incinerator and three additional warehouse buildings, located just west of the site. At the Pilgrim Hospital site, two 10,000- to 20,000-gallon ASTs, likely containing heating oil, were located north of an aluminum structure attached to the north side of the power plant. A smaller AST was located on the east side of the power plant, and two fuel pumps for gasoline and diesel were attached to a structure attached to the west side of the power plant. Several 55-gallon drums of unknown contents were located in the vicinity of the warehouse buildings and south of the power plant.

One active spill was reported for the Pilgrim Hospital complex at Power House G Road, which runs north of the project site and is most likely located off-site. One closed spill was reported at the on-site power plant in 1988, after 500 gallons of No.2 fuel oil were released as the result of an overfill of an AST. This spill was closed in 1993. Spills listed as closed by NYSDEC have been cleaned and closed in accordance with NYSDEC regulations.

Two areas in the vicinity were identified on the CLEARS database as potential hazardous waste disposal sites, both located south of the power plant and off-site incinerator. The sites consisted of two suspected flyash dumps in operation from approximately 1947 to 1969. By 1972, the dumps were no longer detectable and likely were no longer being used, most likely a result of the power plant converting from coal burning to petroleum. Three additional areas were identified adjacent to the west of the site, and are likely the result of dumping.

The former Pilgrim Hospital's sewage treatment facility is located west of the site. Several former sanitary leaching lagoons and discharge pits were located in this area. Seven existing groundwater monitoring wells were located between the site and the sewage treatment facility.

RIVERHEAD SITE

The site inspection and review of federal and state regulatory listings for the Riverhead site did not indicate any significant environmental hazards on the project site or the surrounding area.

Two areas were identified on the CLEARS database as potential hazardous waste disposal sites—one at the western border and one at the southern border of the project site. The sites consist of approximately 3.25 and 0.5 acres, respectively, and are likely the result of dumping.

C. FUTURE CONDITIONS COMMON TO ALL ALTERNATIVES

In the future, it is expected that two current remediation projects could significantly improve groundwater contamination in the Sunnyside Yard/Yard A area. Amtrak, under a consent order with NYSDEC, is proceeding with investigations of the separate-phase PCB-contaminated petroleum plume in Sunnyside Yard and Yard A. Currently, a passive recovery (skimmer) system is in place that collects the contaminated material floating on top of the groundwater. Over the next several years, it could be expected that much of the contaminated material would be removed. Remediation in addition to the skimmer system may also be required. It is unclear as to when remediation would be completed but likely prior to 2020.

At the Outlet City site, located north-adjacent to Yard A at the western portion of the yard, the owner is remediating the creosote contamination as part of NYSDEC's Voluntary Cleanup Agreement. A smaller groundwater treatment system than the one used by Amtrak is currently in place and negotiations are underway to select a final remedial measure. Remediation should be completed by 2010 as part of development resulting from the LIC rezoning.

As described in Chapter 3, "Land Use, Zoning, and Public Policy," future developments are proposed or anticipated at several of the storage yard *sites evaluated in this FEIS*. In particular, the Town of Oyster Bay is currently considering an application to develop The Mall at Oyster Bay, a large regional shopping mall on the Cerro Wire site; a portion of the Pilgrim Hospital campus will be sold and redeveloped*; and residential development is proposed for the Riverhead site*. The proposed changes on the Cerro Wire site would involve demolition of the existing buildings on the site. They would also involve excavation and removal of a small area of soils where copper concentrations were found to be above the cleanup guideline, along with the adjacent foundations and possible subsurface features. This or any other subsurface work would need to be coordinated with NYSDEC. Similarly, any new development at Pilgrim State Hospital would have to follow all applicable regulations related to contaminated materials, including those that relate to asbestos and lead paint, as well as underground fuel storage tanks and other contaminants that may be present.

D. PROBABLE IMPACTS OF THE PROJECT ALTERNATIVES

The presence of hazardous or contaminated materials threatens human health only when exposure to those materials can occur. During construction, the East Side Access Project would require excavation and disturbance of soil, including tunnel spoil. For materials that will not be used on-site, testing would be required to determine appropriate disposal options. *All soil disposal from Sunnyside Yard would be coordinated with Amtrak.* Testing may also be required for reuse of material on-site. Since construction may require dewatering, testing and treatment prior to disposal to the sewer system or natural water body may also be required, assuming New York City Department of Environmental Protection (NYCDEP) (sewer) or NYSDEC (waterbody) criteria are satisfied. In areas where contamination exists, disturbance of soil and groundwater can provide an exposure pathway for the contaminants to workers and the public. This would vary depending on construction depth and methods, as discussed below. As also described below, once construction activities are completed, mitigation measures would

address any remaining subsurface contaminated materials, and thus would eliminate the potential for adverse impacts during the operational phase of the proposed project.

The potential environmental impacts associated with each project alternative are examined below. Where potential impacts are identified, possible mitigation measures are presented in section E, "Mitigation Measures."

NO ACTION ALTERNATIVE

There are no construction and excavation activities associated with the No Action Alternative for the New York City sites. As such, no contaminated materials impacts are expected. On Long Island, a storage yard *will* be created *on the Port Jefferson Branch.** Impacts and mitigation would be similar, on a smaller scale, to the Preferred Alternative and are discussed below.

TSM ALTERNATIVE

There would be very little subsurface construction activity (e.g., foundations for extended bus lane, the expansion of platforms, minimal surface track work at some LIRR stations) associated with the TSM Alternative. Construction over wider or deeper areas would occur if the TSM components providing contraflow bus/taxi lanes were implemented. In these instances, impact potential would be similar to, but likely less than, that of the Preferred Alternative, as discussed below. In addition, construction of this alternative would require a NYSDEC-approved *Construction Contaminant Management Plan* (CCMP), and might also require Phase I and II assessments at specific locations. *As with the No Action Alternative, a new rail storage yard would be required on the Port Jefferson Branch.*

PREFERRED ALTERNATIVE

POTENTIAL IMPACTS DURING CONSTRUCTION

Although proposed plans for each location of concern differ, construction issues are similar, and include surface construction, soft-ground tunneling and cut-and-cover construction, and hard rock tunneling. The specific issues identified at each project location are addressed below. Different impacts for different types of construction are also described below.

The hazardous materials assessment undertaken for this EIS identifies contaminated areas for the purposes of identifying potential significant impacts and appropriate mitigation measures. For all project areas, prior to any additional environmental investigation or construction, a CCMP would be created to provide guidance related to hazardous materials or chemicals that may be encountered in soil or groundwater. This will include remediation plans, specifications for worker safety, and actions to be taken during construction, and is discussed in more detail below under "Mitigation Measures." After the design of project elements is more fully developed and prior to the start of construction, additional soil and groundwater sampling would be undertaken in all project construction areas where contaminated materials were identified. This additional work would be designed to characterize the nature and extent, and approximate quantity of contaminated materials at all construction areas. This would be undertaken to address worker safety and to identify any soil or groundwater that would require special off-site

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* *See page S-6 of the Executive Summary or pages 2-1 through 2-5 of Chapter 2, "Project Alternatives," for a discussion of the No Action Alternative.*

disposal. Any asbestos or contaminated materials found in structures to be demolished would be removed prior to demolition, according to all applicable state and local regulations. State and city regulations restrict the pumping of contaminated groundwater to rivers or sewers. The project specifications for dewatering would include testing to ensure that regulatory levels are not exceeded.

New York City Locations

Manhattan Alignment. Sections in Manhattan where hard rock tunneling techniques would be utilized would not be expected to encounter any contamination, since Manhattan bedrock is relatively unfractured and impervious, thus minimizing the potential migration of water or oil that may transport contaminants into the bedrock. The issues would be the same for the project's Option 1 (new tracks and platforms on Grand Central Terminal's lower level) as for Option 2 (new tracks and platforms below the lower level). Both would use hard rock tunneling techniques to create the new tunnels, and both would involve work in the area of Madison Yard, where care would be taken in handling the soil and ballast there. To ensure worker safety, a CCMP would be implemented. *As noted in Chapter 2, Option 2 has been selected as the preferred engineering option for East Side Access's Manhattan alignment.*

Sunnyside Yard and Yard A. In Queens at Sunnyside Yard, Yard A, and Harold Interlocking, construction activities would include cut-and-cover construction and soft-ground tunneling techniques. These activities would require the excavation of large amounts of soil and the use of tunnel boring machines (TBMs) to construct tunnels deep beneath Sunnyside Yard. Subsurface investigations indicated that deep excavation is less likely to encounter contaminated soil. In addition, TBMs are used to avoid potential human contact with contaminated materials (see Chapter 17, "Construction and Construction Impacts."

As described above, Amtrak's Sunnyside Yard has been designated by NYSDEC as a Class II Inactive Hazardous Waste Site. Amtrak is currently under a consent order to perform remedial investigations in Sunnyside Yard. The yard has been divided into six areas, or operable units (OUs), to define suspected areas of contamination. Two of the OUs were investigated and cleaned up prior to construction of Amtrak's Highspeed Rail facility for their new Acela Service. The third OU is the separate phase petroleum plume that has been delineated by Amtrak. To date, NYSDEC has not approved remedial measures for this area. However, Amtrak is operating a passive recovery system to remove oil. The other three OUs are the remaining soils, the sewer system, and the groundwater within Sunnyside Yard. The timeline for future remedial activities is unknown.

Coordination with NYSDEC and Amtrak regarding project-related construction activities within Sunnyside Yard is ongoing *and all project construction activities in Sunnyside Yard would be addressed with Amtrak and with NYSDEC.* The project's design in Yard A and Sunnyside Yard incorporates measures to minimize the effect of dewatering activities on the 200,000-gallon contaminated plume of oil, in the event that its cleanup is not complete prior to construction. These measures include the use of low permeability barriers in a bathtub design for construction of the TBM launch site. Computer models will be used to predict the potential movement of the subsurface contamination and to identify measures that would further minimize the movement, if required.

As described in more detail in Chapter 17, "Construction and Construction Impacts," the work would begin with excavation of a large area almost entirely within Yard A. Soil and

groundwater would be removed from this area, tested, and disposed of properly, as explained below under "Mitigation Measures." The excavation area would then be enclosed with virtually watertight walls constructed using slurry and jet grout. This new excavation area would thus provide a protected location for construction activities, separate from the contaminated groundwater beneath the yard. Figure 14-2 illustrates the proposed location of the new "cut-off" wall.

Since the slurry wall would have a much lower permeability than the surrounding soil, potential effects on the water table and the need for dewatering of the excavation area would be minimized.

This type of cut-off wall was used for MTA New York City Transit's 63rd Street Connector Project along Northern Boulevard, close to the area to be affected in Yard A. This cut-off wall, in similar soil conditions to that proposed for Yard A, was very effective at minimizing any migration of the plume. As shown in Figure 14-2, the 63rd Street Connector's cut-off wall is much closer to the PCB-contaminated petroleum plume than the one proposed for the Preferred Alternative in Yard A. Since the proposed East Side Access Project's cut-off wall would be much farther away from the plume, it is not expected to result in any significant drawdown at the location of the plume.

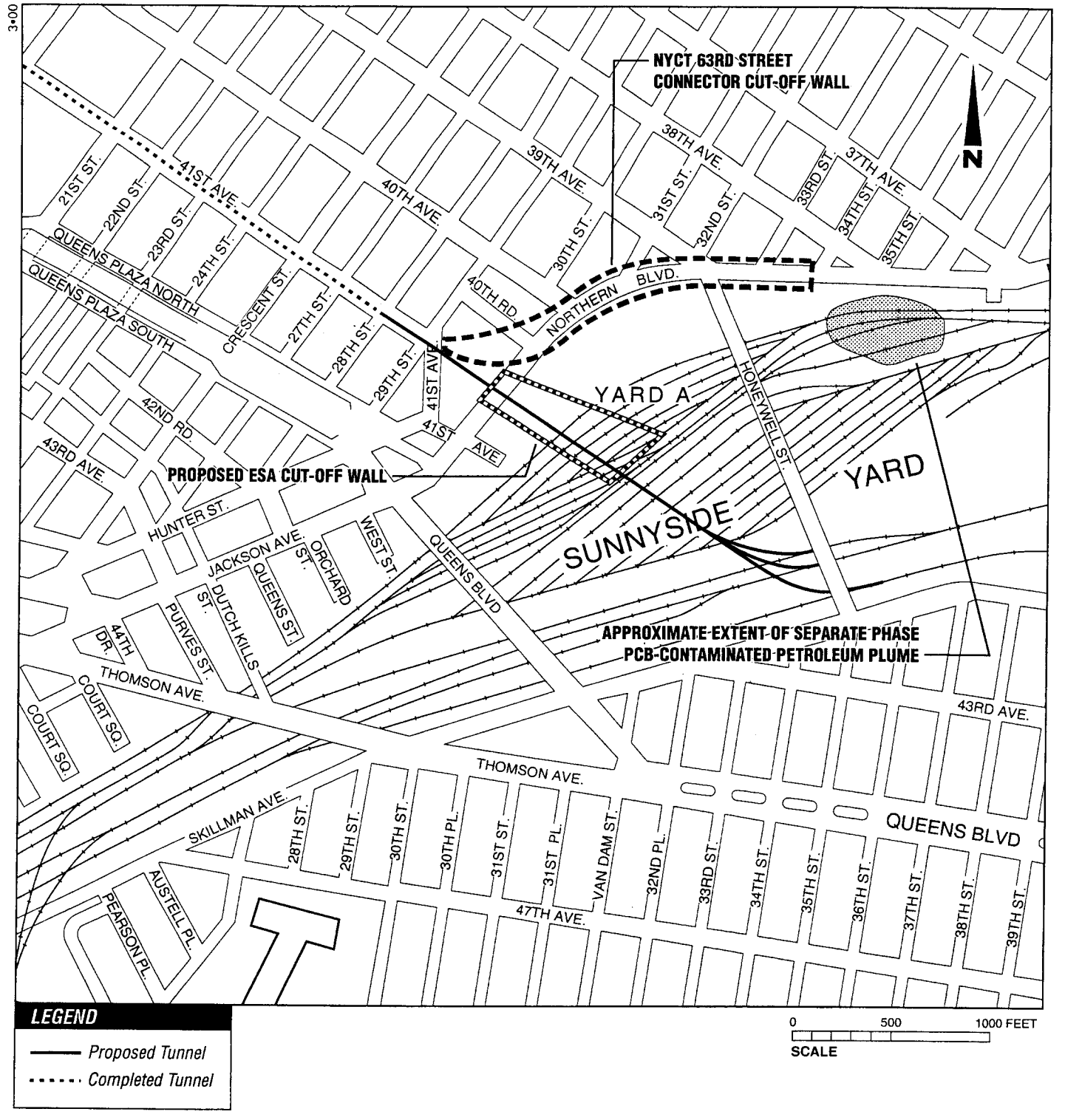
As mentioned above, monitoring would be performed during construction to determine whether the plume moves. If it does move, water from dewatering could be reinjected to reduce drawdown or additional extraction wells or slurry walls could be installed to capture *oil and other contamination*. During construction, the CCMP would specify precautions to be taken to minimize worker contact with groundwater, including the use of safe work practices and protective clothing. Settling basins may be required at Yard A to reduce levels of suspended metals in groundwater collected during dewatering. Sediment from settling basins would be tested and, if necessary, removed off-site in accordance with all applicable regulations, as would any contaminated spoil from the TBM.

Blissville and Maspeth Yards. Surface construction includes activities such as laying new track and adding or relocating utilities and signals. During construction, contaminated soils could be exposed. Airborne dust during construction activities is the main pathway for contaminants to reach nearby residents and construction workers. An environmental CCMP would be created for *the* site to minimize potential exposure to contaminated materials, as discussed under "Mitigation Measures," below.

While most of the project sites do not require any special measures, localized pockets of contamination or underground fuel storage tanks could be encountered during excavating and grading activities at any of the rail yards. These would be tested and disposed of properly, as discussed in "Mitigation Measures," below. Debris and dumped materials would also be removed from the sites and disposed of properly.

As discussed above, there is also the potential to encounter buried drums. Drums and any contaminated soils would be tested and removed with caution, in accordance with the CCMP. If tanks or drums are removed according to regulations and the CCMP, no significant impact would occur. It is expected that any drums found during the pre-construction site investigation would be removed immediately. The CCMP would include measures to be employed should any drums be encountered at any of the project sites.

Groundwater from dewatering, if any, would be tested prior to disposal; assuming NYCDEP criteria are satisfied, it is likely that it would be pumped untreated to the sewer system.



MTA / LIRR
East Side Access

Figure 14-2

ESA and NYCT Cut-off Walls

Fresh Pond Yard. At Fresh Pond Yard, construction activities would include constructing maintenance facilities, including a locomotive inspection pit, and surface work, as described above. Like Blissville and Maspeth Yards, the CCMP would include measures to be employed should any drums or contaminated soil and groundwater be encountered at the site. Construction of the Fresh Pond Yard maintenance facility is not expected to adversely affect public health, workers, or the environment.

Highbridge Yard. Like Blissville and Maspeth Yards described above, activities at Highbridge Yard would include surface construction—such as laying new track, adding a locomotive inspection pit, and adding or relocating utilities and signals. At most, a small area of deeper excavation and dewatering is anticipated. There is also the potential to encounter buried drums. Drums and any contaminated soils (including the known location where soils exceeded the hazardous waste threshold for lead) would be tested and removed in accordance with the CCMP. It is expected that any drums found during the pre-construction site investigation would be removed immediately. The CCMP would include measures to be employed should any drums be encountered at any of the project sites.

At Highbridge, discharge to surface water is potentially feasible. Sampling results indicate that groundwater could likely be pumped to the Harlem River with little or minimal treatment. If dewatering to the river is appropriate at Highbridge, a testing program and site-specific discharge limits would be developed with NYSDEC. (For more information, see Chapter 15, "Natural Resources.")

Roosevelt Island. As described above in "Existing Conditions," soil and groundwater sampling would be conducted to prepare a CCMP.

Long Island Storage Yards

At *any site selected for use as a rail storage yard* site, a CCMP would be developed as discussed below under "Mitigation Measures," based on site-specific concerns. Known issues at *the sites evaluated in this FEIS* are as follows.

Cerro Wire Site. At Cerro Wire, because of the past industrial use of the site, all earth-disturbing activities would be performed under a site-specific CCMP. In addition, if the alignment that crosses the former Syosset Landfill is chosen, the yard would have to be specially designed to protect the landfill cap.

Babylon Site. Because the Babylon site has had a history of industrial and oil-related uses, soil and groundwater testing is recommended. A geophysical survey would also be conducted to identify the locations of any buried tanks. Any remaining drums would be sampled and disposed off-site in accordance with all applicable regulations.

Yaphank East Site. Because the Yaphank East site was identified on the CLEARS database as a potential hazardous waste disposal site, soil and groundwater testing would be appropriate prior to construction in this area.

Yaphank West Site. Because the Yaphank West site was identified on the CLEARS database as a potential hazardous waste disposal site, soil and groundwater testing would be appropriate if this site is selected for development.

Ronkonkoma Site. This site consists of primarily vacant undeveloped land, and would not be expected to have serious contaminated materials issues.

Pilgrim Hospital Site. A soil and groundwater testing program would be recommended for the Pilgrim Hospital site due to former usage of petroleum on-site, and off-site upgradient sewage treatment operations. A geophysical survey would be conducted to identify the locations of any buried tanks associated with the gasoline and diesel pumps at the Pilgrim site. Any remaining drums should be sampled and disposed off-site in accordance with all applicable regulations.

Riverhead Site. Because a small area at Riverhead was identified on the CLEARS database as a potential hazardous waste disposal site, soil and groundwater testing would be appropriate if this site is selected for development.

POTENTIAL IMPACTS DURING OPERATION

The mitigation measures implemented during construction would ensure that any contaminated materials currently present on the project sites would not result in significant adverse impacts once the project's construction is complete and the East Side Access Project is operational. As described earlier, in Yard A and Sunnyside Yard, the project would be constructed to avoid any effects on the contaminated plume beneath the yards; groundwater modeling performed for the project has concluded that the project would not significantly affect the groundwater conditions there. Furthermore, the new railroad-related facilities created as part of the project would comply with all applicable regulations regarding contaminated materials, to avoid creating new contamination at any of the project sites. As detailed in Chapter 15, "Natural Resources," for example, the project would include pre-treatment systems for any discharges from its maintenance facilities, designed in accordance with NYCDEP regulations. Maintenance and car wash activities would be conducted within enclosed facilities. Discharges from these facilities would meet all applicable industrial discharge permit limits in accordance with NYCDEP requirements. The registration of petroleum storage tanks (6 NYCRR §612) and chemical storage tanks (6 NYCRR §596.2) with NYSDEC would occur prior to their installation at Fresh Pond Yard or Yard A. Overall, operation of the proposed project would not result in significant adverse impacts related to contaminated materials.

The changes to the operations of NYAR also would not result in any significant adverse impacts related to contaminated materials. Currently, NYAR does not transport hazardous materials as part of its operation. If, in the future, NYAR transports these materials, the East Side Access Project would have little to no effect on the transport of these materials. Most likely these materials would be transferred to the NYAR system at Fresh Pond Yard as part of the daily CONRAIL/CSX freight deliveries via the Hell Gate Bridge. From Fresh Pond, NYAR would transport any hazardous materials in the same way as they currently transport other freight, to destinations on Long Island as part of the regular NYAR daily freight service. The East Side Access Project would have no effect on this operation. With East Side Access, it is possible that NYAR freight cars containing hazardous materials could be stored at Blissville instead of Yard A (where they would be stored under the no action scenario).

Under any scenario, if NYAR transports hazardous materials, this activity would be subject to the regulations of the U.S. Department of Transportation (49 CFR Parts 107, 171, 172, 173, 174, 178, 179 and 180) pertaining to the transport of these materials. These regulations include registration and operating requirements for transporters of hazardous materials subject to the Hazardous Materials Regulations issued under the Hazardous Materials Transportation Act (HMTA). They set forth procedures to be followed to protect worker and public health, as well as requirements for shipper's certification and the

methods and protective measures to be used to transport the materials. Specifically, the regulations issue requirements for the manifesting, packaging, labeling and placarding the materials being transported. They also contain provisions regarding emergency response in the event of an accidental spill or release of material as well as worker training. The regulations also include specific conditions (Part 174) for the operation of railcars that carry hazardous materials.

E. MITIGATION MEASURES

Based on the initial sampling effort performed for this EIS, a comprehensive program to sample, analyze, delineate, and quantify contamination within each of the construction areas is under development and, in one case (Highbridge Yard), nearly complete. Findings Reports will be prepared that document the on-site sampling and analytical efforts, and quantify and delineate the contamination found. Site-specific CCMPs will be prepared based on the conclusions in the Findings Reports. Each CCMP will contain a Sampling and Analytical Plan (SAP) for contaminated materials to identify sampling and analytical requirements for materials (soil, groundwater, drums, USTs, and asbestos) encountered during construction (specific to both the cut-and-cover and TBM methods). In addition, the CCMPs will describe the requirements for handling, management, treatment, and disposal of contaminated materials encountered during construction. In the case of groundwater contamination, containment, treatment, and discharge options will be included in the CCMP. All materials leaving the site will require sampling and characterization prior to disposal or reuse off-site. The CCMPs will be coordinated with relevant local, state, and federal agencies.

The CCMPs will identify preliminary requirements for Health and Safety Plans (HASPs) to be submitted by each construction contractor prior to commencement of work at the site. The HASPs will comply with 29 CFR 1910.120 and will include health and safety requirements related to site-specific environmental conditions at the site. Worker safety issues related to construction activities and railroad worker protection will be included in the plans.

The approach to mitigation of soil and groundwater conditions includes:

- NYSDEC approvals and/or permits for activities relating to the remediation of oil or hazardous substances would be sought. In accordance with regulations governing Inactive Hazardous Waste Disposal Sites, the project would be constructed so as not to interfere significantly with any proposed or ongoing program to remediate conditions in Sunnyside Yard. Construction of the project would not expose public health or the environment to a significantly increased threat of harm or damage.
- If oil contamination were discovered in connection with the project, the requirements of the New York State Navigation Law (spill reporting and others) would be followed.
- For a discussion of stormwater management and handling of any dewatered groundwater, see Chapter 15, "Natural Resources."
- Potentially contaminated soils would be excavated and stockpiled on polyethylene sheeting until they could be tested and if necessary, removed for off-site disposal at an appropriate facility. Depending on the quantities and locations of contaminated soils, other mitigation technologies may be used, such as soil vapor extraction for VOCs and capping for metal contamination. Capping would involve reusing soil on-site and covering it with at least 2 feet of clean soil or other appropriate cap (e.g., paving).

- As part of the construction documents and included in the CCMP would be methods to be employed should any fuel oil tanks be encountered during construction. They would be closed and removed in accordance with state and city regulations, along with any associated contaminated soils or separate-phase petroleum. The steps to be followed include removing any remaining product and contaminated water, and evacuating any vapors from inside the tanks. Tanks would then be cleaned and properly decommissioned, then hoisted from the ground for off-site disposal. Vents or pipe runs would also be removed in conjunction with the tanks. Soil from around the tank would be sampled to identify contamination, and any contaminated soil would be excavated and removed by a certified hauler to an appropriate disposal facility. Once contaminated soil has been excavated, soil samples would be collected from the sides of the excavated area to confirm all contaminated soil has been removed.
- At locations where construction requires demolition, a comprehensive asbestos survey of each structure would be conducted in the safe and accessible areas that includes the sampling of all suspect materials to determine the presence or absence of asbestos. Based on the findings of the survey, ACMs would be removed in accordance with all local, state, and federal regulations. A "notice of asbestos project" would be submitted to EPA (40 CFR §61.140 et seq) and to the New York State Department of Labor for asbestos removal from GCT, or any other location, where asbestos is to be removed in excess of the specified amount.
- Groundwater mitigation would include ongoing monitoring and treatment of water removed during dewatering operations, and monitoring the plume of separate-phase PCB-contaminated oil in Sunnyside Yard to assure there is no migration into the project area. The use of low permeability barriers (e.g., slurry walls) during construction (see Chapter 17, "Construction and Construction Impacts") would also mitigate contaminated groundwater from entering the construction area. NYSDEC dewatering permits (6 NYCRR §602) for the operation of wells to withdraw water would be obtained prior to construction activities, where required. ❖