RESULTS OF THE SUPPLEMENTAL INVESTIGATION AT SITE B

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1.0 INTRODUCTION

Roux Associates, Inc. (Roux Associates) conducted a Supplemental Soil and Perched Ground-Water Investigation at the Pfizer Inc (Pfizer) property known as "Site B," which is located at 73-87 Gerry Street in Brooklyn, New York. Pfizer has decommissioned Site B, along with adjoining Pfizer properties (i.e., the Citric Block Site and the Organics/Suciac Block), to prepare these properties for future redevelopment and/or beneficial use. The objective of the investigation was to develop additional data needed to fill data gaps identified following a limited environmental site assessment (ESA) previously conducted at Site B by Roux Associates (Roux Associates, 1996a). Specifically, additional data were needed to:

- further assess soil and ground-water quality conditions at Site B, particularly in an area formerly containing a fuel oil underground storage tank (UST);
- evaluate current potential exposure pathways for contaminants found in soil and perched ground water at Site B; and
- evaluate the need for an interim remedial measure (IRM) to address soil and perched ground-water contamination at Site B.

The Supplemental Soil and Perched Ground-Water Investigation was scoped in a manner consistent with the investigations previously conducted by Roux Associates at the Citric Block Site and the Organics/Suciac Block, and was conducted in accordance with the Supplemental Soil and Perched Ground-Water Investigation Work Plan for Site B (Roux Associates, 1996b) and the Project Operations Plans contained in the New York State Department of Environmental Conservation (NYSDEC)-approved Citric Block Site Investigation and IRM Work Plan (Roux Associates, 1995). Data were also evaluated using the same approach used for the Citric Block and Organics/Suciac Block; i.e., soil quality data were evaluated to identify areas where soil may potentially be considered a hazardous waste. A key assumption to this approach is that the potential future use of Site B will be restricted to commercial/industrial.

This report presents the findings of the Supplemental Soil and Perched Ground-Water Investigation. The remainder of this report includes:

- Section 2.0 - contains an overview of pertinent background information and the results of the previous ESA conducted at Site B (Roux Associates, 1996a);

- Section 3.0 - contains a description of the scope of work performed during the Supplemental Soil and Perched Ground-Water Investigation;
- Section 4.0 - presents the results of the soil and perched ground-water sampling conducted during the Supplemental Soil and Perched Ground-Water Investigation;
- Section 5.0 - contains the limited risk assessment;
- Section 6.0 - contains a summary of findings and appropriate recommendations; and
- Section 7.0 - lists the references cited in this report.

2.0 BACKGROUND AND SETTING

Site B is located at 73-87 Gerry Street, between Harrison and Throop Avenues, in Brooklyn, New York (Figure 1). Specifically, Site B is located in the eastern portion of the Pfizer facility, and is bordered on the north by a poultry market and vacant land, a three-story apartment building, and an auto body garage and yard; on the south by Gerry Street; on the east by a portion of the autobody garage and yard, and a storage lot; and on the west by Harrison Avenue (Figure 2).

A detailed description of the Site history of Site B is presented in Section 2.1 of the Supplemental Soil and Perched Ground-Water Investigation Work Plan (Roux Associates, 1996b). In general, Site B was occupied by light commercial businesses (e.g., grocer, storage, garage) and residential buildings based on a review of Sanborn™ maps (Roux Associates, 1996a). Please note that manufacturing at Site B has never occurred.

Pfizer has decommissioned Site B, along with portions of the adjacent Organics/Suciac Block and Citric Block Site, to prepare these properties for future redevelopment and/or beneficial use. As part of this process, the Site B building has been demolished. The building demolition activities were completed by March 1, 1996. Presently, the reinforced concrete slab foundation is the only above ground remnant of the former building. The slab is continuous across half of Site B (eastern portion) and it varies in thickness from approximately 0.5 to 1.5 feet (ft). The western portion of Site B, currently being used by Arlington Press, Inc. as an employee parking lot, is covered with gravel (i.e., blue stone).

2.1 Previous Investigation

As part of the redevelopment of the Pfizer facility, Roux Associates conducted a limited ESA at Site B during March 1996. The objective of the ESA was to identify any environmental concerns associated with Site B that may present a hazard to human health or the environment. The results of the Site B ESA are reported in the document titled "Environmental Site Assessment on Site B" (Roux Associates, 1996a). A summary of the key findings and conclusions is provided below.

Site Inspection and Database Search Results

- Based on the review of the Sanborn™ Maps and aerial photographs available, Site B was occupied with residential buildings and commercial businesses from 1887 through 1935. In 1935, the eastern portion of the Site was occupied by a garage and several residential buildings, while the western portion of Site B was occupied by a dance hall, several residential buildings and a junk lot. By 1947, the eastern portion of Site B was occupied by the garage and a truck renting facility, while the western portion of Site B was vacant; all previously existing structures had been removed. In 1950, the truck renting facility was no longer present. The eastern portion of Site B was occupied by the garage from 1950 until it was demolished in February 1996. With the exception of a lumberyard from 1950 to 1951, the western portion of Site B remained vacant until February 1996 when it was made into a parking lot.

- Based on the regulatory agency (i.e., federal and state) database research provided by the Environmental Risk Information and Imaging Services (ERIIS) Property Record Report, with the exception of an Amoco Service Station located approximately 0.12 miles southwest of Site B, no facilities are considered to be of environmental concern to Site B. A gasoline spill from the Amoco Service Station occurred and was reported to the NYSDEC in the mid-1980s. A ground-water treatment system was in operation in the early 1990s to remove contaminated perched ground water and has since ceased operations.

- Based on the site inspection results, four areas of Site B were identified by Roux Associates for further investigation during the ESA. These areas included the vacant lot currently being used by Arlington Press, Inc. as an employee parking lot, the southwest portion of the concrete slab, the location of the former fuel oil UST, and the location of the former roof drain pipe.

Soil Quality Results

- Man-made fill underlies Site B to a depth of approximately 4 to 16 ft below land surface (bls) and typically consists of brown fine to coarse sand with varying amounts of silt, gravel, brick and concrete fragments. The man-made fill is underlain by low permeability clay with occasional fine to medium sand.

- Benzene, toluene, ethylbenzene and xylene (BTEX) were the only volatile organic compounds (VOCs) detected above the NYSDEC Recommended Soil Cleanup Objectives (RSCOs) in the soil samples collected from six soil borings drilled at Site B (i.e., SBB-01 through SBB-06). These VOCs were detected at concentrations exceeding the NYSDEC RSCOs at only one location (SBB-05). Since Soil Boring SBB-05 was located near the former fuel oil UST, the detections of BTEX in the soil sample from SBB-05 were compared to the NYSDEC Spill Technology And Remediation Series

(STARS) Memo #1, Petroleum-Contaminated Soil Guidance Policy (which is specifically used to determine the limits of petroleum-contaminated soil that may require remediation). The concentrations of BTEX detected in Soil Sample SBB-05 exceeded the NYSDEC STARS guidance.

- Six semivolatile organic compounds (SVOCs) (i.e., phenol, benzo[a]anthracene, chrysene, benzo[b]fluoranthene, benzo[a]pyrene and dibenzo[a,h]anthracene) were detected above the NYSDEC RSCOs in Site B soils. Of these six SVOCs, benzo(a)pyrene and dibenzo(a,h)anthracene were detected most frequently (i.e., 4 of 6 locations), and benzo(a)pyrene was detected at the highest concentration (1,500 micrograms per kilogram [µg/kg] in SBB-02). The maximum concentrations of five of the SVOCs occurred in SBB-02, which is located in the center of the western portion of Site B.

- Eleven Target Analyte List (TAL) metals were detected above the NYSDEC RSCOs in Site B soils. Chromium, iron, mercury and zinc were detected above the NYSDEC RSCOs at all six locations sampled.

Perched Ground-Water Results

- Perched ground water was encountered in the fill at all six ESA soil borings (i.e., SBB-01 through SBB-06). Depth to perched ground water was approximately 6 to 8 ft bls, consistent with depths to perched ground water measured on the adjacent Pfizer blocks. The thickness of the perched ground-water zone ranged from several inches to approximately three feet.

- Seven VOCs (1,2-dichloroethene, chloroform, styrene, and BTEX) were detected in perched ground-water samples collected at Site B. Xylene was present at the highest concentration (15,000 micrograms per liter [µg/L] in SBB-05). The maximum concentrations of all seven VOCs were detected at SBB-05, which is located near the former fuel oil UST.

- Seventeen SVOCs were detected in perched ground-water samples collected at Site B. Naphthalene was present at the highest concentration (1,900 µg/L in SBB-05). The maximum concentrations of 15 of the SVOCs were detected at SBB-02, which is located in the center of the western portion of Site B.

- Twenty-two TAL metals were detected in perched ground-water samples collected at Site B. The maximum concentrations of 18 metals were detected at SBB-02, which is located in the center of the western portion of Site B.

Based on the ESA results, data gaps were identified and the Supplemental Soil and Perched Ground-Water Investigation Work Plan (December 12, 1996) was prepared and implemented.

3.0 SCOPE OF WORK

The Supplemental Soil and Perched Ground-Water Investigation included the drilling of additional soil borings at Site B and the collection of soil and ground-water samples for laboratory analysis. The scope of work was performed in accordance with the Supplemental Soil and Perched Ground-Water Investigation Work Plan for Site B (Roux Associates, 1996b) and the Project Operations Plans contained in the NYSDEC-approved Citric Block Site Investigation and IRM Work Plan (Roux Associates, 1995).

The scope of work for the field work included:

- Task 1: Soil Boring and Sampling; and
- Task 2: Perched Ground-Water Sampling.

A summary of Tasks 1 and 2 is provided below.

3.1 Task 1: Soil Boring and Sampling

A total of 10 soil borings (SBB-07 through SBB-16) were drilled and sampled using the Geoprobe™ method at Site B. Additionally, the six ESA soil borings (SBB-01 through SBB-06) were redrilled (adjacent to the original location) and sampled using the Geoprobe™ method to evaluate current potential exposure pathways. The soil boring locations are shown in Figure 2.

At each soil boring location, soil samples were collected continuously at 2-ft intervals down to the perched ground water or the clay layer, whichever was encountered first. A portion of each sample was placed in a plastic Ziploc™ bag and screened in the field for VOCs using a photoionization detector (PID). Soil samples from the ESA soil borings (SBB-01 through SBB-06) were collected from only the 0 to 2 ft depth interval. Each soil sample was inspected by the field geologist to characterize lithology and any evidence of contamination (e.g., staining, odors). Soil boring and sampling procedures were employed in accordance with the Sampling and Analysis Plan provided in Appendix A of the Citric Block Site Investigation and IRM Work Plan (Roux Associates, 1995).

The soil sample collected from the 0 to 2 ft depth interval (i.e., immediately below the concrete slab or grass areas) and the soil sample that exhibited the highest degree of contamination (e.g., staining and odors) were selected for laboratory analysis from Soil Borings SBB-07 through SBB-16. However, if no impacts were discernible, the soil samples collected from the 0 to 2 ft depth interval and the 2 ft interval immediately above the perched ground water (if present) or clay layer were submitted for analysis.

The soil samples collected from the 0 to 2 ft depth interval from Soil Borings SBB-01 through SBB-13, and SBB-15 were analyzed for metals using the Superfund Contract Laboratory Program (CLP) Inorganics Methods. Additionally, soil samples collected from soil borings drilled adjacent to the former fuel oil UST (i.e., SBB-13 through SBB-16) were analyzed for BTEX according to the United States Environmental Protection Agency (USEPA) Method 8021, consistent with the NYSDEC STARS parameter list. Quality Assurance (QA) samples (e.g., field blanks, matrix spike) were collected for the above analyses.

Deeper soil samples (i.e., greater than 2 ft below the concrete slab or grass areas) collected from Soil Borings SBB-07 through SBB-13, and SBB-15 for laboratory analysis were analyzed for metals using the Superfund CLP Inorganics Methods. Additionally, deeper soil samples collected from Soil Borings SBB-13 through SBB-16 drilled adjacent to the former fuel oil UST were analyzed for BTEX (USEPA Method 8021) consistent with the NYSDEC STARS parameter list. QA samples (e.g., field blanks, matrix spike) were collected for the above analysis.

The location of each soil boring was surveyed for horizontal and vertical coordinates relative to the Brooklyn Datum by a New York State-licensed surveyor.

TCLP Testing

After completion of the Soil Borings SBB-01 through SBB-16, the soil analytical data were compared to the NYSDEC-approved, risk-based criteria for constituents of concern developed for the adjacent Citric Block Site. The NYSDEC-approved, risk-based criteria included antimony at 500 milligrams per kilogram (mg/kg), lead at 1,000 mg/kg and mercury at 100 mg/kg. Therefore, if any of these metals in the fill samples exceed the NYSDEC-approved, risk-based

criteria, the fill may be a hazardous waste. Based on this evaluation, Soil Borings SBB-02 (4 to 6 ft), SBB-03 (0 to 2 ft), SBB-05 (6 to 8 ft), SBB-07 (0 to 2 ft) and SBB-15 (6 to 7 ft) may be hazardous for lead (see Section 4.0). Soil samples were then collected from adjacent soil borings at the same depth interval (shown above) to determine the presence of characteristically-hazardous waste. The samples were analyzed for metals using the TCLP (Superfund CLP Inorganics Methods) and for total lead (USEPA Method 6000-7000). Each soil sample was collected in the same manner as described above.

Additionally, the soil analytical data in Soil Borings SBB-05 (6 to 8 ft), SBB-13 (6 to 7 ft), SBB-14 (6 to 7 ft) and SBB-16 (6 to 7 ft) contains concentrations of VOCs that may be a hazardous waste (see Section 4.0). Soil samples were then collected from adjacent soil borings at the same depth interval (shown above) to determine the presence of characteristically-hazardous waste. The samples were analyzed for VOCs using the TCLP (USEPA Method 8021). Each soil sample was collected in the same manner as described above.

3.2 Task 2: Perched Ground-Water Sampling

An attempt was made to collect perched ground water from Soil Borings SBB-07 through SBB-16 using the Geoprobe™ method. The perched ground-water samples were collected using a slotted drive-point sampler threaded to the hollow steel rods of the Geoprobe™. The sampler and rods were then inserted into the open borehole to the desired depth. Dedicated polyethylene tubing equipped with a check-valve was then inserted into the hollow rod and sampler. Once the bottom of the tubing was at the desired depth for sampling, a vacuum pump was attached to the discharge end of the tubing and the sample was collected.

The perched ground-water samples collected from Soil Borings SBB-07 through SBB-13, and SBB-15 were analyzed for metals (filtered and unfiltered) using the Superfund CLP Inorganics Methods. Additionally, the perched ground-water samples collected from Soil Borings SBB-13 through SBB-16 adjacent to the former fuel oil UST were analyzed for VOCs using USEPA Method 8021 (NYSDEC STARS parameter list).

4.0 RESULTS OF THE SUPPLEMENTAL SOIL AND PERCHED GROUND-WATER INVESTIGATION

The results of the Supplemental Soil and Perched Ground-Water Investigation are summarized below, and including discussions of Site-specific hydrogeology, soil quality and perched ground-water quality.

4.1 Site Hydrogeologic Data

Subsurface geologic data developed during the Site B Supplemental Soil and Perched Ground-Water Investigation are consistent with the data developed during the ESA (Roux Associates, 1996a) and in other parts of the Pfizer Williamsburg facility (Roux Associates, 1995). Specifically, a layer of man-made fill was encountered immediately beneath Site B at all soil boring locations sampled during both the ESA and the Supplemental Soil and Perched Ground-Water Investigation. The thickness of the man-made fill encountered during the Supplemental Soil and Perched Ground-Water Investigation ranged from approximately 7 to 11 ft, and typically consisted of black to brown coarse sand, with some silt and minor amounts of gravel. The fill also contained varying amounts of bricks, cinders and concrete. Geologic logs for all soil borings drilled on Site B are provided in Appendix A.

During the soil boring and sampling at Site B, the same low permeability clay layer that was observed beneath the fill at the Citric Block Site and beneath other portions of the Pfizer Williamsburg facility was encountered in all 10 borings (Appendix A), at depths ranging from approximately 7 to 11 ft bls. The soil boring data indicate that the clay layer is continuous beneath Site B.

Hydraulic conductivities calculated for the clay layer beneath the adjacent Citric Block Site ranged from 2.87×10^{-7} to 1.80×10^{-6} centimeters per second (Roux Associates, 1997a). The low permeability of the clay is consistent with published information (Walton, 1991) and previous permeability data developed for the clay layer at other parts of the Pfizer Williamsburg facility (Roux Associates, 1996c and 1997a). These data confirm that the clay layer acts as an effective confining unit, thereby precluding any downward migration of contaminants from the fill/perched ground-water zone to the underlying Upper Glacial aquifer. Perched ground water was

encountered in each deep soil boring sampled during the Supplemental Soil and Perched Ground-Water Investigation, and ranged in thickness from several inches to approximately four feet (Appendix A).

4.2 Soil Quality Results

Soil quality conditions were evaluated at Site B. It is important to note that all soil samples were collected from the fill underlying Site B, and not from natural indigenous soils. Therefore, the soil data are representative of the quality of fill and not of the deeper, naturally occurring low permeable sediments (clay) of the former Wallabout Creek. Soil quality data for metals were compared to the NYSDEC RSCOs for soil (NYSDEC, 1994), while the VOC soil analytical data were compared to the NYSDEC STARS guidance values (NYSDEC, 1992). Additionally, soil-quality data developed using the TCLP test were compared to the United States Environmental Protection Agency Toxicity Characteristic Levels (40 CFR 261.24). Soil-quality results are provided in Tables 1 through 4.

A summary of the soil quality conditions beneath Site B is provided below.

4.2.1 Metals

During the Supplemental Soil and Perched Ground-Water Investigation, 22 of the 23 TAL metals were detected in the fill at Site B (Table 1). Of the 22 metals detected, 16 were detected at concentrations exceeding NYSDEC RSCOs (Table 1 and Figure 3). However, mercury concentrations in fill detected at Site B are significantly lower than those mercury concentrations detected at other Pfizer blocks, which is consistent with Site B not being used for manufacturing purposes.

The metals concentrations detected in fill at Site B were compared to metal background concentrations in fill. The results indicate that the metals concentrations in fill detected at Site B are generally consistent with metals background concentrations, which are consistent with Site B not being used for manufacturing purposes. Please note that lead concentrations (even those greater than 1,000 mg/kg) detected in fill at Site B are consistent with background concentrations, and reflect regional conditions.

The soil quality results of the Site B soil borings were further evaluated in the same manner as the data generated on the Citric Block Site during the Citric Block Site Investigation and IRM (Roux Associates, 1995). Specifically, the soil quality data were evaluated to determine if a hazardous waste may possibly be present based upon the total concentration data. Once these potential hazardous waste "hot spots" are identified, toxicity characteristic leaching procedure (TCLP) testing of these "hot spots" was performed to positively confirm if hazardous waste is present.

The total concentrations of metals were compared against the NYSDEC-approved, risk-based criteria developed for the adjacent Citric Block Site. The NYSDEC-approved, risk criteria includes antimony at 500 milligrams per kilogram (mg/kg), lead at 1,000 mg/kg and mercury at 100 mg/kg. Therefore, if the total concentrations of these metals exceed the NYSDEC-approved, risk-based criteria, then a hazardous waste may be present. The metals results (Table 1) indicate that three soil borings (i.e., SBB-03, 0 to 2 ft; SBB-07, 0 to 2 ft; and SBB-15, 6 to 7 ft) contain fill with total concentrations that exceed the risk-based criteria for lead (1,000 mg/kg), and may possibly be a characteristic hazardous waste. Additionally, metals results from the ESA (Roux Associates, 1996a) indicate that two soil borings (i.e., SBB-02, 4 to 6 ft and SBB-05, 6 to 8 ft) contain fill with total concentrations that exceed the risk-based criteria for lead, and may possibly be a characteristic hazardous waste.

The fill from these five soil samples were tested using the TCLP to determine if a characteristic hazardous waste was present. The TCLP results indicate that the metals detected were below the regulatory levels; therefore, the fill is nonhazardous (Table 2). Based on the TCLP results, no further sampling is necessary.

4.2.2 VOCs

VOCs (i.e., total analysis) were detected at all four of the soil borings drilled in the vicinity of the former UST area, but generally only in the deeper samples (Table 3). At two of the four borings (SBB-14 and SBB-16), no VOCs were detected in the surficial (0 to 2 ft) soil sample, while the surficial soil samples from the other two borings (SBB-13 and SBB-15) contained only low

concentrations of three and four VOCs, respectively (Figure 4). Moreover, none of these VOCs were detected at concentrations exceeding their respective NYSDEC STARS soil guidance values (Table 3 and Figure 5).

Three of the four deeper samples (SBB-13, SBB-14, and SBB-16) contained numerous petroleum-related VOCs, all at concentrations exceeding their respective NYSDEC STARS soil guidance values (Table 3 and Figure 5). The fourth deeper sample, SBB-15, contained only three VOCs, none that were detected at concentrations exceeding the NYSDEC STARS soil guidance values. These findings indicate that the soils in the vicinity of the former UST area may potentially be considered a Resource Conservation and Recovery Act (RCRA) characteristic hazardous waste and confirmatory TCLP testing was performed.

The fill from the samples in the vicinity of the former UST area was tested using the TCLP to determine if a characteristic hazardous waste was present. The TCLP results indicate that the VOCs were below the regulatory levels; therefore, the fill is nonhazardous (Table 4). Based on the TCLP results, no further sampling is necessary.

4.3 Perched Ground-Water Quality

Subsurface geologic data developed from drilling 16 soil borings during the Supplemental Soil and Perched Ground-Water Investigation indicate that a thin zone of ground water, perched above the low permeability clay layer, occurs in the fill material beneath Site B. The occurrence of this thin perched ground-water zone is defined by the hummocky topography of the underlying clay. The hummocky topography of the clay layer surface may preclude the flow of perched ground water between the various zones of saturation in the fill beneath Site B.

Tables 5 and 6 summarize the perched ground-water analytical data for metals (filtered and unfiltered) and VOCs, respectively.

A summary of the perched ground-water quality data is provided below.

4.3.1 Metals

During the Supplemental Soil and Perched Ground-Water Investigation, 22 of the 23 TAL metals were detected in unfiltered samples (i.e., total metals) of perched ground water collected at Site B, while 18 of the 23 metals were detected in filtered samples (i.e., dissolved metals). Results are provided in Table 5 and Figure 6. Dissolved metals concentrations were significantly lower than the concentrations of total metals. The higher concentrations of metals in the unfiltered ground-water samples are considered reflective of the abundance of suspended sediment in the water samples. The results of metals in perched ground water are consistent with the results of metals (i.e., types) detected in the fill material beneath Site B and at other parts of the Pfizer Williamsburg facility.

4.3.2 VOCs

VOCs were detected in perched ground water at all four borings (SBB-13 through SBB-16) drilled in the vicinity of the former UST area (Table 6 and Figure 7). Xylene was detected at the greatest concentration of any of the VOCs detected. These results are consistent with the ESA perched ground-water quality in the vicinity of the former UST.

The extent of VOCs in perched ground water has not been delineated, yet appears to be limited to the vicinity of the former UST. Moreover, the high concentrations of VOCs detected in the perched ground water at Site B could be problematic with respect to vapors should the future-use structures contain basements. The PID screening for VOCs from all soil borings at Site B indicated that high readings were limited to those soil borings in the vicinity of the former UST (Appendix A).

5.0 LIMITED RISK ASSESSMENT (LRA)

The objective of the LRA was to evaluate potential current and future risks, if any, to workers associated with the presence of chemicals in fill at Site B. This LRA considers both occupational and construction exposure scenarios. The approach adopted for the LRA follows the risk assessment methodology developed by the USEPA, as described in Risk Assessment Guidance for Superfund. Volume I. Human Health Evaluation Manual (RAGS) (USEPA, 1989).

The results of the LRA indicate that the presence of metals at the concentrations determined during the ESA and Supplemental Soil and Perched Ground-Water Investigation do not pose a current or future risk under occupational or construction scenarios. A discussion of the selection of chemicals of potential concern and exposure considerations of the LRA is provided below.

5.1 Selection of Chemicals of Potential Concern

Soil samples (including those collected during the ESA) were collected from Site B and analyzed for the presence of one or more of the following analytical suites:

- VOCs;
- SVOCs; and
- metals.

The analytical data generated from this sampling effort were addressed according to the procedures described in RAGS (USEPA, 1989).

Four surface soil samples (i.e., 0-2 ft interval) were analyzed for the presence of VOCs and the maximum concentrations of all VOCs detected in these samples were below their respective NYSDEC RSCOs. No surface soil samples were analyzed for the presence of SVOCs. Among the 15 surface soil samples analyzed for the presence of metals, 16 metals were identified as having maximum concentrations in one of more samples exceeding the NYSDEC RSCOs. The metals were:

- aluminum;
- arsenic;
- barium;
- beryllium;
- calcium;
- chromium;
- cobalt;
- copper;
- iron;
- lead;
- magnesium;
- manganese;
- mercury;
- nickel;
- selenium; and
- zinc.

Although beryllium had a maximum concentration in surface fill exceeding its NYSDEC RSCO, beryllium was not considered quantitatively based on a comparison to previously collected off-site background samples. The arithmetic mean background concentration of beryllium in fill was 0.98 mg/kg. Potential risks associated with exposure to beryllium were not considered since the 95 percent upper confidence unit (UCL) concentration of beryllium in surface fill at Site B was not significantly different from the background concentration (*i.e.*, the 95 percent UCL concentration of beryllium at Site B is 1.1 mg/kg compared to a concentration of 0.98 mg/kg for beryllium in background samples).

RAGS (USEPA, 1989) states that compounds that are essential human nutrients, such as calcium, iron and magnesium, need not be considered further in the quantitative risk assessment. Therefore, these compounds were not quantitatively evaluated in the risk assessment.

Among the subsurface soil samples (i.e., 0-8 ft interval) analyzed for the presence of VOCs, 12 compounds were identified with maximum concentrations exceeding their respective NYSDEC RSCOs and/or STARS concentrations in one or more samples. These compounds were:

- benzene;
- n-butylbenzene;
- sec-butylbenzene;
- isopropylbenzene;
- n-propylbenzene;
- copper;
- 1,3,5-trimethylbenzene;
- 1,2,4-trimethylbenzene;
- ethylbenzene;
- toluene;
- p-isopropyltoluene; and
- xylene.

Among the subsurface soil samples (i.e., 0-8 ft interval) analyzed for the presence of SVOCs, seven compounds were identified with maximum concentrations exceeding their respective NYSDEC RSCOs in one or more samples. The SVOCs were:

- benzo(a)anthracene;
- benzo(a)pyrene;
- benzo(b)fluoroanthene;
- chrysene;
- dibenzo(a,h)anthracene;
- naphthalene; and
- phenol.

Sixteen metals were identified with maximum concentrations exceeding the NYSDEC RSCOs in one or more subsurface soil samples. These metals were:

- aluminum;
- arsenic;
- barium;
- beryllium;
- calcium;
- chromium;
- cobalt
- copper;
- iron;
- lead;
- magnesium;
- manganese;
- mercury;
- nickel;
- selenium; and
- zinc.

Based on a comparison to background concentrations, beryllium present in subsurface soil samples was not evaluated quantitatively in this LRA. As stated previously, calcium, iron and magnesium were not evaluated quantitatively since these elements are considered essential nutrients (USEPA, 1989).

5.2 Potential Exposure Considerations

Although a reinforced concrete slab (approximately 0.5 to 1.5 ft in thickness) covers half of the Site, the remainder of the Site is covered with gravel. Thus, there is limited potential for persons working at Site B to come into contact with chemicals present in the surface soils. Future development at Site B may necessitate intrusion into subsurface soils, including the temporary removal and/or penetration of portions of the concrete slab to allow for installation or repair of utility lines. Thus, both occupational and construction exposure scenarios were developed to evaluate potential risks, if any, to personnel working at Site B.

Table 9 presents the estimated potential risks for the construction scenario. The estimated ILCRs for the carcinogenic compounds range from a minimum of 7.5E-11 for exposure to chrysene to a maximum of 8.6E-8 for exposure to benzo(a)pyrene (Table 9). These ILCRs are significantly below *de minimis* (1E-6) risk, indicating that workers engaged in construction activities are not expected to experience any excess (above background) cancer risk resulting from exposure to chemicals in Site B fill. The HQs for the noncarcinogenic compounds range from a minimum of 5.9E-6 for exposure to phenol to a maximum of 1.2E-2 for exposure to arsenic treated as a noncarcinogen. These HQs are significantly below a value of one, indicating that, according to the given exposure conditions, workers engaged in construction activities are not expected to experience an increased incidence of noncarcinogenic health effects. Table 10 presents the potential blood lead concentration for adult workers based on exposure to the 95 percent UCL concentration of lead in the subsurface fill. The maximum predicted potential blood lead concentration for an adult is 16 μg/dL, which corresponds to the 99th percentile exposure (Table 10). This potential blood lead concentration is well below the OSHA-recommended threshold blood lead concentrations of 30 μg/dL for workers intending to have children. Thus, construction workers at Site B are not expected to experience an increased incidence of lead-related adverse health effects.

6.0 SUMMARY OF FINDINGS AND RECOMMENDATIONS

A brief summary of the findings and recommendations is provided below.

Soil Quality Results

- Man-made fill underlies Site B to a depth of approximately 7 to 11 ft bls and typically consists of black to brown coarse sand, with some silt and minor accounts of gravel. The fill also contained varying amounts of bricks, cinders, and concrete. The man-made fill is underlain by low permeable clay with occasional fine to medium sand.

- Twenty-two of 23 metals were detected in fill at Site B, while 16 of the 22 metals detected exceeded the NYSDEC RSCOs. The results also indicate that the metals concentrations in fill detected at Site B are generally consistent with metals background concentrations, having lower concentrations than other locations at the Pfizer facility, which are consistent with Site B not being used for manufacturing purposes.

- The total concentrations of metals detected in fill were compared against the NYSDEC-approved, risk-based criteria. The results indicate that three soil borings (SBB-03, 0 to 2 ft; SBB-07, 0 to 2 ft; and SBB-15, 6 to 7 ft) from the Supplemental Soil and Perched Ground-Water Investigation and two soil borings (SBB-02, 4 to 6 ft and SBB-05, 6 to 8 ft) from the ESA contain fill with total concentrations that exceed the risk-based criteria for lead, and may be a characteristic hazardous waste.

- VOCs in surficial soil (0 to 2 ft) at Site B were either not detected or detected below the NYSDEC STARS guidance values. Three of the four deeper soil samples (SBB-13, SBB-14 and SBB-16) contained numerous VOCs that exceed the NYSDEC STARS guidance values. The concentrations of VOCs in the deep fill samples indicate that the fill may be a characteristic hazardous waste.

TCLP Sampling Results

- The metals results indicate that five soil borings (i.e., SBB-02, SBB-03, SBB-05, SBB-07 and SBB-15) contain fill that may be a characteristic hazardous waste. The fill form the five soil borings were tested using the TCLP, and the results indicate that the fill is nonhazardous. Therefore, no further sampling is necessary.

- The VOC results indicate that four soil borings (i.e., SBB-05, SBB-13, SBB-14 and SBB-16) contain fill that may be a characteristic hazardous waste. The fill form the four soil borings were tested using the TCLP, and the results indicate that the fill is nonhazardous. Therefore, no further sampling is necessary.

Perched Ground-Water Results

- Perched ground water was encountered in all Supplemental Soil and Perched Ground-Water Investigation soil borings. Depth to perched ground water was approximately 6 to 8 ft bls, consistent with depths to perched ground water measured during the ESA and on adjacent Pfizer blocks. The thickness of the perched ground water ranged from several inches to approximately four feet.

- Twenty-two of 23 metals were detected in unfiltered perched ground-water samples at Site B, while 18 of the 23 metals were detected in the filtered samples.

- Dissolved (filtered) metals concentrations were significantly lower than the concentrations of total metals (unfiltered). The higher concentrations of metals in the unfiltered ground-water samples are considered reflective of the abundance of suspended sediment in the water samples.

- VOCs were detected in perched ground water at all four borings drilled in the vicinity of the former UST area (SBB-13 through SBB-16). Xylene was detected at the greatest concentration of any of the VOCs detected.

Limited Risk Assessment

The results of the LRA indicate that the presence of chemicals at the concentrations detected in fill at Site B do not pose a current or future risk under occupational or construction scenarios.

Recommendations

Even though no hazardous waste was determined at Site B based on TCLP testing, Pfizer plans, as an added safety measure, to remove petroleum-contaminated fill located within an approximate 10 ft radius in the vicinity of Soil Borings SBB-13, SBB-14 and SBB-16. To support this work, Roux Associates would prepare a work plan (consistent with those prepared for other Pfizer blocks) for submittal to the NYSDEC.

Respectfully Submitted,

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Table 1. Summary of Metals Detected in Soil, Site B, Pfizer Inc, Brooklyn, New York.

Parameter (Concentrations in mg/kg)	NYSDEC RSCOs (mg/kg)	Sample Designation:	SBB-01	SBB-02	SBB-02/R	SBB-03	SBB-04	SBB-05
		Sample Depth (ft bls):	0-2	0-2	0-2	0-2	0-2	0-2
		Sample Date:	4/15/97	4/15/97	4/15/97	4/15/97	4/21/97	4/17/97
Aluminum	5,410		6,940	5,980	5,490	6,270	6,500	6,800
Antimony	13.4 U (b)		0.59 U	0.67 B	0.50 U	5.4 B	0.71 BN	0.70 U
Arsenic	7.5		**8.2 N**	**8.0 N**	**8.3 N**	**23.2 N**	5.3 N	3.4
Barium	340		259	332	**425**	**465**	74.4	80.5
Beryllium	0.16		**0.56 B**	**0.44 B**	**0.40 B**	**0.49 B**	**0.48 B**	**0.40 B**
Cadmium	1		0.20 UN	0.40 BN	0.36 BN	0.22 UN	0.20 UN	0.23 U
Calcium	15,600		13,200	10,700	12,600	13,800	**30,300**	**23,600**
Chromium	15.4		15.2	**16.4**	14.7	**21.9**	12.8	**17.0**
Cobalt	30		7.1 B	6.8 B	6.2 B	7.5 B	5.0 B	5.6 B
Copper	50.2		**357 N**	**168 N**	**154 N**	**188 N**	**58.5 ***	**81.2**
Iron	14,700		**16,000**	**15,100**	14,200	**28,200**	**16,300**	14,000
Lead	1,380		319	732	812	**2,840**	136 *	191
Magnesium	2,670		**2,820**	**4,210**	**3,760**	2,280	2,650	**2,790**
Manganese	336		**395 N**	298 N	284 N	**630 N**	254 N*	277
Mercury	0.1		**0.86 ***	**1.9 ***	**1.6 ***	**5.2 ***	**9.2**	**1.2 ***
Nickel	14.4		**15.6**	**17.2**	**15.6**	**20.7**	11.9	12.4
Potassium	43,000 (a)		536 BE	1,190 E	967 E	731 BE	894 B	913 BE
Selenium	2.2		1.8	2.1	1.8	**2.9**	1.7	1.5
Silver	2.2 U (b)		0.20 U	0.17 U	0.16 U	0.80 B	0.20 U	0.23 U
Sodium	8,000 (a)		126 BE	202 BE	204 BE	289 BE	546 B	246 BE
Thallium	2.2 U (b)		0.59 U	0.52 U	0.50 U	0.65 U	0.62 U	0.70 U
Vanadium	150		25.8	23.8	22.4	25.0	21.5	19.4
Zinc	337		326	**608**	**546**	**534**	73.1 *	65.4

U - Indicates compound was analyzed for but not detected
B - Estimated value
N - Spiked sample recovery not within control limits
E - Reported value is estimated due to the presence of interference
* - Duplicate analysis not within control limits
NYSDEC RSCOs - New York State Department of Environmental Conservation Recommended Soil Cleanup Objectives
mg/kg - Milligrams per kilogram
ft bls - Feet below land surface
(a) - Eastern USA Background Concentrations
(b) - Practical Quantitation Limit used for Site Background Concentration
Bold - Data highlighted in bold represent results detected above the NYSDEC RSCOs

Table 1. Summary of Metals Detected in Soil, Site B, Pfizer Inc, Brooklyn, New York.

Parameter (Concentrations in mg/kg)	NYSDEC RSCOs (mg/kg)	Sample Designation:	SBB-06	SBB-07	SBB-07	SBB-08	SBB-08	SBB-09
		Sample Depth (ft bls):	0-2	0-2	6-7.5	0-2	8-9	0-2
		Sample Date:	4/22/97	4/15/97	4/15/97	4/15/97	4/15/97	4/21/97
Aluminum	5,410		6,060	8,130	15,300	10,200	6,990	6,590
Antimony	13.4 U (b)		0.56 UN	5.8 B	0.69 U	0.58 U	0.52 U	0.70 BN
Arsenic	7.5		4.8	14.2 N	3.1 N	13.4 N	4.0 N	14.3
Barium	340		535	577	82.7	434	148	519
Beryllium	0.16		0.28 B	4.0	0.98 B	1.1	0.44 B	0.60 B
Cadmium	1		0.19 UN	0.21 UN	0.23 UN	0.19 UN	0.17 UN	0.18 UN
Calcium	15,600		47,200	14,600	3,230	41,400	22,400	12,400
Chromium	15.4		16.0	52.3	29.8	34.6	17.7	20.4
Cobalt	30		3.9 B	38.9	14.1	10.8	6.6 B	5.8 B
Copper	50.2		36.0	661 N	53.9 N	174 N	26.0 N	82.5 *
Iron	14,700		12,700	39,700	25,000	22,600	19,000	21,900
Lead	1,380		281	1,230	18.7	256	107	809 *
Magnesium	2,670		2,780	3,070	10,800	8,540	3,320	4,370
Manganese	336		183	1,380 N	500 N	2,260 N	343 N	947 N*
Mercury	0.1		1.8	1.8 *	0.88 *	0.26 *	0.48 *	0.68
Nickel	14.4		13.1	76.6	72.8	26.4	16.1	17.6
Potassium	43,000 (a)		882 B	769 BE	3,710 E	1,330 E	1,650 E	706 B
Selenium	2.2		1.6	3.2	1.9	2.1	1.6	2.3
Silver	2.2 U (b)		0.19 U	0.21 U	0.23 U	0.19 U	0.17 U	0.18 U
Sodium	8,000 (a)		444 B	963 BE	197 BE	796 BE	226 BE	221 B
Thallium	2.2 U (b)		0.56 U	0.63 U	0.69 U	0.58 U	0.52 U	0.54 U
Vanadium	150		13.8	26.6	48.1	40.2	25.4	30.2
Zinc	337		354	4,700	159	667	107	442 *

U - Indicates compound was analyzed for but not detected
B - Estimated value
N - Spiked sample recovery not within control limits
E - Reported value is estimated due to the presence of interference
* - Duplicate analysis not within control limits
NYSDEC RSCOs - New York State Department of Environmental Conservation Recommended Soil Cleanup Objectives
mg/kg - Milligrams per kilogram
ft bls - Feet below land surface
(a) - Eastern USA Background Concentrations
(b) - Practical Quantitation Limit used for Site Background Concentration
Bold - Data highlighted in bold represent results detected above the NYSDEC RSCOs

Table 1. Summary of Metals Detected in Soil, Site B, Pfizer Inc, Brooklyn, New York.

Parameter (Concentrations in mg/kg)	NYSDEC RSCOs (mg/kg)	Sample Designation:	SBB-09	SBB-10	SBB-10	SBB-11	SBB-11	SBB-12
		Sample Depth (ft bls):	9-11	0-2	8-10	0-2	6-8	0-2
		Sample Date:	4/21/97	4/21/97	4/21/97	4/22/97	4/22/97	4/22/97
Aluminum	5,410		**6,980**	**7,290**	5,340	**7,870**	**7,240**	4,650
Antimony	13.4 U (b)		0.52 UN	1.2 BN	0.56 UN	0.61 UN	1.4 BN	0.75 BN
Arsenic	7.5		**8.5**	5.8	2.3	6.7	**10**	**9.3**
Barium	340		**1,950**	287	199	149	80.6	**771**
Beryllium	0.16		**0.69 B**	**0.42 B**	**0.38 B**	**0.53 B**	**0.50 B**	**0.29 B**
Cadmium	1		0.17 UN	0.18 UN	0.18 UN	0.20 U	0.20 U	0.18 U
Calcium	15,600		**47,400**	**31,100**	4,290	**16,800**	**19,300**	**53,100**
Chromium	15.4		**22.6**	12.0	13.0	**17.6**	**20.8**	14.3
Cobalt	30		5.8 B	5.0 B	5.4 B	6.1 B	4.0 B	4.0 B
Copper	50.2		**53.1** *	34.4 *	14.2 *	47.4	**100**	44.2
Iron	14,700		**21,900**	**16,400**	13,700	**19,800**	**15,400**	12,400
Lead	1,380		818 *	343 *	174 *	570	316	842
Magnesium	2,670		**4,280**	**3,070**	2,010	**2,720**	2,060	**2,690**
Manganese	336		274 N*	263 N*	313 N*	330	131	208
Mercury	0.1		**1.5**	**2.4**	**0.12**	**3.8**	**0.76**	**14.4**
Nickel	14.4		**28.2**	10.5	13.3	13.4	10.2	10.6
Potassium	43,000 (a)		1,190	962	603 B	1,360	620 B	857 B
Selenium	2.2		**2.4**	**2.3**	1.7	2.1	1.9	2.0
Silver	2.2 U (b)		0.17 U	0.18 U	0.18 U	0.20 U	0.20 U	0.18 U
Sodium	8,000 (a)		367 B	374 B	108 B	385 B	239 B	346 B
Thallium	2.2 U (b)		0.52 U	0.54 U	0.56 U	0.61 U	0.61 U	0.55 U
Vanadium	150		23.0	17.0	20.5	27.8	24.0	15.9
Zinc	337		**714** *	208 *	205 *	192	126	**465**

U - Indicates compound was analyzed for but not detected
B - Estimated value
N - Spiked sample recovery not within control limits
E - Reported value is estimated due to the presence of interference
* - Duplicate analysis not within control limits
NYSDEC RSCOs - New York State Department of Environmental Conservation Recommended Soil Cleanup Objectives
mg/kg - Milligrams per kilogram
ft bls - Feet below land surface
(a) - Eastern USA Background Concentrations
(b) - Practical Quantitation Limit used for Site Background Concentration
Bold - Data highlighted in bold represent results detected above the NYSDEC RSCOs

Table 1. Summary of Metals Detected in Soil, Site B, Pfizer Inc, Brooklyn, New York.

Parameter (Concentrations in mg/kg)	NYSDEC RSCOs (mg/kg)	Sample Designation:	SBB-12	SBB-13	SBB-13	SBB-15	SBB-15
		Sample Depth (ft bls):	6-8	0-2	6-7	0-2	6-7
		Sample Date:	4/22/97	4/17/97	4/17/97	4/17/97	4/17/97
Aluminum	5,410		5,240	4,990	10,100	5,760	5,110
Antimony	13.4 U (b)		1.9 BN	0.62 U	0.64 U	0.98 B	8.0 B
Arsenic	7.5		11.2	6.4	5.1	5.8	21.3
Barium	340		346	159	96.6	88.6	291
Beryllium	0.16		0.31 B	0.29 B	0.47 B	0.24 B	0.32 B
Cadmium	1		0.20 U	0.20 U	0.21 U	0.56 B	0.20 U
Calcium	15,600		41,000	50,400	55,100	40,000	6,330
Chromium	15.4		11.1	9.3	16.1	21.4	39.3
Cobalt	30		8.2 B	3.0 B	5.5 B	4.1 B	5.2 B
Copper	50.2		109	35.8	34.6	197	344
Iron	14,700		22,600	7,040	14,800	9,780	13,200
Lead	1,380		807	288	119	603	1,080
Magnesium	2,670		2,000	3,020	16,600	2,890	739 B
Manganese	336		225	110	742	214	142
Mercury	0.1		2.5	0.59 *	0.34 *	3.3 *	0.44 *
Nickel	14.4		16.0	8.6	14.0	11.2	13.0
Potassium	43,000 (a)		947 B	680 BE	979 BE	738 BE	566 BE
Selenium	2.2		2.6	1.5	1.3	1.5	2.0
Silver	2.2 U (b)		0.20 U	0.20 U	0.21 U	0.22 U	0.50 B
Sodium	8,000 (a)		473 B	423 BE	359 BE	428 BE	397 BE
Thallium	2.2 U (b)		0.59 U	0.62 U	0.64 U	0.65 U	0.61 U
Vanadium	150		26.4	8.8 B	24.3	15.5	23.6
Zinc	337		667	91	49.8	111	242

U - Indicates compound was analyzed for but not detected
B - Estimated value
N - Spiked sample recovery not within control limits
E - Reported value is estimated due to the presence of interference
* - Duplicate analysis not within control limits
NYSDEC RSCOs - New York State Department of Environmental Conservation Recommended Soil Cleanup Objectives
mg/kg - Milligrams per kilogram
ft bls - Feet below land surface
(a) - Eastern USA Background Concentrations
(b) - Practical Quantitation Limit used for Site Background Concentration
Bold - Data highlighted in bold represent results detected above the NYSDEC RSCOs

Table 2. Summary of Metals Detected in Soil Using the Toxicity Characteristic Leaching Procedure, Pfizer Inc, Site B, Brooklyn, New York.

Parameter (Concentrations in µg/L)	Regulatory Levels (µg/L)	Sample Designation:	SBB-2	SBB-3	SBB-5	SBB-7	SBB-15
		Sample Depth (ft bls):	4-6	0-2	6-8	0-2	6-7
		Sample Date:	4/15/97	4/15/97	4/17/97	4/15/97	4/17/97
Aluminum	--		175 B	533	209	680	475
Antimony	--		3.0 U	3.3 B	14.5 B	3.0 U	3.0 U
Arsenic	5,000		6.8 B	39.7	15.3	10.5	7.2 B
Barium	100,000		288	539	362	1,180	420
Beryllium	--		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Cadmium	1,000		1.3 B	6.0	1.0 U	23.4	2.3 B
Calcium	--		33,400	69,800	69,100	503,000	427,000
Chromium	5,000		2.2 B	8.5 B	8.7 B	3.1 B	7.5 B
Cobalt	--		1.0 U	1.2 B	1.1 B	57.1	28.2 B
Copper	--		40.1	58.4	198	385	23.1 B
Iron	--		108	99.5 B	67.0 B	4,370	144.0
Lead	5,000		58.6	183	59.3	4,840	1,030
Magnesium	--		4,520 B	1,610 B	6,720	6,410	16,900
Manganese	--		91.0	83.9	91.0	3,980	1,790
Mercury	200		2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Nickel	--		8.0 B	15.0 B	5.9 B	50.7	30.5 B
Potassium	--		7,460	6,810	27,600	7,370	19,100
Selenium	1,000		17.1	16.0	17.2	14.5	16.5
Silver	5,000		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Sodium	--		217,000	219,000	221,000	214,000	220,000
Thallium	--		3.0 U	3.0 U	3.0 U	3.0 U	3.0 U
Vanadium	--		1.0 U	3.3 B	2.4 B	1.0 U	1.0 U
Zinc	--		326	3,900	357	6,680	1,070

µg/L - Micrograms per liter
U - Indicates compound was analyzed for but not detected
B - Estimated value
ft bls - Feet below land surface
-- - No Regulatory Level available

Table 3. Summary of Volatile Organic Compounds Detected in Soil, Site B, Pfizer Inc, Brooklyn, New York.

Parameter (Concentrations in µg/kg)	NYSDEC STARS Soil Guidance Values (µg/kg)	Sample Designation: SBB-13 Sample Depth (ft bls): 0-2 Sample Date: 4/17/97	SBB-13 6-7 4/17/97	SBB-14 0-2 4/17/97	SBB-14 6-7 4/17/97	SBB-15 0-2 4/17/97	SBB-15 6-7 4/17/97	SBB-16 0-2 4/17/97
Benzene	14.0	11	2,500 U	1.0 U	**1,300 JB**	1.0 U	5.0 U	1.0 U
Toluene	100	6.1	**7,500**	1.0 U	**20,000 B**	1.0 U	5.0 U	1.0 U
Ethylbenzene	100	1.0 U	**11,000**	1.0 U	**72,000 B**	1.0 U	5.0 U	1.0 U
M/P Xylenes	100	3.6	**60,000 E**	1.0 U	**290,000 BE**	2.4	5.0 U	1.0 U
O-Xylene	100	1.0 U	**22,000 E**	1.0 U	**26,000 BC**	1.0 U	5.0 U	1.0 U
Isopropylbenzene	100	1.0 U	**3,400**	1.0 U	**22,000 B**	1.0 U	5.0 U	1.0 U
n-Propylbenzene	100	1.0 U	**6,700**	1.0 U	**33,000 B**	1.0 U	5.0 U	1.0 U
1,3,5-Trimethylbenzene	100	1.0 U	**23,000 E**	1.0 U	**49,000 BCE**	7.4	18	1.0 U
Tert-Butylbenzene	100	1.0 U	2,500 U	1.0 U	5,000 U	1.0 U	5.0 U	1.0 U
1,2,4-Trimethylbenzene	100	1.0 U	**61,000 E**	1.0 U	**210,000 BE**	9.8	13	1.0 U
Sec-Butylbenzene	100	1.0 U	2,500 U	1.0 U	**4,100 JB**	1.0 U	5.0 U	1.0 U
P-Isopropyltoluene	100	1.0 U	2,500 U	1.0 U	**2,400 JB**	1.0 U	5.0 U	1.0 U
n-Butylbenzene	100	1.0 U	**33,000 E**	1.0 U	**45,000 BCE**	7.8	67	1.0 U
Naphthalene	200	1.0 U	**6,300**	1.0 U	**19,000 B**	1.0 U	5.0 U	1.0 U
MTBE	50	5.0 U	13,000 U	5.0 U	25,000 U	5.0 U	25 U	5.0 U

U - Indicates that compound was not detected
E - Indicates exceedance of calibration curve range
C - Confirmed by GC/MS
J - Estimated value
B - Analyte detected in blank sample
NYSDEC STARS - New York State Department of Environmental Conservation Spill Technology and Remediation Series (Memo #1), Petroleum-Contaminated Soil Guidance Values
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
Bold - Data highlighted in bold represent detections above the NYSDEC STARS guidance values
MTBE - Methyl tertiary-butyl ether

Table 3. Summary of Volatile Organic Compounds Detected in Soil, Site B, Pfizer Inc, Brooklyn, New York.

Parameter (Concentrations in µg/kg)	NYSDEC STARS Soil Guidance Values (µg/kg)	
Sample Designation:		**SBB-16**
Sample Depth (ft bls):		**6-7**
Sample Date:		**4/17/97**
Benzene	14.0	**1,200 J**
Toluene	100	5,000 U
Ethylbenzene	100	**55,000 E**
M/P Xylenes	100	**140,000 E**
O-Xylene	100	**10,000**
Isopropylbenzene	100	**26,000**
n-Propylbenzene	100	**52,000**
1,3,5-Trimethylbenzene	100	**100,000 E**
Tert-Butylbenzene	100	5,000 U
1,2,4-Trimethylbenzene	100	**400,000 E**
Sec-Butylbenzene	100	**6,500**
P-Isopropyltoluene	100	**8,200**
n-Butylbenzene	100	**12,000**
Naphthalene	200	**7,600 E**
MTBE	50	25,000 U

U - Indicates that compound was not detected
E - Indicates exceedance of calibration curve range
C - Confirmed by GC/MS
J - Estimated value
B - Analyte detected in blank sample
NYSDEC STARS - New York State Department of Environmental Conservation Spill Technology and Remediation Series (Memo #1), Petroleum-Contaminated Soil Guidance Values
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
Bold - Data highlighted in bold represent detections above the NYSDEC STARS guidance values
MTBE - Methyl tertiary-butyl ether

Table 4. Summary of Volatile Organic Compounds Detected in Soil Using the Toxicity Characteristic Leaching Procedure, Pfizer Inc, Site B, Brooklyn, New York.

Parameter (Concentrations in µg/L)	Regulatory Levels (µg/L)	NYSDEC STARS Soil Guidance Values (µg/L)	Sample Designation: SBB-05 Sample Depth (ft bls): 6-8 Sample Date: 6/23/97	SBB-13 6-7 6/23/97	SBB-14 6-7 6/23/97	SBB-16 6-7 6/23/97
Dichlorofluoromethane	--	--	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane	--	--	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl Chloride	--	--	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane	--	--	1.0 U	1.0 U	1.0 U	1.0 U
Chloroethane	--	--	1.0 U	1.0 U	1.0 U	1.0 U
Trichlorofluormethane	--	--	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	--	--	1.0 U	1.0 U	1.0 U	1.0 U
Methylene Chloride	--	--	11.0	11.0	15.0	15.0
trans-1,2-Dichloroethene	--	--	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	700	--	1.0 U	1.0 U	1.0 U	1.0 U
2,2-Dichloropropane	--	--	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene	--	--	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform	6,000	--	11.0 E	1.0 U	1.0 U	1.0 U
Bromochloromethane	--	--	1.0 U	1.0 U	1.0 U	1.0 U
1,1,1-Trichloroethane	--	--	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloropropene	--	--	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride	500	--	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	500	--	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethylene	500	--	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloropropene	--	--	1.0 U	1.0 U	1.0 U	1.0 U
Bromodichloromethane	--	--	1.0 U	1.0 U	1.0 U	1.0 U
Dibromomethane	--	--	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,3-Dichloropropene	--	--	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,3-Dichloropropene	--	--	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	--	--	1.0 U	1.0 U	1.0 U	1.0 U
1,3-Dichloropropane	--	--	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethylene	700	--	3.6	8.4 E	52.0 E	1.8
Dibromochloromethane	--	--	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dibromomethane	--	--	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	100,000	--	1.0 U	1.0 U	1.0 U	1.0 U
1,1,1,2-Tetrachloroethane	--	--	1.0 U	1.0 U	1.0 U	1.0 U
Bromoform	--	--	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	--	--	1.0 U	1.0 U	1.0 U	1.0 U
1,2,3-Trichloropropane	--	--	1.0 U	1.0 U	1.0 U	1.0 U
Bromobenzene	--	--	1.0 U	1.0 U	1.0 U	1.0 U
2-Chlorotoluene	--	--	1.0 U	1.0 U	1.0 U	1.0 U
4-Chlorotoluene	--	--	1.0 U	1.0 U	1.0 U	1.0 U
1,3-Dichlorobenzene	--	--	1.0 U	1.0 U	1.0 U	1.0 U
1,4-Dichlorobenzene	7,500	--	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichlorobenzene	--	--	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dibromo-3-Chloropropa	--	--	1.0 U	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene	--	--	1.0 U	1.0 U	1.0 U	1.0 U
Hexachlorobutadiene	--	--	1.0 U	1.0 U	1.0 U	1.0 U
1,2,3-Trichlorobenzene	--	--	1.0 U	1.0 U	1.0 U	1.0 U

Table 4. Summary of Volatile Organic Compounds Detected in Soil Using the Toxicity Characteristic Leaching Procedure, Pfizer Inc, Site B, Brooklyn, New York.

Parameter (Concentrations in µg/L)	Regulatory Levels (µg/L)	NYSDEC STARS Soil Guidance Values (µg/L)	Sample Designation: SBB-05 Sample Depth (ft bls): 6-8 Sample Date: 6/23/97	SBB-13 6-7 6/23/97	SBB-14 6-7 6/23/97	SBB-16 6-7 6/23/97
Benzene	500	0.7	1.0 U	**1.2**	**6.9 E**	1.0 U
Toluene	--	5	1.0 U	1.0	1.7	1.4
Ethylbenzene	--	5	1.0 U	1.0 U	1.0 U	**12.0 E**
m+p-Xylene	--	5	1.0 U	3.6	1.0 U	**8.0 E**
o-Xylene	--	5	1.0 U	1.5	1.0 U	5.0 E
Styrene	--	--	1.0 U	1.0 U	1.0 U	1.0 U
Isopropylbenzene	--	5	1.0 U	1.0 U	1.0 U	**13.0 E**
n-Propylbenzene	--	5	1.0 U	**5.2 E**	2.0	**11.0 E**
1,3,5-Trimethylbenzene	--	5	1.0 U	1.0	1.0 U	**37.0 E**
tert-Butylbenzene	--	5	1.0 U	1.0 U	1.0 U	1.0 U
1,2,4-Trimethylbenzene	--	5	1.0 U	2.1	1.0 U	**46.0 E**
sec-Butylbenzene	--	5	1.0 U	1.0 U	1.0 U	2.2
p-Isopropyltoluene	--	5	1.0 U	1.0 U	1.0 U	**8.2**
n-Butylbenzene	--	5	1.0 U	2.7	1.3	**58.0 E**
Naphthalene	--	10	1.0 U	1.0 U	1.0 U	**48.0**
MTBE	--	50	1.0 U	1.0 U	1.0 U	1.0 U

U - Indicates that compound was not detected
E - Indicates exceedance of calibration curve range
NYSDEC STARS - New York State Department of Environmental Conservation Spill Technology and Remediation Series (Memo #1), Petroleum-Contaminated Soil Guidance Values
µg/L - Micrograms per liter
ft bls - Feet below land surface
Bold - Data highlighted in bold represent detections above the NYSDEC STARS guidance values
MTBE - Methyl tertiary-butyl ether
-- - No NYSDEC STAR Guidance Value available

Table 5. Summary of Metals Detected in Perched Ground Water, Site B, Pfizer Inc, Brooklyn, New York.

Parameter (Concentrations in µg/L)	Sample Designation: / Sample Date:	SBB-07 Dissolved 4/15/97	SBB-07 Total 4/15/97	SBB-08 Dissolved 4/15/97	SBB-08 Total 4/15/97	SBB-09 Dissolved 4/21/97	SBB-09 Total 4/21/97
Aluminum		60.5 BE	833,000 E	96.0 BE	617,000	14.0 U	683,000
Antimony		3.0 U	3.0 U	4.0 U	3.0 U	7.0 B	3.0 U
Arsenic		21.6 E	554 E	4.1 BE	393	3.0 U	855
Barium		94.5 BE	13,500 E	68.0 BE	13,800	104 B	3,400
Beryllium		1.0 UE	66.0 E	1.0 UE	34.3	1.0 U	60.0
Cadmium		1.0 U	42.3	1.0 U	58.8	1.0 U	62.9
Calcium		124,000 E	822,000 E	120,000 E	2,400,000	194,000	1,660,000
Chromium		1.7 BE	3,120 E	2.3 BE	1,810	1.0 U	1,960
Cobalt		1.3 BE	744 E	1.0 UE	420	1.2 B	590
Copper		1.0 U	8,100	1.0 U	3,850	1.7 B	5,310
Iron		1,140	1,670,000	117	673,000	8.0 U	1,470,000
Lead		2.0 UE	20,200 E	2.0 UE	37,200	5.3	79,800
Magnesium		29,000 E	457,000 E	23,000 E	326,000	36,800	392,000
Manganese		420 E	21,700 E	106 E	22,200	1,180	18,400
Mercury		0.20 U	727	0.20 U	349	0.20 U	130
Nickel		4.1 BE	3,140 E	2.0 UE	1,460	3.7 B	2,720
Potassium		26,800	133,000	13,300	98,100	17,600	157,000
Selenium		3.0 U	3.0 U	5.0 B	3.0 U	6.4	57.2
Silver		1.0 U	42.7	1.0 U	8.3 B	1.0 U	16.9
Sodium		127,000	121,000	43,100	82,700	92,600	110,000
Thallium		3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U
Vanadium		2.6 BE	4,110 E	3.8 BE	1,860	1.0 U	2,340
Zinc		9.6 BE	17,800 E	8.3 BE	18,500	25.3	29,000

Notes:

U - Indicates compound was analyzed for but not detected
B - Estimated value
E - Indicates exceedance of calibration curve range
N - Spiked sample recovery not within control limits
µg/L - Micrograms per liter

Table 5. Summary of Metals Detected in Perched Ground Water, Site B, Pfizer Inc, Brooklyn, New York.

Parameter (Concentrations in µg/L)	Sample Designation: / Sample Date:	SBB-10 Dissolved 4/21/97	SBB-10 Total 4/21/97	SBB-11 Dissolved 4/22/97	SBB-11 Total 4/22/97	SBB-12 Dissolved 4/22/97	SBB-12 Total 4/22/97
Aluminum		157.0 B	931,000	14.3 B	45,200	226	732,000
Antimony		4.5 B	3.0 U	23.0 B	3.0 U	3.0 U	3.0 U
Arsenic		3.0 U	725	3.0 U	254	3.0 U	186
Barium		141 B	5,960	69.0 B	1,750	132 B	10,700
Beryllium		1.0 U	57.1	1.0 U	33.0	1.0 U	35.9
Cadmium		1.0 U	15.5	1.0 U	1.0 U	1.0 U	1.0 U
Calcium		410,000	1,190,000	388,000	493,000	170,000	914,000
Chromium		1.6 B	2,270	1.0 U	1,350	1.2 B	2,060
Cobalt		1.6 B	771	3.0 B	166	2.8 B	393
Copper		5.7 B	3,970	8.5 B	1,750	1.5 B	2,280
Iron		244	1,460,000	8.0 U	632,000	3,970	935,000
Lead		26.7	31,200	2.0 U	1,420	4.3	12,900
Magnesium		42,100	300,000	171,000	232,000	40,600	189,000
Manganese		175	32,400	80.3	2,720	2,120	11,000
Mercury		0.20 U	453	0.20 U	25.8	0.20 U	7,500
Nickel		2.8 B	1,550	3.7 B	549	2.8 B	1,050
Potassium		37,200	162,000	68,800	108,000	23,200	95,400
Selenium		19.9	35.4	32.5	76.7	3.6 B	40.5
Silver		1.0 U	2.3 B	1.0 U	1.0 U	1.0 U	2.7 B
Sodium		114,000	133,000	211,000	201,000	75,100	89,700
Thallium		3.0 U	3.0 U	3.0 U	8.3 B	3.0 U	7.1 B
Vanadium		5.6 B	2,880	1.0 U	1,860	1.0 U	2,170
Zinc		25.4	19,200	7.2 B	3,340	15.4 B	9,270

Notes:

U - Indicates compound was analyzed for but not detected
B - Estimated value
E - Indicates exceedance of calibration curve range
N - Spiked sample recovery not within control limits
µg/L - Micrograms per liter

Table 5. Summary of Metals Detected in Perched Ground Water, Site B, Pfizer Inc, Brooklyn, New York.

Parameter (Concentrations in µg/L)	Sample Designation: / Sample Date:	SBB-13 Dissolved 4/17/97	SBB-13 Total 4/17/97	SBB-15 Dissolved 4/17/97	SBB-15/R Dissolved 4/17/97	SBB-15 Total 4/17/97	SBB-15/R Total 4/17/97
Aluminum		40.5 B	155,000	191 B	90.1 B	13,000	96,000
Antimony		3.7 B	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U
Arsenic		3.0 U	36.4	6.3 B	6.0 B	11.0	28.0
Barium		165 B	1,940	118 B	120 B	210	990
Beryllium		1.0 U	39.4	1.0 U	1.0 U	1.4 B	10
Cadmium		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Calcium		177,000	253,000	148,000	151,000	156,000	182,000
Chromium		1.0 U	1,070	2.6 B	1.1 B	41.9	319
Cobalt		1.0 U	98.8	1.0 U	1.0 U	7.5 B	47.8 B
Copper		1.0 U	183	1.0 U	1.0 U	16.8 B	106
Iron		7,940	360,000	12,100	15,600	44,800	209,000
Lead		2.8 B	150	2.8 B	2.0 U	40.9	160
Magnesium		35,400	75,200	37,300	38,000	40,700	53,500
Manganese		2,360	4,890	879	914	1,060	1,880
Mercury		0.20 UN	2.6 N	0.20 UN	0.20 UN	0.20 UN	0.20 UN
Nickel		2.5 B	265	2.1 B	3.8 B	21.8 B	141
Potassium		19,900	53,900	19,900	20,400	22,500	30,600
Selenium		3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U
Silver		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Sodium		25,400	34,700	49,000	49,100	50,600	53,300
Thallium		3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U
Vanadium		1.0 U	2,180	1.0 U	1.0 U	58.8	435
Zinc		8.3 B	714	11.6 B	11.8 B	86.2	395

Notes:

U - Indicates compound was analyzed for but not detected
B - Estimated value
E - Indicates exceedance of calibration curve range
N - Spiked sample recovery not within control limits
µg/L - Micrograms per liter

Table 6. Summary of Volatile Organic Compounds Detected in Perched Ground Water, Site B, Pfizer Inc, Brooklyn, New York.

Sample Designation:	SBB-13	SBB-14	SBB-15	SBB-15R	SBB-16
Sample Date:	4/17/97	4/17/97	4/17/97	4/17/97	4/17/97
Parameter (Concentrations in µg/L)					
Benzene	2,300 E	1,000	270	370	300
Toluene	6,200 E	960	100 U	100 U	100 U
Ethylbenzene	1,800	1,900	920	1,100	1,400
M/P Xylenes	6,500 E	7,200 E	3,600 E	4,200 E	3,100 E
O-Xylene	2,100	1,600	940	920	280
Isopropylbenzene	120	130	110	130	100 U
n-Propylbenzene	180	300	170	200	230
1,3,5-Trimethylbenzene	580	690	790	720	1,100
Tert-Butylbenzene	100 U	100 U	100 U	100 U	100 U
1,2,4-Trimethylbenzene	1,600	2,600 E	1,600	1,900	2,800 E
Sec-Butylbenzene	100 U	100 U	100 U	100 U	100 U
P-Isopropyltoluene	100 U	100 U	100 U	100 U	100 U
n-Butylbenzene	360	380	590	480	680
Naphthalene	310	430	250	310	740
MTBE	500 U	500 U	500 U	500 U	500 U

µg/L - Micrograms per liter
U - Indicates that compound was not detected
E - Indicates exceedance of calibration curve range
MTBE - Methyl tertiary-butyl ether

Table 7: Estimated Potential Baseline Incremental Lifetime Cancer Risks (ILCRs) and Hazard Quotients (HQs) Associated with Exposure, During Occupational Activities, to Metals Identified in Surface Fill (0 - 2 ft.) from Site B, Pfizer Inc, Brooklyn, New York - Reasonable Maximum Exposed Individual

Metal	Soil Concentration (SC) (mg/kg) (a)	Estimated Average Daily Intakes (mg/kg) by pathway: Dermal Absorption (DA) (b)	Ingestion (IG) (c)	Inhalation (IH) (d)	Estimated Total Average Daily Intake - All Pathways (EDI) (mg/kg) (e)	Estimated Lifetime Average Daily Intake - All Pathways (LADI) (mg/kg/day) (f)	Slope Factor (CPF) (mg/kg/day)-1 (g)	Reference Dose (RfD) mg/kg-day (h)	Estimated Potential ILCR (i)	Estimated HQ (j)
Aluminum	7.2E+3	1.9E-3	3.1E-3	3.8E-5	5.0E-3	2.1E-3	NC	1.0E+0	NC	5.0E-3
Arsenic	1.1E+1	3.0E-6	4.8E-6	6.0E-8	7.8E-6	3.3E-6	1.5E+0	3.0E-4	5.0E-6	2.6E-2
Barium	4.3E+2	1.1E-4	1.8E-4	2.3E-6	3.0E-4	1.3E-4	NC	7.0E-2	NC	4.3E-3
Chromium	2.4E+1	6.3E-6	1.0E-5	1.3E-7	1.7E-5	7.2E-6	NC	1.0E+0	NC	1.7E-5
Cobalt	1.2E+1	3.1E-6	4.9E-6	6.2E-8	8.1E-6	3.5E-6	NC	6.0E-2	NC	1.3E-4
Copper	2.3E+2	5.9E-5	9.5E-5	1.2E-6	1.6E-4	6.7E-5	NC	4.0E-2	NC	3.9E-3
Lead	Risks associated with lead estimated using a biokinetic slope factor model (Table 2).									
Manganese	7.8E+2	2.0E-4	3.3E-4	4.1E-6	5.4E-4	2.3E-4	NC	2.3E-2	NC	2.3E-2
Mercury	4.9E+0	1.3E-6	2.1E-6	2.6E-8	3.4E-6	1.4E-6	NC	3.0E-4	NC	1.1E-2
Nickel	2.6E+1	6.7E-6	1.1E-5	1.4E-7	1.8E-5	7.6E-6	NC	2.0E-2	NC	8.9E-4
Selenium	2.2E+0	5.9E-7	9.5E-7	1.2E-8	1.5E-6	6.6E-7	NC	5.0E-3	NC	3.1E-4
Zinc	1.1E+3	2.9E-4	4.7E-4	5.9E-6	7.7E-4	3.3E-4	NC	3.0E-1	NC	2.6E-3

Table 7: Estimated Potential Baseline Incremental Lifetime Cancer Risks (ILCRs) and Hazard Quotients (HQs) Associated with Exposure, During Occupational Activities, to Metals Identified in Surface Fill (0 - 2 ft.) from Site B, Pfizer Inc, Brooklyn, New York - Reasonable Maximum Exposed Individual

Assumptions Used for Estimating Daily Intake:

ASSUMPTION		REFERENCE
Respiratory rate (m^3/hour) (RV)	= 2.5	USEPA, 1996
Body weight (kg) (BW)	= 70	USEPA, 1989
Height (cm) (HT)	= 175	AIHC, 1994
Body surface area (cm^2) (SA)	= 18539	DuBois and DuBois, 1916; USEPA, 1996
Contact area-soil (CAS)	= 0.1	USEPA, 1996
Soil adherence (mg/cm^2) (A)	= 1.0	USEPA, 1992
Respirable dust fraction (unitless) (PF)	= 0.5	Menzel and Amdur, 1986
Skin absorption factor-metals (unitless) (AFM)	= 0.03	MA Department of Environmental Protection, 1992
Soil Ingestion rate (mg soil/day) (IR)	= 100	USEPA, 1991
Particulate dust matter ($\mu g/m^3$) (PM)	= 150	NYSDOH, 1994, NYSDEC, 1989
GI absorption factor-soil (unitless) (GIS)	= 0.9	MA Department of Environmental Protection, 1992; ATSDR, 1991
Exposed hours-inhalation (hours/day) (HH)	= 6	Professional judgement
Exposed days a year (days/year) (DE)	= 120	Professional judgement
Total days in year (days/year) (DY)	= 365	Number of days in a year
Exposure years (years) (EY)	= 30	Professional judgement
Lifetime (years) (LT)	= 70	USEPA, 1989
Conversion factor (kg/mg) (F)	= 1.0E-6	Unit conversion factor
Conversion Factor (mg/µg) (X)	= 1.0E-3	Unit conversion factor

Notes

C indicates constituent is considered a carcinogen in either IRIS (USEPA, 1997) or HEAST (USEPA, 1995).

NC indicates constituent is considered a noncarcinogen in either IRIS (USEPA, 1997) or HEAST (USEPA, 1995).

No data indicates that although compound may be listed in IRIS (USEPA, 1997) or HEAST (USEPA, 1995), data are insufficient for estimating toxicity factors such as slope factor or reference dose.

(a) The soil concentrations shown are the 95 precent UCL concentration (in mg/kg) of metals detected in 0-2 ft. interval of fill at sampling locations at Site B (SC).

(b) Estimated daily intake via dermal absorption (DA) DA = ((SC*SA*CAS*A*F*AF {or AFM}*DE)/(DY*BW))

(c) Estimated daily intake via ingestion (IG) IG = ((SC*IR*F*GIS*DE)/(DY*BW))

(d) Estimated daily intake via inhalation (IH) IH = (SC*F*PM*X*RV*HH*PF*DE)/(DY*BW)

(e) Sum of daily intakes from three pathways (EDI) EDI = DA+IG+IH

(f) Total daily intake averaged over lifetime (LADI) LADI = (EDI*EY)/(LT)

(g) Carcinogenic potency factors used are derived from IRIS (USEPA, 1997) and HEAST (USEPA, 1995) (CPF)

(h) Reference doses for chronic exposure (RfDs) were derived from IRIS (USEPA, 1997) and HEAST (USEPA, 1995)

(i) Incremental lifetime cancer risk (ILCR) based on lifetime average daily intake ILCR = LADI * CPF

(j) Hazard quotient (HQ) based on daily intake HQ = EDI / RfD

Table 8: Estimated Potential Blood Lead Concentrations, Based on a Biokinetic Slope Factor Model, Associated with Exposure, During Occupational Activities, to Lead Identified in Surface Fill (0 - 2 ft.) at Site B, Pfizer Inc, Brooklyn, New York - Reasonable Maximum Exposed Individual

INPUT Site-Specific Concentrations (a)	
Concentration of Lead in Soil (CS) (µg/g)	9.7E+2
Background Soil Lead Concentration (BS) (µg/g)	0
Airborne Dust Concentration (CD) (µg/m^3)	150

OUTPUT Estimated Blood Lead Concentration (µg/dL) Percentile Ranges Using Geometric Standard Deviation (GSD) of 1.8 or 2.1 (b)							
	50th	90th		95th		99th	
GSD used:	none	1.8	2.1	1.8	2.1	1.8	2.1
ADULT WORKER (µg/dL)	3.09	6.6E+0	8.0E+0	8.1E+0	1.0E+1	1.2E+1	1.7E+1

ADULT INDUSTRIAL EXPOSURE

Exposure Pathways		Media Concentrations Minus Background (CF)	Fractional Absorption of Lead per Medium (FA)	Contact Rate (CR)	Blood Lead (µg/dL)
Incidental Soil Ingestion	(c)	970 (µg/g)	0.08	0.10 g/day	0.97
Inhalation-Airborne Dust	(d)	150 (µg/m^3)	0.32	20 m^3/day	0.12

Sum of Blood Lead Concentration from all Pathways (µg/dL) = 1.09 (e)

ESTIMATED GEOMETRIC MEAN BLOOD LEAD CONCENTRATION (µg/dL) = 3.09 (f)

CONSTANTS

Baseline adult blood lead concentration (µg/dL) (B) = 2.0

Biokinetic slope factor (µg/dL per µg/day) (BSF) = 0.375

Hours spent at site (hours/day) (WD) = 8

Conversion Factor (g/µg) (X) = 1.0E-6

Notes:

µg/g indicates units of micrograms per gram

µg/m^3 indicates units of micrograms per cubic meter

µg/dL indicates units of micrograms per deciliter

(a) Soil lead concentration is the 95 percent UCL concentration of lead in surface (0-2 ft.) interval samples. Background concentration of lead in soil is assumed to be zero. The airborne dust concentration of 150 µg/m^3 is based on NYSDOH (1994) and NYSDEC (1989) standard for community protection from fugitive dust.

(b) Geometric mean blood lead concentration is assumed to be 50th percentile. 90th percentile= exp(ln(50th percentile)+1.282*ln(GSD)); 95th percentile=exp(ln(50th percentile)+1.64*ln(GSD)); 99th percentile=exp(ln(50th percentile)+2.33*ln(GSD))

(c) *Blood lead concentration attributed to incidental soil ingestion* = BSF*(CF*FA*CR*(WD/24))

(d) Blood lead concentration attributed to fugitive dust = BSF*(CF*X*(CS-BS)*FA*CR*(WD/24))

(e) Blood lead concentrations from incidental soil ingestion and inhalation of dust are summed.

(f) Estimated geometric mean blood lead concentration equals sum of background concentration (B) plus blood lead concentrations attributed to sum of all exposure pathways.

Table 9: Estimated Potential Baseline Incremental Lifetime Cancer Risks (ILCRs) and Hazard Quotients (HQs) Associated with Exposure, During Construction Activities, to Chemicals Identified in Subsurface Fill (0 - 8 ft.) from Site B, Pfizer Inc, Brooklyn, New York - Reasonable Maximum Exposed Individual

Chemical	Soil Concentration (SC) (mg/kg) (a)	Estimated Average Daily Intakes (mg/kg) by pathway: Dermal Absorption (DA) (b)	Ingestion (IG) (c)	Inhalation (IH) (d)	Estimated Total Average Daily Intake - All Pathways (EDI) (mg/kg) (e)	Estimated Lifetime Average Daily Intake - All Pathways (LADI) (mg/kg/day) (f)	Slope Factor (CPF) (mg/kg/day)-1 (g)	Reference Dose (RfD) mg/kg-day (h)	Estimated Potential ILCR (i)	Estimated HQ (j)
VOLATILE ORGANIC COMPOUNDS										
Benzene	7.5E-1	5.8E-7	1.6E-7	2.6E-9	7.4E-7	1.1E-8	2.9E-2	C	3.1E-10	C
N-Butylbenzene	2.2E+1	1.7E-5	4.6E-6	7.6E-8	2.2E-5	3.1E-7	no data	no data	no data	no data
Sec-Butylbenzene	2.9E+0	2.3E-6	6.2E-7	1.0E-8	2.9E-6	4.2E-8	NC	1.0E-2	NC	2.9E-4
Isopropylbenzene	1.3E+1	1.0E-5	2.7E-6	4.5E-8	1.3E-5	1.8E-7	no data	no data	no data	no data
N-Propylbenzene	2.3E+1	1.8E-5	4.9E-6	8.1E-8	2.3E-5	3.3E-7	no data	no data	no data	no data
1,3,5-Trimethylbenzene	4.3E+1	3.3E-5	9.0E-6	1.5E-7	4.3E-5	6.1E-7	NC	5.0E-2	NC	8.5E-4
1,2,4-Trimethylbenzene	1.7E+2	1.3E-4	3.6E-5	6.0E-7	1.7E-4	2.4E-6	NC	5.0E-2	NC	3.4E-3
Ethylbenzene	2.0E+1	1.6E-5	4.3E-6	7.2E-8	2.0E-5	2.9E-7	NC	1.0E-1	NC	2.0E-4
Toluene	7.2E+0	5.6E-6	1.5E-6	2.5E-8	7.2E-6	1.0E-7	NC	2.0E-1	NC	3.6E-5
P-Isopropyltoluene	3.1E+0	2.5E-6	6.6E-7	1.1E-8	3.1E-6	4.5E-8	no data	no data	no data	no data
Xylene (total)	8.4E+1	6.6E-5	1.8E-5	3.0E-7	8.4E-5	1.2E-6	NC	2.0E+0	NC	4.2E-5
SEMIVOLATILE ORGANIC COMPOUNDS										
Benzo(a)anthracene	6.8E-1	5.3E-7	1.4E-7	2.4E-9	6.8E-7	9.6E-9	7.3E-1	C	7.0E-9	C
Benzo(a)pyrene	8.3E-1	6.5E-7	1.8E-7	2.9E-9	8.3E-7	1.2E-8	7.3E+0	C	8.6E-8	C
Benzo(b)fluoranthene	6.6E-1	5.1E-7	1.4E-7	2.3E-9	6.5E-7	9.3E-9	7.3E-1	C	6.8E-9	C
Chrysene	7.2E-1	5.7E-7	1.5E-7	2.5E-9	7.2E-7	1.0E-8	7.3E-3	C	7.5E-11	C
Dibenzo(a,h)anthracen	1.7E-1	1.3E-7	3.6E-8	6.0E-10	1.7E-7	2.4E-9	7.3E+0	C	1.8E-8	C
Naphthalene	8.1E+0	6.3E-6	1.7E-6	2.8E-8	8.1E-6	1.2E-7	NC	4.0E-2	NC	2.0E-4
Phenol	1.8E-1	1.4E-7	3.8E-8	6.3E-10	1.8E-7	2.5E-9	NC	3.0E-2	NC	5.9E-6

Table 9: Estimated Potential Baseline Incremental Lifetime Cancer Risks (ILCRs) and Hazard Quotients (HQs) Associated with Exposure, During Construction Activities, to Chemicals Identified in Subsurface Fill (0 - 8 ft.) from Site B, Pfizer Inc, Brooklyn, New York - Reasonable Maximum Exposed Individual

Chemical	Soil Concentration (SC) (mg/kg) (a)	Estimated Average Daily Intakes (mg/kg) by pathway: Dermal Absorption (DA) (b)	Ingestion (IG) (c)	Inhalation (IH) (d)	Estimated Total Average Daily Intake - All Pathways (EDI) (mg/kg) (e)	Estimated Lifetime Average Daily Intake - All Pathways (LADI) (mg/kg/day) (f)	Slope Factor (CPF) (mg/kg/day)-1 (g)	Reference Dose (RfD) mg/kg-day (h)	Estimated Potential ILCR (i)	Estimated HQ (j)
Metals										
Aluminum	9.8E+3	1.3E-3	2.1E-3	3.5E-5	3.4E-3	4.9E-5	NC	1.0E+0	NC	3.4E-3
Arsenic	1.0E+1	1.4E-6	2.2E-6	3.7E-8	3.6E-6	5.2E-8	1.5E+0	3.0E-4	7.8E-8	1.2E-2
Barium	4.3E+2	5.6E-5	9.1E-5	1.5E-6	1.5E-4	2.1E-6	NC	7.0E-2	NC	2.1E-3
Chromium	2.7E+1	3.5E-6	5.7E-6	9.5E-8	9.3E-6	1.3E-7	NC	1.0E+0	NC	9.3E-6
Cobalt	9.9E+0	1.3E-6	2.1E-6	3.5E-8	3.4E-6	4.9E-8	NC	6.0E-2	NC	5.7E-5
Copper	1.8E+2	2.3E-5	3.8E-5	6.3E-7	6.1E-5	8.8E-7	NC	4.0E-2	NC	1.5E-3
Lead	Risks associated with exposure to lead evaluated using a biokinetic slope factor model (Table 4).									
Manganese	5.4E+2	7.1E-5	1.1E-4	1.9E-6	1.9E-4	2.7E-6	NC	2.3E-2	NC	8.2E-3
Mercury	3.5E+0	4.5E-7	7.4E-7	1.2E-8	1.2E-6	1.7E-8	NC	3.0E-4	NC	4.0E-3
Nickel	2.5E+1	3.2E-6	5.2E-6	8.7E-8	8.5E-6	1.2E-7	NC	2.0E-2	NC	4.3E-4
Selenium	2.8E+0	3.6E-7	5.8E-7	9.7E-9	9.6E-7	1.4E-8	NC	5.0E-3	NC	1.9E-4
Zinc	6.9E+2	9.0E-5	1.5E-4	2.4E-6	2.4E-4	3.4E-6	NC	3.0E-1	NC	7.9E-4

Table 9: Estimated Potential Baseline Incremental Lifetime Cancer Risks (ILCRs) and Hazard Quotients (HQs) Associated with Exposure, During Construction Activities, to Chemicals Identified in Subsurface Fill (0 - 8 ft.) from Site B, Pfizer Inc, Brooklyn, New York - Reasonable Maximum Exposed Individual

Assumptions Used for Estimating Daily Intake:

ASSUMPTION		REFERENCE
Respiratory rate (m^3/hour) (RV) =	2.5	USEPA, 1996
Body weight (kg) (BW) =	70	USEPA, 1989
Height (cm) (HT) =	175	AIHC, 1994
Body surface area (cm^2) (SA) =	18539	DuBois and DuBois, 1916; USEPA, 1996
Contact area-soil (CAS) =	0.1	USEPA, 1996
Soil adherence (mg/cm^2) (A) =	1.0	USEPA, 1992
Respirable dust fraction (unitless) (PF) =	0.5	Menzel and Amdur, 1986
Skin absorption factor-organics (unitless) (AF) =	0.18	MA Department of Environmental Protection, 1992
Skin absorption factor-metals (unitless) (AFM) =	0.03	MA Department of Environmental Protection, 1992
Soil Ingestion rate (mg soil/day) (IR) =	100	USEPA, 1991
Particulate dust matter ($\mu g/m^3$) (PM) =	150	NYSDOH, 1994; NYSDEC, 1989
GI absorption factor-soil (unitless) (GIS) =	0.9	MA Department of Environmental Protection, 1992; ATSDR, 1991
Exposed hours-inhalation (hours/day) (HH) =	8	Professional judgement
Exposed days a year (days/year) (DE) =	60	Professional judgement
Total days in year (days/year) (DY) =	365	Number of days in a year
Exposure years (years) (EY) =	1	Professional judgement
Lifetime (years) (LT) =	70	USEPA, 1989
Conversion factor (kg/mg) (F) =	1.0E-6	Unit conversion factor
Conversion Factor (mg/µg) (X) =	1.0E-3	Unit conversion factor

Notes

C indicates constituent is considered a carcinogen in either IRIS (USEPA, 1997) or HEAST (USEPA, 1995).

NC indicates constituent is considered a noncarcinogen in either IRIS (USEPA, 1997) or HEAST (USEPA, 1995).

No data indicates that although compound may be listed in IRIS (USEPA, 1997) or HEAST (USEPA, 1995), data are insufficient for estimating toxicity factors such as slope factor or reference dose.

(a) The soil concentrations shown are the 95 precent UCL concentration (in mg/kg) of chemicals detected in 0-8 ft. interval of fill at sampling locations at Site B (SC).

(b) Estimated daily intake via dermal absorption (DA) DA = ((SC*SA*CAS*A*F*AF {or AFM}*DE)/(DY*BW))

(c) Estimated daily intake via ingestion (IG) IG = ((SC*IR*F*GIS*DE)/(DY*BW))

(d) Estimated daily intake via inhalation (IH) IH = (SC*F*PM*X*RV*HH*PF*DE)/(DY*BW)

(e) Sum of daily intakes from three pathways (EDI) EDI = DA+IG+IH

(f) Total daily intake averaged over lifetime (LADI) LADI = (EDI*EY)/(LT)

(g) Carcinogenic potency factors used are derived from IRIS (USEPA, 1997) and HEAST (USEPA, 1995) (CPF)

(h) Reference doses for chronic exposure (RfDs) were derived from IRIS (USEPA, 1997) and HEAST (USEPA, 1995)

(i) Incremental lifetime cancer risk (ILCR) based on lifetime average daily intake ILCR = LADI * CPF

(j) Hazard quotient (HQ) based on daily intake HQ = EDI / RfD

Table 10: Estimated Potential Blood Lead Concentrations, Based on a Biokinetic Slope Factor Model, Associated with Exposure, During Construction Activities, to Lead Identified in Subsurface Fill (0 - 8 ft.) at Site B, Pfizer Inc, Brooklyn, New York - Reasonable Maximum Exposed Individual

INPUT Site-Specific Concentrations (a)	
Concentration of Lead in Soil (CS) (µg/g)	8.0E+2
Background Soil Lead Concentration (BS) (µg/g)	0
Airborne Dust Concentration (CD) (µg/m^3)	150

OUTPUT Estimated Blood Lead Concentration (µg/dL) Percentile Ranges Using Geometric Standard Deviation (GSD) of 1.8 or 2.1 (b)							
	50th	90th		95th		99th	
GSD used:	none	1.8	2.1	1.8	2.1	1.8	2.1
ADULT WORKER (µg/dL)	2.90	6.2E+0	7.5E+0	7.6E+0	9.8E+0	1.1E+1	1.6E+1

ADULT INDUSTRIAL EXPOSURE

Exposure Pathways		Media Concentrations Minus Background (CF)	Fractional Absorption of Lead per Medium (FA)	Contact Rate (CR)	Blood Lead (µg/dL)	
Incidental Soil Ingestion	(c)	800 (µg/g)	0.08	0.10 g/day	0.80	
Inhalation-Airborne Dust	(d)	150 (µg/m^3)	0.32	20 m^3/day	0.10	
				Sum of Blood Lead Concentration from all Pathways (µg/dL) =	0.90	(e)
				ESTIMATED GEOMETRIC MEAN BLOOD LEAD CONCENTRATION (µg/dL) =	2.90	(f)

CONSTANTS

Baseline adult blood lead concentration (µg/dL) (B) = 2.0
Biokinetic slope factor (µg/dL per µg/day) (BSF) = 0.375
Hours spent at site (hours/day) (WD) = 8
Conversion Factor (g/µg) (X) = 1.0E-6

Notes:

µg/g indicates units of micrograms per gram
µg/m^3 indicates units of micrograms per cubic meter
µg/dL indicates units of micrograms per deciliter

(a) Soil lead concentration is the 95 percent UCL concentration of lead in subsurface (0-8 ft.) interval samples. Background concentration of lead in soil is assumed to be zero. The airborne dust concentration of 150 µg/m^3 is based on NYSDOH (1994) and NYSDEC (1989) standard for community protection from fugitive dust.

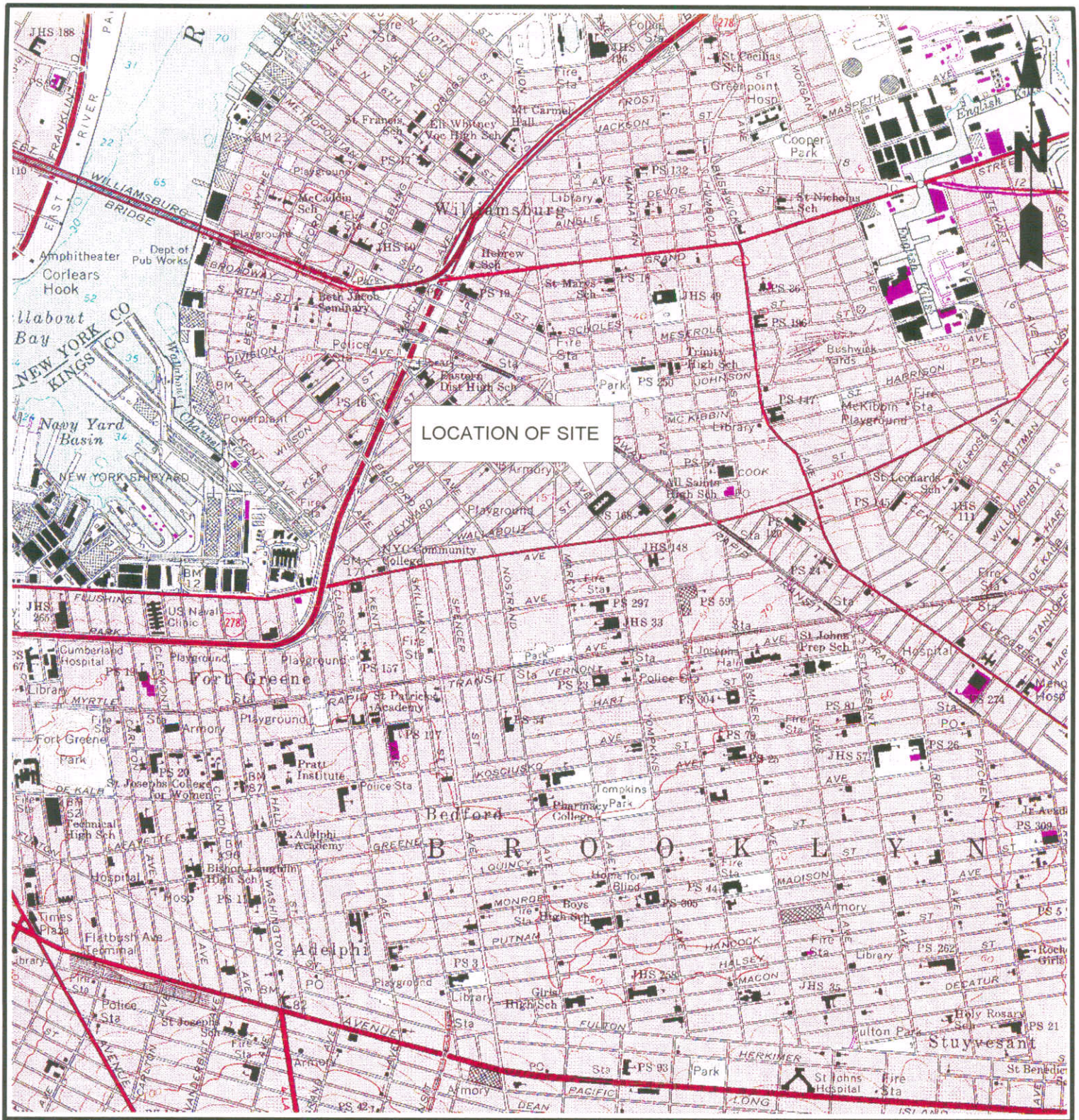
(b) Geometric mean blood lead concentration is assumed to be 50th percentile. 90th percentile= exp(ln(50th percentile)+1.282*ln(GSD)); 95th percentile=exp(ln(50th percentile)+1.64*ln(GSD)); 99th percentile=exp(ln(50th percentile)+2.33*ln(GSD))

(c) Blood lead concentration attributed to incidental soil ingestion = BSF*(CF*FA*CR*(WD/24))

(d) Blood lead concentration attributed to fugitive dust = BSF*(CF*X*(CS-BS)*FA*CR*(WD/24))

(e) Blood lead concentrations from incidental soil ingestion and inhalation of dust are summed.

(f) Estimated geometric mean blood lead concentration equals sum of background concentration (B) plus blood lead concentrations attributed to sum of all exposure pathways.



SOURCE:
USGS BROOKLYN, NEW YORK
QUADRANGLE 7.5 MINUTE SERIES (TOPOGRAPHIC)

Title:

SITE LOCATION MAP

SUPPLEMENTAL INVESTIGATION
AT SITE B

Prepared For:
PFIZER INC
WILLIAMSBURG FACILITY, BROOKLYN, NEW YORK

ROUX ASSOCIATES INC
Environmental Consulting & Management

Compiled by:	S.J.G.	Date:	10/96	FIGURE
Prepared by:	R.R.	Scale:	1"=2,000'	1
Project Mgr:	S.J.G.	Revision:		
File No:	44122169	Project:	04744Y08	

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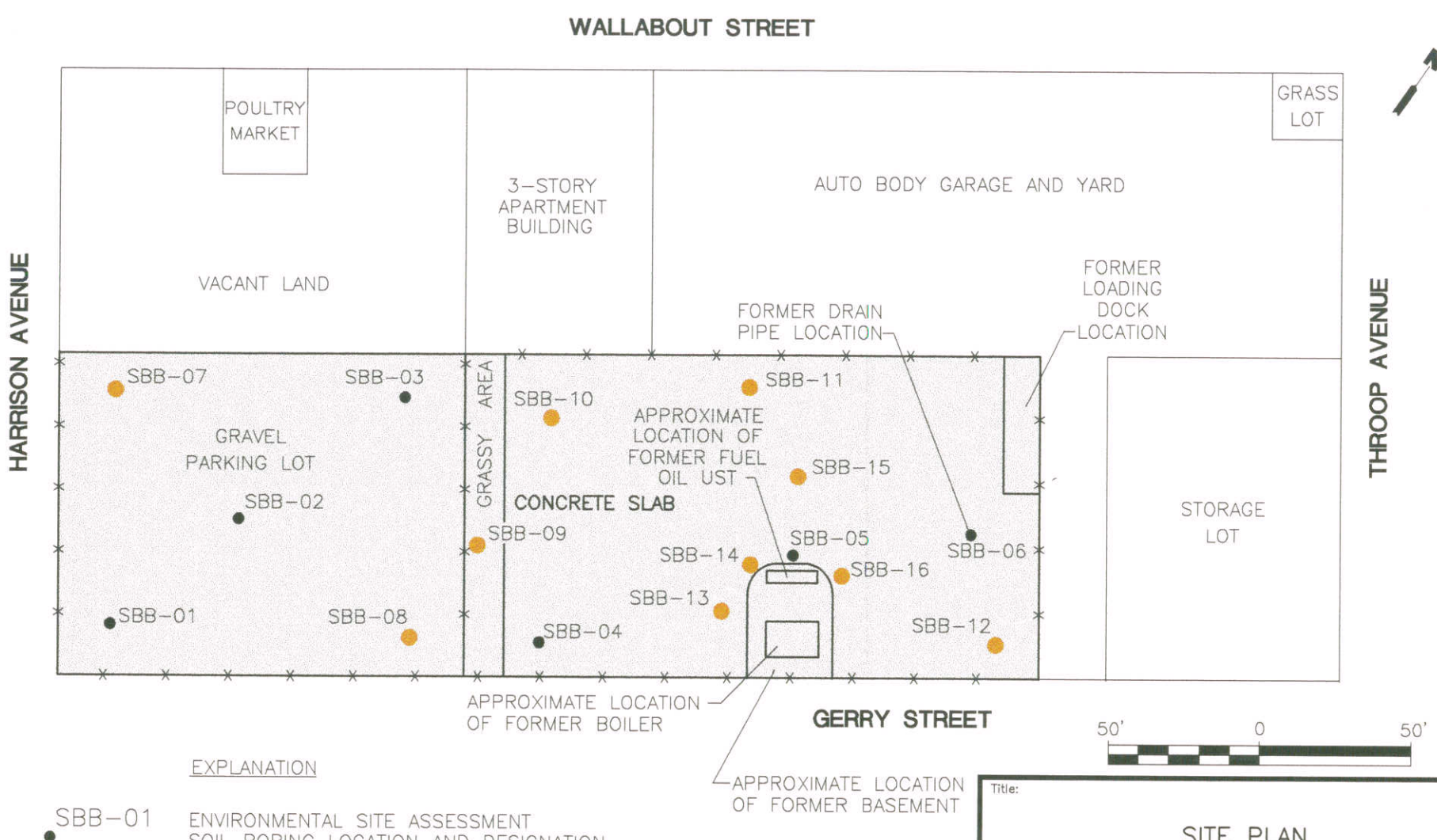

EXPLANATION

- SBB-01 — ENVIRONMENTAL SITE ASSESSMENT SOIL BORING LOCATION AND DESIGNATION
- SBB-07 — SOIL BORING LOCATION AND DESIGNATION
- CHAIN LINK FENCING
- SITE B
- UST — UNDERGROUND STORAGE TANK

Title:

SITE PLAN

SUPPLEMENTAL INVESTIGATION AT SITE B

Prepared For:

PFIZER INC
WILLIAMSBURG FACILITY, BROOKLYN, NEW YORK

ROUX ASSOCIATES INC
Environmental Consulting & Management

Compiled by:	S.J.G.	Date:	6/97
Prepared by:	R.K.	Scale:	1"=50"
Project Mgr:	S.J.G	Status:	DRAFT
File No:	P4418101	Project:	04744Y08

FIGURE 2

SBB–07	0–2	6–7.5
ALUMINUM	8,130	15,300
ARSENIC	14.2N	–
BARIUM	577	–
BERYLLIUM	4.0	0.98B
CHROMIUM	52.3	29.8
COBALT	38.9	–
COPPER	661N	53.9N
IRON	39,700	25,000
LEAD	1,230	–
MAGNESIUM	3,070	10,800
MANGANESE	1,380N	500N
MERCURY	1.8*	0.88*
NICKEL	76.6	72.8
SELENIUM	3.2	–
ZINC	4,700	–

SBB–03	0–2
ALUMINUM	6,270
ARSENIC	23.2N
BARIUM	465
BERYLLIUM	0.49B
CHROMIUM	21.9
COPPER	188N
IRON	28,200
LEAD	2,840
MANGANESE	630N
MERCURY	5.2*
NICKEL	20.7
SELENIUM	2.9
ZINC	534

SBB–09	0–2	9–11
ALUMINUM	6,590	6,980
ARSENIC	14.3	8.5
BARIUM	519	1,950
BERYLLIUM	0.60B	0.69B
CALCIUM	–	47,400
CHROMIUM	20.4	22.6
COPPER	82.5*	53.1*
IRON	21,900	21,900
MAGNESIUM	4,370	4,280
MANGANESE	947N*	–
MERCURY	0.68	1.5
NICKEL	17.6	28.2
SELENIUM	2.3	2.4
ZINC	442*	714*

SBB–10	0–2	8–10
ALUMINUM	7,290	–
BERYLLIUM	0.42B	0.38B
CALCIUM	31,100	–
IRON	16,400	–
MAGNESIUM	3,070	–
MERCURY	2.4	0.12
SELENIUM	2.3	–

SBB–11	0–2	6–8
ALUMINUM	7,870	7,240
ARSENIC	–	10
BERYLLIUM	0.53B	0.50B
CALCIUM	16,800	19,300
CHROMIUM	17.6	20.8
COPPER	–	100
IRON	19,800	15,400
MAGNESIUM	2,720	–
MERCURY	3.8	0.76

SBB–15	0–2	6–7
ALUMINUM	5,760	–
ARSENIC	–	21.3
BERYLLIUM	0.24B	0.32B
CALCIUM	40,000	–
CHROMIUM	21.4	39.3
COPPER	197	344
LEAD	–	1,080
MAGNESIUM	2,890	–
MERCURY	3.3*	0.44*

SBB–05	6–8
LEAD	1,440

SBB–05	0–2
ALUMINUM	6,800
BERYLLIUM	0.40B
CALCIUM	23,600
CHROMIUM	17.0
COPPER	81.2
MAGNESIUM	2,790
MERCURY	1.2*

SBB–06	0–2
ALUMINUM	6,060
BARIUM	535
BERYLLIUM	0.28B
CALCIUM	47,200
CHROMIUM	16.0
MAGNESIUM	2,780
MERCURY	1.8
ZINC	354

SBB–02	4–6
LEAD	1,710

SBB–02	0–2
ALUMINUM	5,980
ARSENIC	8.0N
BERYLLIUM	0.44B
CHROMIUM	16.4
COPPER	168N
IRON	15,100
MAGNESIUM	4,210
MERCURY	1.9
NICKEL	17.2
ZINC	608

SBB–01	0–2
ALUMINUM	6,940
ARSENIC	8.2N
BERYLLIUM	0.56B
COPPER	357N
IRON	16,000
MAGNESIUM	2,820
MANGANESE	395N
MERCURY	0.86*
NICKEL	15.6

SBB–08	0–2	8–9
ALUMINUM	10,200	6,990
ARSENIC	13.4N	–
BARIUM	434	–
BERYLLIUM	1.1	0.44B
CALCIUM	41,400	22,400
CHROMIUM	34.6	17.7
COPPER	174N	–
IRON	22,600	19,000
MAGNESIUM	8,540	3,320
MANGANESE	2,260N	343N
MERCURY	0.26*	0.48*
NICKEL	26.4	16.1
ZINC	667	–

SBB–04	0–2
ALUMINUM	6,500
BERYLLIUM	0.48B
CALCIUM	30,300
COPPER	58.5*
IRON	16,300
MERCURY	9.2

SBB–13	0–2	6–7
ALUMINUM	–	10,100
BERYLLIUM	0.29B	0.47B
CALCIUM	50,400	55,100
CHROMIUM	–	16.1
IRON	–	14,800
MAGNESIUM	3,020	16,600
MANGANESE	–	742
MERCURY	0.59*	0.34*

SBB–12	0–2	6–8
ARSENIC	9.3	11.2
BARIUM	771	346
BERYLLIUM	0.29B	0.31B
CALCIUM	53,100	41,000
COPPER	–	109
IRON	–	22,600
MAGNESIUM	2,690	–
MERCURY	14.4	2.5
NICKEL	–	16.0
SELENIUM	–	2.6
ZINC	465	667

WALLABOUT STREET

GERRY STREET

HARRISON AVENUE

THROOP AVENUE

POULTRY MARKET

VACANT LAND

3–STORY APARTMENT BUILDING

AUTO BODY GARAGE AND YARD

GRASS LOT

FORMER DRAIN PIPE LOCATION

FORMER LOADING DOCK LOCATION

GRAVEL PARKING LOT

GRASSY AREA

CONCRETE SLAB

APPROXIMATE LOCATION OF FORMER FUEL OIL UST

STORAGE LOT

APPROXIMATE LOCATION OF FORMER BOILER

APPROXIMATE LOCATION OF FORMER BASEMENT

SBB–01 SBB–02 SBB–03 SBB–04 SBB–05 SBB–06 SBB–07 SBB–08 SBB–09 SBB–10 SBB–11 SBB–12 SBB–13 SBB–14 SBB–15 SBB–16

60' 0 60'

NOTE: ALL SAMPLES WERE COLLECTED ON APRIL 15–22, 1997 EXCEPT FOR SBB–1/6–8, SBB–2/4–6, SBB–3/4–6, SBB–4/6–8, SBB–5/6–8 AND SBB–6/6–8, WHICH WERE COLLECTED ON MARCH 11–12, 1996.

LEGEND

SBB–01 ● SOIL BORING LOCATION AND DESIGNATION

SBB–03 ● HOT SPOT MARKER SOIL BORING

N SPIKE SAMPLE NOT WITHIN CONTROL LIMITS

B ESTIMATED VALUE

* DUPLICATE ANALYSIS NOT WITHIN CONTROL LIMITS

SITE B

NYSDEC NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

RSCOs RECOMMENDED SOIL CLEANUP OBJECTIVES

NA NOT ANALYZED

UST UNDERGROUND STORAGE TANK

– NOT DETECTED OR NOT DETECTED ABOVE NYSDEC RSCOs

X X X CHAIN LINK FENCING

SBB–5	0–2
ALUMINUM	6,800
BERYLLIUM	0.40B
CALCIUM	23,600
CHROMIUM	17.0
COPPER	81.2
MAGNESIUM	2,790
MERCURY	1.2*

SAMPLE DESIGNATION

SAMPLE INTERVAL

CONCENTRATIONS IN MILLIGRAMS PER KILOGRAM (mg/kg)

GREY INDICATES LEAD CONCENTRATION BELOW RSCO, BUT GREATER THAN 1,000 mg/kg

	NYSDEC RSCOs (mg/kg)		
ALUMINUM	5,410	MANGANESE	336
ARSENIC	7.5	MERCURY	0.1
BARIUM	340	NICKEL	14.4
BERYLLIUM	0.16	SELENIUM	2.2
CALCIUM	15,600	ZINC	337
CHROMIUM	15.4		
COBALT	30		
COPPER	50.2		
IRON	14,700		
LEAD	1,380		
MAGNESIUM	2,670		

Title:

METALS DETECTED IN SOIL THAT EXCEED THE NYSDEC RSCOs

SUPPLEMENTAL INVESTIGATION AT SITE B

Prepared For: PFIZER INC
WILLIAMSBURG FACILITY, BROOKLYN, NEW YORK

ROUX ASSOCIATES INC
Environmental Consulting & Management

Compiled by: J.T.	Date: 6/97	FIGURE
Prepared by: R.K.	Scale: 1"=60"	3
Project Mgr: S.J.G	Status: FINAL	
File No: P4418102	Project: 04744Y08	

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SBB–14	0–2	6–7
BENZENE	–	1,300JB
TOLUENE	–	20,000B
ETHYLBENZENE	–	72,000B
M/P XYLENES	–	290,000BE
O–XYLENE	–	26,000BC
ISOPROPYLBENZENE	–	22,000B
N–PROPYLBENZENE	–	33,000B
1,3,5–TRIMETHYLBENZENE	–	49,000BCE
1,2,4–TRIMETHYLBENZENE	–	210,000BE
SEC–BUTYLBENZENE	–	4,100JB
P–ISOPROPYLTOLUENE	–	2,400JB
N–BUTYLBENZENE	–	45,000BCE
NAPHTHALENE	–	19,000B

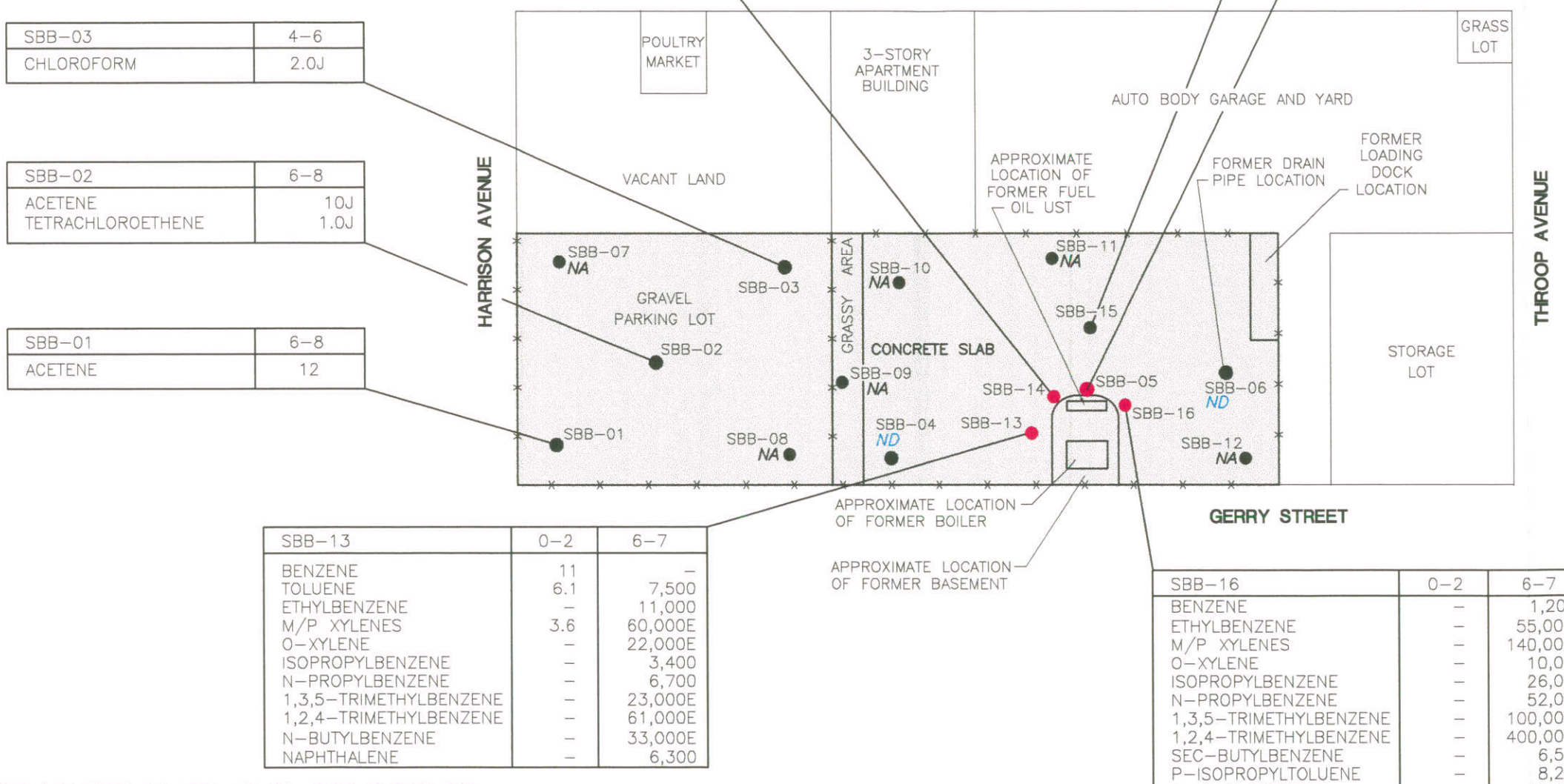
SBB–15	0–2	6–7
M/P XYLENES	2.4	–
1,3,5–TRIMETHYLBENZENE	7.4	18
1,2,4–TRIMETHYLBENZENE	9.8	13
N–BUTYLBENZENE	7.8	67

SBB–05	6–8
BENZENE	1,400J
TOLUENE	16,000
ETHYLBENZENE	13,000
TETRACHLOROETHENE	200J
XYLENES (TOTAL)	78,000

SBB–03	4–6
CHLOROFORM	2.0J

SBB–02	6–8
ACETENE	10J
TETRACHLOROETHENE	1.0J

SBB–01	6–8
ACETENE	12



SBB–13	0–2	6–7
BENZENE	11	–
TOLUENE	6.1	7,500
ETHYLBENZENE	–	11,000
M/P XYLENES	3.6	60,000E
O–XYLENE	–	22,000E
ISOPROPYLBENZENE	–	3,400
N–PROPYLBENZENE	–	6,700
1,3,5–TRIMETHYLBENZENE	–	23,000E
1,2,4–TRIMETHYLBENZENE	–	61,000E
N–BUTYLBENZENE	–	33,000E
NAPHTHALENE	–	6,300

SBB–16	0–2	6–7
BENZENE	–	1,200J
ETHYLBENZENE	–	55,000E
M/P XYLENES	–	140,000E
O–XYLENE	–	10,000
ISOPROPYLBENZENE	–	26,000
N–PROPYLBENZENE	–	52,000
1,3,5–TRIMETHYLBENZENE	–	100,000E
1,2,4–TRIMETHYLBENZENE	–	400,000E
SEC–BUTYLBENZENE	–	6,500
P–ISOPROPYLTOLUENE	–	8,200
N–BUTYLBENZENE	–	12,000
NAPHTHALENE	–	7,600E

NOTE:
ALL SAMPLES WERE COLLECTED ON APRIL 15–22, 1997, EXCEPT FOR SBB–1/6–8, SBB–2/4–6, SBB–3/4–6, SBB–4/6–8, SBB–5/6–8, AND SBB–6/6–8, WHICH WERE COLLECTED ON MARCH 11–12, 1996.

LEGEND

SBB–07 ●	SOIL BORING LOCATION AND DESIGNATION
SBB–14 ●	HOT SPOT MARKER SOIL BORING
B	ANALYTE DETECTED IN BLANK SAMPLE
J	ESTIMATED VALUE
E	INDICATES EXCEEDANCE OF CALIBRATION CURVE RANGE
C	CONFIRMED BY GC/MS
–	NOT DETECTED
NYSDEC	NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
NA	NOT ANALYZED
ND	NOT DETECTED
UST	UNDERGROUND STORAGE TANK
–X–X–	CHAIN LINK FENCING
	SITE B

SAMPLE DESIGNATION

SBB–13	0–2	6–7
TOLUENE	–	7,500
ETHYLBENZENE	–	11,000
M/P XYLENES	–	60,000E
O–XYLENE	–	22,000E
ISOPROPYLBENZENE	–	3,400
N–PROPYLBENZENE	–	6,700
1,3,5–TRIMETHYLBENZENE	–	23,000E
1,2,4–TRIMETHYLBENZENE	–	61,000E
N–BUTYLBENZENE	–	33,000E
NAPHTHALENE	–	6,300

SAMPLE INTERVAL

CONCENTRATIONS IN MICROGRAMS PER KILOGRAM (ug/kg)

Title:
TOTAL CONCENTRATIONS OF VOLATILE ORGANIC COMPOUNDS DETECTED IN SOIL

SUPPLEMENTAL INVESTIGATION AT SITE B

Prepared For: PFIZER INC
WILLIAMSBURG FACILITY, BROOKLYN, NEW YORK

ROUX ASSOCIATES INC
Environmental Consulting & Management

Compiled by:	J.T.	Date:	6/97
Prepared by:	R.K.	Scale:	1"=60"
Project Mgr:	S.J.G	Status:	FINAL
File No:	P4418105	Project:	04744Y08

FIGURE 4

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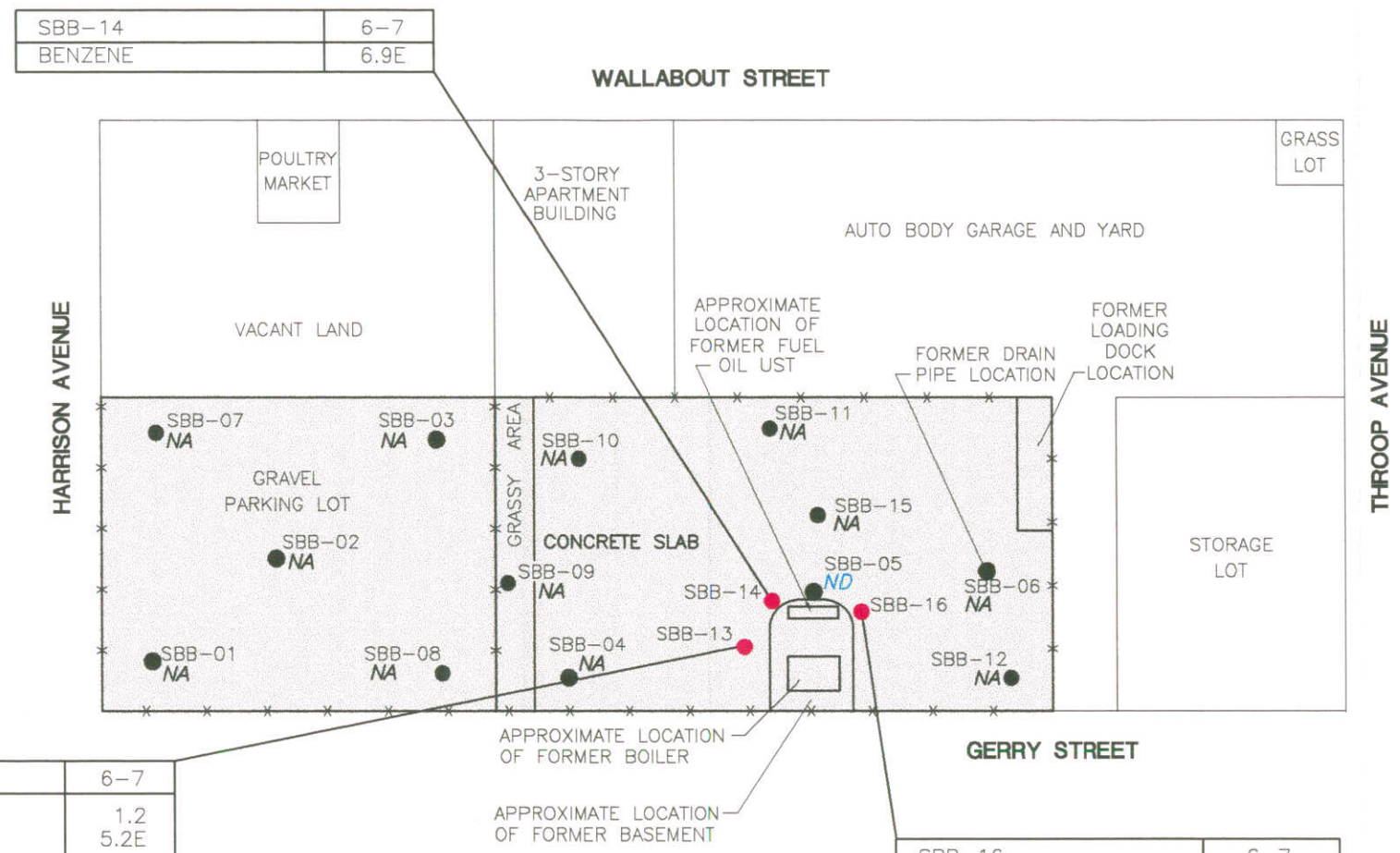

SBB-14	6-7
BENZENE	6.9E

SBB-13	6-7
BENZENE	1.2
N-PROPYLBENZENE	5.2E

SBB-16	6-7
ETHYLBENZENE	12.0E
M/P XYLENES	8.0E
ISOPROPYLBENZENE	13.0E
N-PROPYLBENZENE	11.0E
1,3,5-TRIMETHYLBENZENE	37.0E
1,2,4-TRIMETHYLBENZENE	46.0E
P-ISOPROPYLTOLUENE	8.2
N-BUTYLBENZENE	58.0E
NAPHTHALENE	48

NYSDEC STARS (ug/L)

BENZENE	0.7
TOLUENE	5
ETHYLBENZENE	5
M-XYLENE	5
P-XYLENE	5
ISOPROPYLBENZENE	5
N-PROPYLBENZENE	5
1,3,5-TRIMETHYLBENZENE	5
1,2,4-TRIMETHYLBENZENE	5
SEC-BUTYLBENZENE	5
P-ISOPROPYLTOLUENE	5
N-BUTYLBENZENE	5
NAPHTHALENE	10

NOTE:
ALL SAMPLES WERE COLLECTED ON JUNE 23, 1997.

LEGEND

SBB-07 ●	SOIL BORING LOCATION AND DESIGNATION
SBB-14 ●	HOT SPOT MARKER SOIL BORING
J	ESTIMATED VALUE
E	INDICATES EXCEEDANCE OF CALIBRATION CURVE RANGE
▭	SITE B
NYSDEC	NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
STARS	SPILL TECHNOLOGY AND REMEDIATION SERIES
NA	NOT ANALYZED
ND	NOT DETECTED ABOVE THE NYSDEC STARS
UST	UNDERGROUND STORAGE TANK
-X-X-	CHAIN LINK FENCING

SAMPLE DESIGNATION — SBB-16 | 6-7 — SAMPLE INTERVAL

ETHYLBENZENE	12.0E
M/P XYLENES	8.0E
ISOPROPYLBENZENE	13.0E
N-PROPYLBENZENE	11.0E
1,3,5-TRIMETHYLBENZENE	37.0E
1,2,4-TRIMETHYLBENZENE	46.0E
P-ISOPROPYLTOLUENE	8.2
N-BUTYLBENZENE	58.0E
NAPHTHALENE	48

CONCENTRATIONS IN MICROGRAMS PER KILOGRAM (ug/L)

Title:

VOLATILE ORGANIC COMPOUNDS DETECTED IN SOIL THAT EXCEED THE NYSDEC STARS

SUPPLEMENTAL INVESTIGATION AT SITE B

Prepared For: PFIZER INC
WILLIAMSBURG FACILITY, BROOKLYN, NEW YORK

ROUX ASSOCIATES INC
Environmental Consulting & Management

Compiled by: J.T.	Date: 6/97	FIGURE
Prepared by: R.K.	Scale: 1"=60"	5
Project Mgr: S.J.G	Status: FINAL	
File No: P4418106	Project: 04744Y08	

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SBB-09	DISSOLVED	TOTAL
ALUMINUM	–	683,000
ANTIMONY	7.0B	–
ARSENIC	–	855
BARIUM	104B	3,400
BERYLLIUM	–	60.0
CADMIUM	–	62.9
CALCIUM	194,000	1,660,000
CHROMIUM	–	1,960
COBALT	1.2B	590
COPPER	1.7B	5,310
IRON	–	1,470,000
LEAD	5.3	79,800
MAGNESIUM	36,800	392,000
MANGANESE	1,180	18,400
MERCURY	–	130
NICKEL	3.7B	2,720
POTASSIUM	17,600	157,000
SELENIUM	6.4	57.2
SILVER	–	16.9
SODIUM	92,600	110,000
VANADIUM	–	2,340
ZINC	25.3	29,000

SBB-10	DISSOLVED	TOTAL
ALUMINUM	157.0B	931,000
ANTIMONY	4.5B	–
ARSENIC	–	725
BARIUM	141B	5,960
BERYLLIUM	–	57.1
CADMIUM	–	15.5
CALCIUM	410,000	1,190,000
CHROMIUM	1.6B	2,270
COBALT	1.6B	771
COPPER	5.7B	3,970
IRON	244	1,460,000
LEAD	26.7	31,200
MAGNESIUM	42,100	300,000
MANGANESE	175	32,400
MERCURY	–	453
NICKEL	2.8B	1,550
POTASSIUM	37,200	162,000
SELENIUM	19.9	35.4
SILVER	–	2.3B
SODIUM	114,000	133,000
VANADIUM	5.6B	2,880
ZINC	25.4	19,200

SBB-11	DISSOLVED	TOTAL
ALUMINUM	14.3B	45,200
ANTIMONY	23.0B	–
ARSENIC	–	254
BARIUM	69.0B	1,750
BERYLLIUM	–	33.0
CALCIUM	388,000	493,000
CHROMIUM	–	1,350
COBALT	3.0B	166
COPPER	8.5B	1,750
IRON	–	632,000
LEAD	–	1,420
MAGNESIUM	171,000	232,000
MANGANESE	80.3	2,720
MERCURY	–	25.8
NICKEL	3.7B	549
POTASSIUM	68,800	108,000
SELENIUM	32.5	76.7
SODIUM	211,000	201,000
THALLIUM	–	8.3B
VANADIUM	–	1,860
ZINC	7.2B	3,340

SBB-15	DISSOLVED	TOTAL
ALUMINUM	191B	13,000
ARSENIC	6.3B	11.0
BARIUM	118B	210
BERYLLIUM	–	1.4B
CALCIUM	148,000	156,000
CHROMIUM	2.6B	41.9
COBALT	–	7.5B
COPPER	–	16.8B
IRON	12,100	44,800
LEAD	2.8B	40.9
MAGNESIUM	37,300	40,700
MANGANESE	879	1,060
NICKEL	2.1B	21.8B
POTASSIUM	19,900	22,500
SODIUM	49,000	50,600
VANADIUM	–	58.8
ZINC	11.6B	86.2

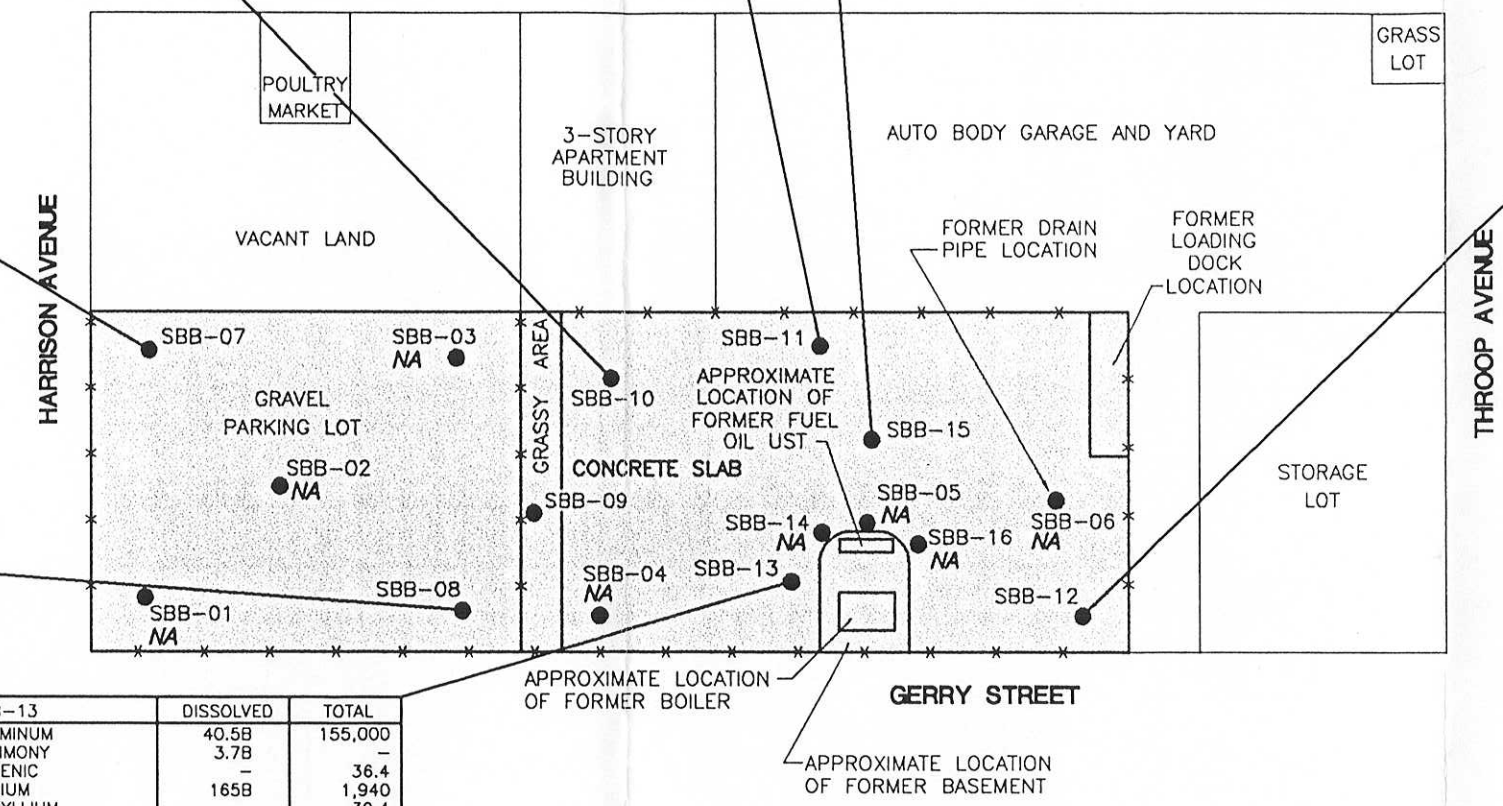
SBB-15R	DISSOLVED	TOTAL
ALUMINUM	90.1B	96,000
ARSENIC	6.0B	28.0
BARIUM	120B	990
BERYLLIUM	–	10
CALCIUM	151,000	182,000
CHROMIUM	1.1B	319
COBALT	–	47.8B
COPPER	–	106
IRON	15,600	209,000
LEAD	–	160
MAGNESIUM	38,000	53,500
MANGANESE	914	1,880
NICKEL	3.8B	141
POTASSIUM	20,400	30,600
SODIUM	49,100	53,300
VANADIUM	–	435
ZINC	11.8B	395

SBB-07	DISSOLVED	TOTAL
ALUMINUM	60.5BE	833,000E
ARSENIC	21.6E	554E
BARIUM	94.5BE	13,500E
BERYLLIUM	–	66.0E
CADMIUM	–	42.3
CALCIUM	124,000E	822,000E
CHROMIUM	1.7BE	3,120E
COBALT	1.3BE	744E
COPPER	–	8,100
IRON	1,140	1,670,000
LEAD	–	20,200E
MAGNESIUM	29,000E	457,000E
MANGANESE	420E	21,700E
MERCURY	–	727
NICKEL	4.1BE	3,140E
POTASSIUM	26,800	133,000
SILVER	–	42.7
SODIUM	127,000	121.000
VANADIUM	2.6BE	4,110E
ZINC	9.6BE	17,800E

SBB-12	DISSOLVED	TOTAL
ALUMINUM	226	732,000
ARSENIC	–	186
BARIUM	132B	10,700
BERYLLIUM	–	35.9
CALCIUM	170,000	914,000
CHROMIUM	1.2B	2,060
COBALT	2.8B	393
COPPER	1.5B	2,280
IRON	3,970	935,000
LEAD	4.3	12,900
MAGNESIUM	40,600	189,000
MANGANESE	2,120	11,000
MERCURY	–	7,500
NICKEL	2.8B	1,050
POTASSIUM	23,200	95,400
SELENIUM	3.6B	40.5
SILVER	–	2.7B
SODIUM	75,100	89,700
THALLIUM	–	7.1B
VANADIUM	–	2,170
ZINC	15.4B	9,270

SBB-08	DISSOLVED	TOTAL
ALUMINUM	96.0BE	617,000
ARSENIC	4.1BE	393
BARIUM	68.0BE	13,800
BERYLLIUM	–	34.3
CADMIUM	–	58.8
CALCIUM	120,000E	2,400,000
CHROMIUM	2.3BE	1,810
COBALT	–	420
COPPER	–	3,850
IRON	117	673,000
LEAD	–	37,200
MAGNESIUM	23,000E	326,000
MANGANESE	106E	22,200
MERCURY	–	349
NICKEL	–	1,460
POTASSIUM	13,300	98,100
SELENIUM	5.0B	–
SILVER	–	8.3B
SODIUM	43,100	82,700
VANADIUM	3.8BE	1,860
ZINC	8.3BE	18,500

SBB-13	DISSOLVED	TOTAL
ALUMINUM	40.5B	155,000
ANTIMONY	3.7B	–
ARSENIC	–	36.4
BARIUM	165B	1,940
BERYLLIUM	–	39.4
CALCIUM	177,00	253,000
CHROMIUM	–	1,070
COBALT	–	98.8
COPPER	–	183
IRON	7,940	360,000
LEAD	2.8B	150
MAGNESIUM	35,400	75,200
MANGANESE	2,360	4,890
MERCURY	–	2.6N
NICKEL	2.5B	265
POTASSIUM	19,900	53,900
SODIUM	25,400	34,700
VANADIUM	–	2,180
ZINC	8.3B	714



SBB-07 ● SOIL BORING LOCATION AND DESIGNATION

* DUPLICATE ANALYSIS NOT WITHIN CONTROL LIMITS

—X—X— CHAIN LINK FENCING

B ESTIMATED VALUE

E INDICATES EXCEEDANCE OF CALIBRATION CURVE RANGE

R FIELD DUPLICATE

PLEASE NOTE THAT THE SAMPLES ANALYZED FOR DISSOLVED METALS WERE FIELD FILTERED

LEGEND

SITE B

NA NOT ANALYZED

– NOT DETECTED

UST UNDERGROUND STORAGE TANK

SBB-15	DISSOLVED	TOTAL
ALUMINUM	191B	13,000
ARSENIC	6.3B	11.0
BARIUM	118B	210
BERYLLIUM	–	1.4B
CALCIUM	148,000	156,000
CHROMIUM	2.6B	41.9
COBALT	–	7.5B
COPPER	–	16.8B
IRON	12,100	44,800
LEAD	2.8B	40.9
MAGNESIUM	37,300	40,700
MANGANESE	879	1,060
NICKEL	2.1B	21.8B
POTASSIUM	19,900	22,500
SODIUM	49,000	50,600
VANADIUM	–	58.8
ZINC	11.6B	86.2

SAMPLE DESIGNATION

ANALYSIS TYPE

CONCENTRATIONS IN MICROGRAMS PER LITER (ug/L)

60' 0 60'

Title:

METALS DETECTED IN PERCHED GROUND WATER

SUPPLEMENTAL INVESTIGATION AT SITE B

Prepared For:

PFIZER INC

WILLIAMSBURG FACILITY, BROOKLYN, NEW YORK

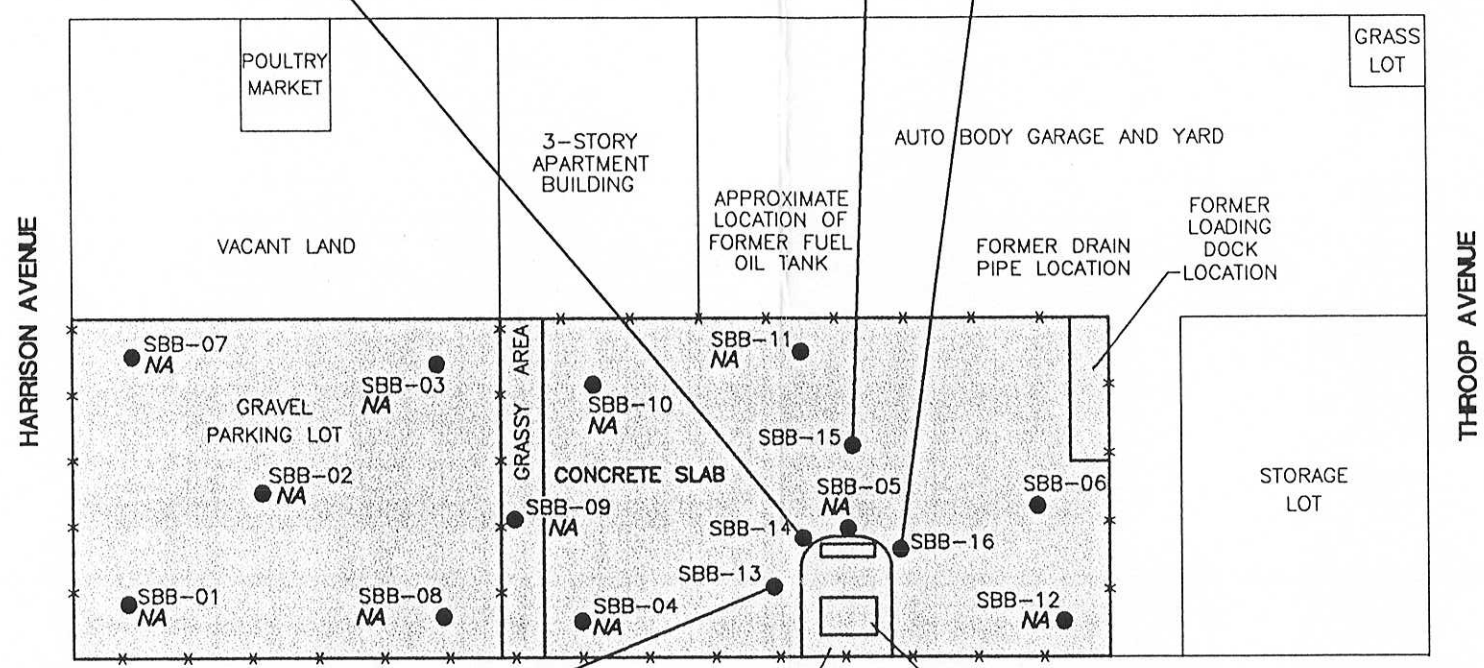
ROUX ASSOCIATES INC
Environmental Consulting & Management

Compiled by: J.T.	Date: 6/97	FIGURE
Prepared by: R.K.	Scale: 1"=60'	6
Project Mgr: S.J.G	Status: FINAL	
File No: P4418103	Project: 04744Y08	

SBB-14	4/17/97
BENZENE	1,000
TOLUENE	960
ETHYLBENZENE	1,900
M/P XYLENES	7,200E
O-XYLENE	1,600
ISOPROPYLBENZENE	130
N-PROPYLBENZENE	300
1,3,5-TRIMETHYLBENZENE	690
1,2,4-TRIMETHYLBENZENE	2,600E
N-BUTYLBENZENE	380
NAPHTHALENE	430

SBB-15	4/17/97	4/17/97R
BENZENE	270	370
ETHYLBENZENE	920	1,100
M/P XYLENES	3,600E	4,200E
O-XYLENE	940	920
ISOPROPYLBENZENE	110	130
N-PROPYLBENZENE	170	200
1,3,5-TRIMETHYLBENZENE	790	720
1,2,4-TRIMETHYLBENZENE	1,600	1,900
N-BUTYLBENZENE	590	480
NAPHTHALENE	250	310

SBB-16	4/17/97
BENZENE	300
ETHYLBENZENE	1,400
M/P XYLENES	3,100E
O-XYLENE	280
N-PROPYLBENZENE	230
1,3,5-TRIMETHYLBENZENE	1,100
1,2,4-TRIMETHYLBENZENE	2,800E
N-BUTYLBENZENE	680
NAPHTHALENE	740



SBB-13	4/17/97
BENZENE	2,300E
TOLUENE	6,200E
ETHYLBENZENE	1,800
M/P XYLENES	6,500E
O-XYLENE	2,100
ISOPROPYLBENZENE	120
N-PROPYLBENZENE	180
1,3,5-TRIMETHYLBENZENE	580
1,2,4-TRIMETHYLBENZENE	1,600
N-BUTYLBENZENE	360
NAPHTHALENE	310

60' 0 60'

LEGEND

SBB-07 ● SOIL BORING LOCATION AND DESIGNATION

CHAIN LINK FENCING

NA NOT ANALYZED

SITE B

E INDICATES EXCEEDENCE OF CALIBRATION CURVE RANGE

R FIELD REPLICATE

SBB-16	4/17/97
BENZENE	300
ETHYLBENZENE	1,400
M/P XYLENES	3,100E
O-XYLENE	280
N-PROPYLBENZENE	230
1,3,5-TRIMETHYLBENZENE	1,100
1,2,4-TRIMETHYLBENZENE	2,800E
N-BUTYLBENZENE	680
NAPHTHALENE	740

SAMPLE DESIGNATION
SAMPLE DATE
CONCENTRATIONS IN MICROGRAMS PER LITER (ug/L)

UST UNDERGROUND STORAGE TANK

Title:

VOLATILE ORGANIC COMPOUNDS DETECTED IN PERCHED GROUND WATER

SUPPLEMENTAL INVESTIGATION AT SITE B

Prepared For: PFIZER INC
WILLIAMSBURG FACILITY, BROOKLYN, NEW YORK

ROUX ASSOCIATES INC
Environmental Consulting & Management

Compiled by: J.T.	Date: 6/97	FIGURE
Prepared by: R.K.	Scale: 1"=60'	7
Project Mgr: S.J.G	Status: FINAL	
File No: P4418104	Project: 04744Y08	

APPENDIX A

Soil Boring Logs

ROUX

Project: PFIZER INC WILLIAMSBURG, BROOKLYN		Log of Soil Boring No. SBB-1	
Logged By: J. Tyers	Checked By: J. Yeary	Date Started: 4/15/97	Date Completed: 4/15/97
Drilling Co: Roux Associates, Inc.		Drill Bit Diameter: 2-inch	Total Depth: 2.0 ft
Driller: P. Barczak		Backfill Material: Bentonite Pellets	from 0 ft to 2 ft
Drilling Method: Geoprobe Model 5400		Sampler: 2-inch Drive Sampler	
Drilling Equipment: Geoprobe Model 5400		Depth to Water at Time of Drilling: Not Encountered	

Depth (feet)	LITHOLOGIC DESCRIPTION	Lithology	Sampler	Blows per 6"	PID (ppm)	REMARKS
	Brown and dark brown fine to coarse SAND, little fine to medium Gravel, little Ash-like material, little Silt; Dry to moist (FILL)	FILL			0.0	Soil sample collected from 0-2 ft bls for laboratory analysis (TAL Metals only).
						Bottom of boring at 2 ft bls.
5						
10						
15						
20						
25						

ROUX

Project: PFIZER INC WILLIAMSBURG, BROOKLYN		Log of Soil Boring No. **SBB-2**	
Logged By: **J. Tyers**	Checked By: **J. Yeary**	Date Started: **4/15/97**	Date Completed: **4/15/97**
Drilling Co: **Roux Associates, Inc.**		Drill Bit Diameter: **2-inch**	Total Depth: **2.0 ft**
Driller: **P. Barczak**		Backfill Material: **Bentonite Pellets**	from **0 ft** to **2 ft**
Drilling Method: **Geoprobe Model 5400**		Sampler: **2-inch Drive Sampler**	
Drilling Equipment: **Geoprobe Model 5400**		Depth to Water at Time of Drilling: **Not Encountered**	

Depth (feet)	LITHOLOGIC DESCRIPTION	Lithology	Sampler	Blows per 6"	PID (ppm)	REMARKS
	Brown and dark brown fine to medium SAND, some Rock fragments, some red Brick, little fine to medium Gravel, little Silt, little Cinders; Moist (FILL)	FILL			0.0	Soil sample collected from 0-2 ft bls for laboratory analysis (TAL Metals only).
						Bottom of boring at 2 ft bls.
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ROUX

Project: PFIZER INC WILLIAMSBURG, BROOKLYN		Log of Soil Boring No. SBB-3	
Logged By: J. Tyers	Checked By: J. Yeary	Date Started: 4/15/97	Date Completed: 4/15/97
Drilling Co: Roux Associates, Inc.		Drill Bit Diameter: 2-inch	Total Depth: 2.0 ft
Driller: P. Barczak		Backfill Material: Bentonite Pellets	from 0 ft to 2 ft
Drilling Method: Geoprobe Model 5400		Sampler: 2-inch Drive Sampler	
Drilling Equipment: Geoprobe Model 5400		Depth to Water at Time of Drilling: Not Encountered	

Depth (feet)	LITHOLOGIC DESCRIPTION	Lithology	Sampler	Blows per 6"	PID (ppm)	REMARKS
	Brown and dark brown fine to medium SAND, some Rock fragments, little red Brick, little fine to medium Gravel; Moist (FILL)	FILL			0.0	Soil sample collected from 0-2 ft bls for laboratory analysis (TAL Metals only).
						Bottom of boring at 2 ft bls.
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ROUX

Project: PFIZER INC WILLIAMSBURG, BROOKLYN		Log of Soil Boring No. SBB-4	
Logged By: J. Tyers	Checked By: J. Yeary	Date Started: 4/21/97	Date Completed: 4/21/97
Drilling Co: Roux Associates, Inc.		Drill Bit Diameter: 2-inch	Total Depth: 2.0 ft
Driller: P. Barczak		Backfill Material: Bentonite Pellets	from 0 ft to 2 ft
Drilling Method: Geoprobe Model 5400		Sampler: 2-inch Drive Sampler	
Drilling Equipment: Geoprobe Model 5400		Depth to Water at Time of Drilling: Not Encountered	

Depth (feet)	LITHOLOGIC DESCRIPTION	Lithology	Sampler	Blows per 6"	PID (ppm)	REMARKS
	Brown and tan fine to coarse SAND, some fine to coarse Gravel, some Rock fragments; Moist (FILL)	FILL			11.8	3" concrete slab not included in geologic logging. Soil sample collected from 0-2 ft bls for laboratory analysis (TAL Metals only). Bottom of boring at 2 ft bls.
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ROUX

Project: **PFIZER INC WILLIAMSBURG, BROOKLYN**		**Log of Soil Boring No. SBB-5**	
Logged By: **J. Tyers**	Checked By: **J. Yeary**	Date Started: **4/17/97**	Date Completed: **4/17/97**
Drilling Co: **Roux Associates, Inc.**		Drill Bit Diameter: **2-inch**	Total Depth: **2.0 ft**
Driller: **P. Barczak**		Backfill Material: **Bentonite Pellets**	from **0 ft** to **2 ft**
Drilling Method: **Geoprobe Model 5400**		Sampler: **2-inch Drive Sampler**	
Drilling Equipment: **Geoprobe Model 5400**		Depth to Water at Time of Drilling: **Not Encountered**	

Depth (feet)	LITHOLOGIC DESCRIPTION	Lithology	Sampler	Blows per 6"	PID (ppm)	REMARKS
	Brown fine to coarse SAND, some Rock fragments, some fine to coarse Gravel, some red Brick; Moist (FILL)	FILL			2.8	3" concrete slab not included in geologic logging. Soil sample collected from 0-2 ft bls for laboratory analysis (TAL Metals only). Bottom of boring at 2 ft bls.
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ROUX

Project: PFIZER INC WILLIAMSBURG, BROOKLYN		Log of Soil Boring No. SBB-6	
Logged By: J. Tyers	Checked By: J. Yeary	Date Started: 4/22/97	Date Completed: 4/22/97
Drilling Co: Roux Associates, Inc.		Drill Bit Diameter: 2-inch	Total Depth: 2.0 ft
Driller: P. Barczak		Backfill Material: Bentonite Pellets	from 0 ft to 2 ft
Drilling Method: Geoprobe Model 5400		Sampler: 2-inch Drive Sampler	
Drilling Equipment: Geoprobe Model 5400		Depth to Water at Time of Drilling: Not Encountered	

Depth (feet)	LITHOLOGIC DESCRIPTION	Lithology	Sampler	Blows per 6"	PID (ppm)	REMARKS
0	Brown fine to coarse SAND, some Rock fragments, little fine to medium Gravel, trace Organic material; Moist (FILL)	FILL			0.0	3" concrete slab not included in geologic logging. Soil sample collected from 0-2 ft bls for laboratory analysis (TAL Metals only). Bottom of boring at 2 ft bls.
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ROUX

Project: PFIZER INC WILLIAMSBURG, BROOKLYN		Log of Soil Boring No. SBB-7	
Logged By: J. Tyers	Checked By: J. Yeary	Date Started: 4/15/97	Date Completed: 4/15/97
Drilling Co: Roux Associates, Inc.		Drill Bit Diameter: 2-inch	Total Depth: 8.0 ft
Driller: P. Barczak		Backfill Material: Bentonite Pellets	from 0 ft to 8 ft
Drilling Method: Geoprobe Model 5400		Sampler: 2-inch Drive Sampler	
Drilling Equipment: Geoprobe Model 5400		Depth to Water at Time of Drilling: 6.0 feet	

Depth (feet)	LITHOLOGIC DESCRIPTION	Lithology	Sampler	Blows per 6"	PID (ppm)	REMARKS
	Brown and dark brown fine to medium SAND, some red Brick, some Rock fragments, little fine to medium Gravel, little Ash-like material; Moist (FILL)	FILL			0.0	Soil samples collected from 0-2 and 6-7.5 ft bls for laboratory analysis (TAL Metals only).
					0.0	
5	Brown fine to coarse SAND, some fine to coarse Gravel, some Rock fragments, little Cinders, little Ash-like material; Moist to wet (FILL)				0.0	
	Brown fine to coarse GRAVEL and fine to coarse Sand, some Rock fragments; Wet (FILL)				0.0	Perched ground water encountered at approximately 6 ft bls; sample collected for laboratory analysis (TAL Metals only).
	Grey and black CLAY, some Silt; Moist	CLAY				Bottom of boring at 8 ft bls.
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ROUX

Project: PFIZER INC WILLIAMSBURG, BROOKLYN		Log of Soil Boring No. **SBB-8**	
Logged By: **J. Tyers**	Checked By: **J. Yeary**	Date Started: **4/15/97**	Date Completed: **4/15/97**
Drilling Co: **Roux Associates, Inc.**		Drill Bit Diameter: **2-inch**	Total Depth: **12.0 ft**
Driller: **P. Barczak**		Backfill Material: **Bentonite Pellets**	from **0 ft** to **12 ft**
Drilling Method: **Geoprobe Model 5400**		Sampler: **2-inch Drive Sampler**	
Drilling Equipment: **Geoprobe Model 5400**		Depth to Water at Time of Drilling: **7.5 feet**	

Depth (feet)	LITHOLOGIC DESCRIPTION	Lithology	Sampler	Blows per 6"	PID (ppm)	REMARKS
	Tan fine to coarse SAND, some red Brick, some Rock fragments, some fine to medium Gravel; Dry to Moist (FILL)	FILL			5.9	Soil samples collected from 0-2 and 8-9 ft bls for laboratory analysis (TAL Metals only).
	Brown and dark brown fine to medium SAND, some fine to coarse Gravel, some Rock fragments; Moist (FILL)				13.6	
5	Brown fine to coarse SAND, some red Brick, some Rock fragments, little Silt; Moist to wet (FILL)				11.2	
	Brown coarse SAND and Rock fragments, some red Brick; Wet (FILL)				0.0	Perched ground water encountered at approximately 7.5 ft bls; sample collected for laboratory analysis (TAL Metals only).
	Brown, black and grey CLAY, some Silt; Moist	CLAY				
10					4.3	
						Bottom of boring at 12 ft bls.
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ROUX

Project: PFIZER INC WILLIAMSBURG, BROOKLYN		Log of Soil Boring No. SBB-9	
Logged By: J. Tyers	Checked By: J. Yeary	Date Started: 4/21/97	Date Completed: 4/21/97
Drilling Co: Roux Associates, Inc.		Drill Bit Diameter: 2-inch	Total Depth: 12.0 ft
Driller: P. Barczak		Backfill Material: Bentonite Pellets	from 0 ft to 12 ft
Drilling Method: Geoprobe Model 5400		Sampler: 2-inch Drive Sampler	
Drilling Equipment: Geoprobe Model 5400		Depth to Water at Time of Drilling: 7.0 feet	

Depth (feet)	LITHOLOGIC DESCRIPTION	Lithology	Sampler	Blows per 6"	PID (ppm)	REMARKS
	Brown fine to coarse SAND, little Organic material, little fine to coarse Gravel; Moist (FILL)	FILL			12.7	Soil samples collected from 0-2 and 9-11 ft bls for laboratory analysis (TAL Metals only).
	Brown and tan fine to coarse SAND, some Rock fragments, some fine to coarse Gravel, little red Brick; Moist (FILL)				10.8	
5	Brown fine to coarse SAND, some red Brick, some Concrete, little Rock fragments; Moist (FILL)				10.1	
	Brown fine to coarse SAND, some Rock fragments, some fine to coarse Gravel, little red Brick; Moist to wet (FILL)				7.8	Perched ground water encountered at approximately 7 ft bls; sample collected for laboratory analysis (TAL Metals only).
	Grey and brown fine to coarse SAND, some Rock fragments, some fine to coarse Gravel, little red Brick, little Silt; Wet (FILL)				6.2	
10					5.9	
	Black and grey CLAY, some Silt; Moist	CLAY				Bottom of boring at 12 ft bls.
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ROUX

Project: PFIZER INC WILLIAMSBURG, BROOKLYN		Log of Soil Boring No. SBB-10	
Logged By: J. Tyers	Checked By: J. Yeary	Date Started: 4/21/97	Date Completed: 4/21/97
Drilling Co: Roux Associates, Inc.		Drill Bit Diameter: 2-inch	Total Depth: 12.0 ft
Driller: P. Barczak		Backfill Material: Bentonite Pellets	from 0 ft to 12 ft
Drilling Method: Geoprobe Model 5400		Sampler: 2-inch Drive Sampler	
Drilling Equipment: Geoprobe Model 5400		Depth to Water at Time of Drilling: 8.0 feet	

Depth (feet)	LITHOLOGIC DESCRIPTION	Lithology	Sampler Blows per 6"	PID (ppm)	REMARKS
	Brown fine to coarse SAND, some brown-orange and brown Silt, some Rock fragments, some fine to coarse Gravel, little Cinders, little red Brick; Dry to moist (FILL)	FILL		0.0	3" concrete slab not included in geologic logging. Soil samples collected from 0-2 and 8-10 ft bls for laboratory analysis (TAL Metals only).
				0.0	
5	Brown fine to coarse SAND, some Rock fragments, some fine to coarse Gravel, some red Brick; Moist to wet (FILL)			0.0	
				0.0	
	Brown fine to coarse SAND, some Rock fragments, some fine to coarse Gravel, some red Brick; Wet (FILL)			0.0	Perched ground water encountered at approximately 8 ft bls; sample collected for laboratory analysis (TAL Metals only).
10	Brown, black and grey CLAY, some Silt; Moist	CLAY		0.0	
					Bottom of boring at 12 ft bls.
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ROUX

Project: PFIZER INC WILLIAMSBURG, BROOKLYN		Log of Soil Boring No. SBB-11	
Logged By: J. Tyers	Checked By: J. Yeary	Date Started: 4/22/97	Date Completed: 4/22/97
Drilling Co: Roux Associates, Inc.		Drill Bit Diameter: 2-inch	Total Depth: 8.0 ft
Driller: P. Barczak		Backfill Material: Bentonite Pellets	from 0 ft to 8 ft
Drilling Method: Geoprobe Model 5400		Sampler: 2-inch Drive Sampler	
Drilling Equipment: Geoprobe Model 5400		Depth to Water at Time of Drilling: 7.0 feet	

Depth (feet)	LITHOLOGIC DESCRIPTION	Lithology	Sampler	Blows per 6"	PID (ppm)	REMARKS
	Brown fine to coarse SAND, some fine to coarse Gravel, some Rock fragments, trace red Brick, trace Cinders; Moist (FILL)	FILL			0.0	3" concrete slab not included in geologic logging. Soil samples collected from 0-2 and 6-8 ft bls for laboratory analysis (TAL Metals only).
					3.5	
5	Brown fine to coarse Sand, some Silt, some Rock fragments, some fine to coarse Gravel, some Concrete, some red Brick; Moist to wet (FILL)				1.3	
					1.4	
	Black CLAY, some Silt; Moist	CLAY				Perched ground water encountered at approximately 7 ft bls; sample collected for laboratory analysis (TAL Metals only). Bottom of boring at 8 ft bls.
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ROUX

Project: PFIZER INC WILLIAMSBURG, BROOKLYN		Log of Soil Boring No. SBB-12	
Logged By: J. Tyers	Checked By: J. Yeary	Date Started: 4/22/97	Date Completed: 4/22/97
Drilling Co: Roux Associates, Inc.		Drill Bit Diameter: 2-inch	Total Depth: 8.0 ft
Driller: P. Barczak		Backfill Material: Bentonite Pellets	from 0 ft to 8 ft
Drilling Method: Geoprobe Model 5400		Sampler: 2-inch Drive Sampler	
Drilling Equipment: Geoprobe Model 5400		Depth to Water at Time of Drilling: 8.0 feet	

Depth (feet)	LITHOLOGIC DESCRIPTION	Lithology	Sampler	Blows per 6"	PID (ppm)	REMARKS
	Brown fine to coarse SAND, some Rock fragments, little fine to coarse Gravel, little Concrete; Dry to moist (FILL)	FILL			8.3	3" concrete slab not included in geologic logging. Soil samples collected from 0-2 and 6-8 ft bls for laboratory analysis (TAL Metals only).
					9.2	
5	Brown fine to coarse SAND, some Rock fragments, little fine to coarse Gravel, little Concrete, little Cinders, little Ceramic tiles; Moist to wet (FILL)				7.8	
					7.4	
	Black and grey CLAY, some Silt; Moist	CLAY				Perched ground water encountered at approximately 8 ft bls; sample collected for laboratory analysis (TAL Metals only).
10						Bottom of boring at 8 ft bls.
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ROUX

Project: PFIZER INC WILLIAMSBURG, BROOKLYN		Log of Soil Boring No. SBB-13	
Logged By: J. Tyers	Checked By: J. Yeary	Date Started: 4/17/97	Date Completed: 4/17/97
Drilling Co: Roux Associates, Inc.		Drill Bit Diameter: 2-inch	Total Depth: 8.0 ft
Driller: P. Barczak		Backfill Material: Bentonite Pellets	from 0 ft to 8 ft
Drilling Method: Geoprobe Model 5400		Sampler: 2-inch Drive Sampler	
Drilling Equipment: Geoprobe Model 5400		Depth to Water at Time of Drilling: 7.0 feet	

Depth (feet)	LITHOLOGIC DESCRIPTION	Lithology	Sampler	Blows per 6"	PID (ppm)	REMARKS
	Brown and dark brown fine to coarse SAND, some Concrete, some Rock fragments, some fine to coarse Gravel, little Ash-like material, little Creosote; Moist (FILL)	FILL			13.2	3" concrete slab not included in geologic logging. Soil samples collected from 0-2 and 6-7 ft bls for laboratory analysis (VOCs & TAL Metals).
					10.4	
5	Brown and dark brown fine to coarse SAND, some Concrete, some Rock fragments, some fine to coarse Gravel, little Ash-like material, little Creosote; Moist to wet (FILL)				226	Petroleum odor at 4-8 ft bls.
					1327	
	Grey and black CLAY, some Silt; Moist	CLAY				Perched ground water encountered at approximately 7 ft bls; sample collected for laboratory analysis (VOCs & TAL Metals); petroleum odor and sheen present in sample. Bottom of boring at 8 ft bls.
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ROUX

Project: **PFIZER INC WILLIAMSBURG, BROOKLYN**		**Log of Soil Boring No. SBB-14**	
Logged By: **J. Tyers**	Checked By: **J. Yeary**	Date Started: **4/17/97**	Date Completed: **4/17/97**
Drilling Co: **Roux Associates, Inc.**		Drill Bit Diameter: **2-inch**	Total Depth: **8.0 ft**
Driller: **P. Barczak**		Backfill Material: **Bentonite Pellets**	from **0 ft** to **8 ft**
Drilling Method: **Geoprobe Model 5400**		Sampler: **2-inch Drive Sampler**	
Drilling Equipment: **Geoprobe Model 5400**		Depth to Water at Time of Drilling: **6.0 feet**	

Depth (feet)	LITHOLOGIC DESCRIPTION	Lithology	Sampler	Blows per 6"	PID (ppm)	REMARKS
	Brown fine to coarse SAND, some fine to coarse Gravel, some Rock fragments, some Ash-like material; Moist (FILL)	FILL			6.6	12" concrete and 12" void not included in geologic logging. Soil samples collected from 0-2 and 6-7 ft bls for laboratory analysis (VOCs only).
5	Brown fine to coarse Sand, some red Brick, some Rock fragments, some Ash-like material, some Concrete, some fine to coarse Gravel; Moist to wet (FILL)				9.9	Petroleum odor from 4-8 ft bls.
	Grey fine to coarse SAND, trace Rock fragments; Wet (FILL)				1830	Perched ground water encountered at approximately 6 ft bls; sample collected for laboratory analysis (VOCs only); petroleum odor and sheen present in sample.
	Grey and black CLAY; Moist	CLAY				
	Grey fine to medium SAND, some Silt; Moist to wet	SW				Bottom of boring at 8 ft bls.
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ROUX

Project: PFIZER INC WILLIAMSBURG, BROOKLYN		Log of Soil Boring No. **SBB-15**	
Logged By: **J. Tyers**	Checked By: **J. Yeary**	Date Started: **4/17/97**	Date Completed: **4/17/97**
Drilling Co: **Roux Associates, Inc.**		Drill Bit Diameter: **2-inch**	Total Depth: **8.0 ft**
Driller: **P. Barczak**		Backfill Material: **Bentonite Pellets**	from **0 ft** to **8 ft**
Drilling Method: **Geoprobe Model 5400**		Sampler: **2-inch Drive Sampler**	
Drilling Equipment: **Geoprobe Model 5400**		Depth to Water at Time of Drilling: **6.0 feet**	

Depth (feet)	LITHOLOGIC DESCRIPTION	Lithology	Sampler	Blows per 6"	PID (ppm)	REMARKS
	Brown and brown-orange fine to coarse SAND, some Rock fragments, some fine to coarse Gravel, trace Ash-like material; Moist (FILL)	FILL			0.0	4" concrete slab not included in geologic logging. Soil samples collected from 0-2 and 6-7 ft bls for laboratory analysis (VOCs & TAL Metals).
					2.1	
5	Brown and brown-orange fine to coarse SAND, some Rock fragments, some fine to coarse Gravel, trace Ash-like material; Moist to wet (FILL)				17.8	Petroleum odor from 4-8 ft bls.
					582	Perched ground water encountered at approximately 6 ft bls; sample collected for laboratory analysis (VOCs & TAL Metals); slight petroleum odor and sheen present in sample.
	Black and brown CLAY, some Silt; Moist to wet	CLAY				Bottom of boring at 8 ft bls.
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ROUX

Project: PFIZER INC WILLIAMSBURG, BROOKLYN		Log of Soil Boring No. SBB-16	
Logged By: J. Tyers	Checked By: J. Yeary	Date Started: 4/17/97	Date Completed: 4/17/97
Drilling Co: Roux Associates, Inc.		Drill Bit Diameter: 2-inch	Total Depth: 8.0 ft
Driller: P. Barczak		Backfill Material: Bentonite Pellets	from 0 ft to 8 ft
Drilling Method: Geoprobe Model 5400		Sampler: 2-inch Drive Sampler	
Drilling Equipment: Geoprobe Model 5400		Depth to Water at Time of Drilling: 7.0 feet	

Depth (feet)	LITHOLOGIC DESCRIPTION	Lithology	Sampler	Blows per 6"	PID (ppm)	REMARKS
	Brown fine to coarse SAND, some Rock fragments, some fine to coarse Gravel, some red Brick; Moist (FILL)	FILL			2.3	4" concrete slab not included in geologic logging. Soil samples collected from 0-2 and 6-7 ft bls for laboratory analysis (VOCs only).
					2.8	
					407	Petroleum odor from 4-8 ft bls.
5	Grey fine SAND, trace fine Gravel; Moist to wet (FILL)				>2000	
	Grey and black CLAY, some Silt; Moist to wet	CLAY				Perched ground water encountered at approximately 7 ft bls; sample collected for laboratory analysis (VOCs only); petroleum odor and sheen present in sample. Bottom of boring at 8 ft bls.
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25						