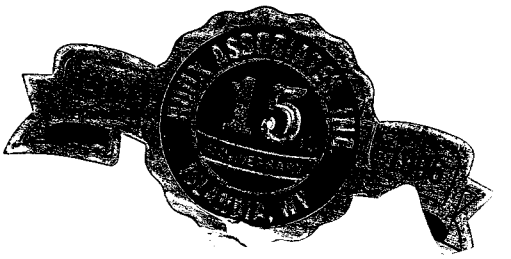

SUPPLEMENTAL SOIL AND PERCHED GROUND-WATER INVESTIGATION WORK PLAN SITE B

Pfizer Inc
Brooklyn, New York

ROUX Associates, Inc.
ENVIRONMENTAL CONSULTING & MANAGEMENT

SUPPLEMENTAL SOIL AND PERCHED GROUND-WATER INVESTIGATION WORK PLAN SITE B

Pfizer Inc
Brooklyn, New York

December 12, 1996

Prepared for:

Pfizer Inc
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CONTENTS

TABLE

FIGURES

1.0 INTRODUCTION

Roux Associates, Inc. (Roux Associates) has prepared this Work Plan to conduct a Supplemental Soil and Perched Ground-Water Investigation at the Pfizer Inc (Pfizer) property known as "Site B" (Site B), located at 73-87 Gerry Street, between Harrison and Throop Avenues, in Brooklyn, New York (Figure 1). This investigation was designed to supplement the previous investigation (i.e., Environmental Site Assessment) performed at Site B. Specifically, the objectives of this investigation are to:

- further assess the soil and perched ground-water quality conditions at Site B, including the vicinity of the former fuel oil tank;
- develop data to evaluate the need for an Interim Remedial Measure (IRM);
- develop data to evaluate the current potential exposure pathways; and
- support Pfizer's plans to rehabilitate Site B for potential future redevelopment and/or beneficial use.

To accomplish the objectives, the following tasks will be performed:

- Task 1: Soil Boring and Sampling;
- Task 2: Perched Ground-Water Sampling; and
- Task 3: Data Evaluation and Report Preparation.

This investigation is warranted based on findings from a limited Environmental Site Assessment (ESA) at Site B conducted by Roux Associates in March 1996. The ESA report concluded that metals and volatile organic compounds (VOCs) in soil were determined to be the only constituents of concern; semivolatile organic compounds (SVOCs) detected in Site soil were attributed to the makeup of the fill material, as seen by Roux Associates elsewhere in urban environments and on other blocks at the Pfizer facility.

This Work Plan was developed based on a detailed review of existing Site B data and published information. The scope and approach of this investigation for Site B is consistent with the investigation approved by the New York State Department of Environmental Conservation (NYSDEC) and implemented at the adjacent Pfizer blocks (i.e., Citric Block Site and Organics/Suciac Block). The scope of work will be performed in accordance with the Project

Operation Plans (POPs) provided in the Citric Block Site Investigation and Interim Remedial Measure Work Plan (Roux Associates, 1995). The POPs include a sampling and analysis plan (SAP), a quality assurance project plan (QAPP) and a health and safety plan (HASP).

The remaining sections of this Work Plan include:

- Section 2.0 - Background and Setting;
- Section 3.0 - Additional Data Needs;
- Section 4.0 - Scope of Work;
- Section 5.0 - Schedule; and
- Section 6.0 - References.

2.0 BACKGROUND AND SETTING

Site B is located at 73-87 Gerry Street, between Harrison and Throop Avenues, in Brooklyn, New York (Figures 1 and 2). 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 auto body garage and yard, and a storage lot; and on the west by Harrison Avenue (Figure 3).

Pfizer has decommissioned Site B, along with portions of the adjacent adjoining 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 Site B History

A review of Site B history was conducted during the ESA using available Sanborn fire insurance maps and aerial photographs. Sanborn Maps for the years 1887, 1904, 1918, 1935, 1947 and 1950 and aerial photographs for the years 1951, 1959, 1961, 1966, 1970, 1976 and 1980 were reviewed. A site inspection was conducted during the ESA to determine the present features of Site B. A brief summary of the Site history follows.

Sanborn Maps

- 1887 - Site B was occupied by residential buildings, with the exception of a fur factory located in the eastern portion of the property.
- 1904 - The eastern portion of Site B remained mostly residential, with the addition of a storage and carriage repository facility. The fur factory was no longer present. The western portion of Site B was occupied by a bottling distributor, several residential buildings, a school, and a business named "Atlantic Gardens."

- 1918 - The eastern portion of Site B was occupied by residential buildings and a wholesale grocer. The storage and carriage repository facility was no longer present. The western portion of Site B was occupied by residential buildings, Atlantic Gardens and a soda-water factory. The bottling distributor and the school were no longer present.

- 1935 - The eastern portion of Site B was occupied by a 75-car garage and several residential buildings. The wholesale grocer was no longer present. The western portion of Site B was occupied by a dance hall, several residential buildings and a junk lot. Atlantic Gardens and the soda-water factory were no longer present.

- 1947 - The eastern portion of Site B was occupied by a 75-car garage and a truck renting facility. The residential buildings were no longer present. The western portion of Site B was vacant; all previously existing structures had been removed.

- 1950 - The eastern portion of Site B was occupied by a 75-car garage and a truck renting facility. The western portion of Site B was occupied by a lumberyard.

Aerial Photographs

In each of the aerial photographs reviewed (from 1951 to 1980), it appears that the eastern portion of Site B was occupied with a building (i.e., the garage identified on the Sanborn Maps) and the western portion was occupied by a parking lot.

According to Pfizer personnel, the garage located on the eastern portion of Site B was used as a warehouse from the late 1970s to the mid-late 1980s. At this time, the warehouse was turned back into a garage for the Arlington Press, Inc. facility employees. In February 1996, the garage was demolished by Garito Contracting, Inc., leaving only the concrete slab intact. The western portion of Site B, which was vacant at the time, was made into a parking lot for the Arlington Press, Inc. employees.

Site Inspection

Site B is divided into two portions by chain link fencing (Figure 3). Most of the eastern portion of Site B is covered by a large concrete slab, which marks the former location of the garage. No

staining was observed on the concrete slab. Grassy areas occupy the remaining eastern portion of Site B. Additionally, the following features (shown in Figure 3) were observed on the eastern portion of Site B:

- a stockpile consisting of brick and concrete blocks derived from the February 1996 demolition of the garage;
- a former truck loading dock;
- a former roof drain pipe; and
- a debris pile (e.g., tires, chairs, scrap metal).

A portion of the concrete slab had been cut away to expose the former basement located on the eastern portion of Site B (Figure 3). This basement had contained a hot-water boiler and a 1,000-gallon capacity fuel oil tank, both of which were removed by Garito Contracting, Inc. February 1996. According to Mr. Steve Garito of Garito Contracting, Inc. (Pfizer's demolition contractor), the former fuel oil tank resided on top of a concrete floor in a subbasement of the basement. Specifically, the former fuel oil tank was located inside a concrete-block vault filled with sand. Prior to removal of the fuel oil tank from the vault, any remaining tank contents were removed, and the tank was cleaned in place. The former fuel oil tank was removed along with piping that connected the tank to the boiler. No product or staining was observed by Mr. Garito during the removal activities. The basement was then backfilled with brick and concrete fragments.

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).

2.2 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 risks and liabilities associated with Site B that may present a hazard to human health or the environment. To achieve this objective, the following scope of work was performed:

- Site Inspection;

- Historical and Current Use Records Search;
- Regulatory Agency Database Research; and
- Limited Soil and Perched Ground-Water Sampling.

The results of the Site B ESA are provided in the report titled "Environmental Site Assessment on Site B" (Roux Associates, 1996). A summary of the key findings and conclusions is provided below.

- 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. 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 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. 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. 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 tank, and the location of the former roof drain pipe.

- 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.

- 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.

- Benzene, toluene, ethylbenzene and xylene (BTEX) were the only VOCs detected above the NYSDEC Recommended Soil Cleanup Objectives (RSCOs) in the soil samples collected at Site B. 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 tank, 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 SVOCs (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 four 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.

- 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 tank.

- 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.

3.0 ADDITIONAL DATA NEEDS

This section identifies additional data needed to complete soil and perched ground-water characterization at Site B. Based on an evaluation of the available data, the following data gaps have been identified.

- Soil quality conditions at Site B including the vicinity of the former fuel oil tank, have not been fully defined.
- Perched ground-water conditions at Site B including the vicinity of the former fuel oil tank, have not been fully defined.

The scope of work to address these data gaps is presented in Section 4.0.

4.0 SCOPE OF WORK

The scope of work to be performed during the Site B Supplemental Soil and Perched Ground-Water Investigation is described in this section. Specifically, the objectives of this investigation are to:

- further assess the soil and perched ground-water quality conditions at Site B, including the vicinity of the former fuel oil tank;
- develop data to evaluate the need for an IRM;
- develop data to evaluate the current potential exposure pathways; and
- support Pfizer's plans to rehabilitate Site B for potential future redevelopment and/or beneficial use.

To accomplish the objectives, the following tasks will be performed:

- Task 1: Soil Boring and Sampling;
- Task 2: Perched Ground-Water Sampling; and
- Task 3: Data Evaluation and Report Preparation.

A brief summary of each task is discussed below.

4.1 Task 1: Soil Boring and Sampling

A total of 10 new soil borings (SBB-07 through SBB-16) will be drilled and sampled using the Geoprobe™ Method at Site B. In addition, the six original soil borings (SBB-01 through SBB-06) will be redrilled (adjacent to the original location) and sampled using the Geoprobe™ Method to evaluate current potential exposure pathways. The proposed soil boring locations are shown in orange in Figure 3. The locations are approximate, and may be modified based on conditions encountered during drilling (i.e., subsurface obstructions).

At each proposed new soil boring location, soil samples will be collected continuously at 2-ft intervals down to the perched ground water or the clay layer, whichever is encountered first. A portion of each sample will be placed in a plastic Ziploc™ bag or glass jar and screened in the field for VOCs using a photoionization detector (PID). Soil samples will be collected from only

the 0 to 2 ft depth interval from the original soil borings (SBB-01 through SBB-06). Each soil sample will be inspected by the field geologist to characterize lithology and any evidence of contamination (e.g., staining, odors). Soil boring and sampling procedures will be employed in accordance with the SAP provided in Appendix A of the Citric Block Site Investigation and Interim Remedial Measure 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 exhibits the highest degree of contamination (e.g., staining and odors) will be selected for laboratory analysis. However, if no impacts are discernible, the 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 will be submitted for analysis.

The soil samples collected from the 0 to 2 ft depth interval from original Soil Borings SBB-01 through SBB-06 and the proposed new Soil Borings SBB-07 through SBB-13, and SBB-15 will be 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 tank (i.e., SBB-13 through SBB-16) will be analyzed for BTEX according to 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) will be collected for the above analyses. A further discussion of the QA samples is provided in Appendix B of the Citric Block Site Investigation and Interim Remedial Measure Work Plan (Roux Associates, 1995). The analytical parameters for the projected number of field samples are presented in Table 1.

Deeper soil samples (i.e., greater than 2 ft bls) collected for laboratory analysis will be analyzed for metals from the proposed new Soil Borings SBB-07 through SBB-13, and SBB-15 using the Superfund CLP Inorganics Methods. Additionally, soil samples collected from soil borings drilled adjacent to the former fuel oil tank (i.e., SBB-13 through SBB-16) will be analyzed for BTEX (USEPA Method 8021) consistent with the NYSDEC STARS parameter list. QA samples (e.g., field blanks, matrix spike) will be collected for the above analysis. A further discussion of the QA

samples is provided in Appendix B of the Citric Block Site Investigation and Interim Remedial Measure Work Plan (Roux Associates, 1995). The analytical parameters for the projected number of field samples are presented in Table 1.

The location of each soil boring will be surveyed for horizontal and vertical coordinates relative to the National Geodetic Vertical Datum (NGVD) and Brooklyn Datum by a New York State licensed surveyor.

4.2 Task 2: Perched Ground-Water Sampling

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

The perched ground-water samples collected from the proposed new Soil Borings SBB-07 through SBB-13, and SBB-15 will be 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 will be analyzed for VOCs (i.e., BTEX) using USEPA Method 8021 (NYSDEC STARS parameter list).

4.3 Task 3: Data Evaluation and Report Preparation

Following completion of Tasks 1 and 2, a summary report will be prepared. The report will summarize the sampling methods, data collected during the investigation, conclusions and recommendations that may be appropriate. In addition, data developed during the ESA will be integrated with data developed from the Supplemental Soil and Perched Ground-Water Investigation. Report appendices will include soil borings logs, analytical data documentation, Quality Assurance/Quality Control reports, and other data as appropriate.

5.0 SCHEDULE

The work is anticipated to require 8 to 10 weeks to complete, following NYSDEC approval to proceed. The proposed schedule may require revisions if the field tasks are delayed by inclement weather or availability of subcontractors. However, every effort will be made to adhere to the proposed schedule, and the NYSDEC will be notified immediately if any changes are necessary. The work will commence within two weeks of the NYSDEC approval.

Sincerely,

ROUX ASSOCIATES, INC.

Scott J. Glash, C.P.G.
Senior Hydrogeologist/
Project Manager

Douglas J. Swanson

Douglas J. Swanson
Principal Hydrogeologist/
Vice President

6.0 REFERENCES

Roux Associates, Inc. 1995. Citric Block Site Investigation and Interim Remedial Measure Work Plan, December 12, 1995.

Roux Associates, Inc. 1996. Environmental Site Assessment on Site B, May 14, 1996.

TABLES

Table 1. Projected Number of Field Samples, Site B, Pfizer Inc, Brooklyn, New York

Task	Parameter	Field Samples	Field Duplicates	Field Blanks[a]	Trip Blanks[b]	MS/MSD[c] (Extra Volume)	Total Laboratory Samples
1. Soil Boring and Sampling							
Soil	TAL[d] Metals	22	1	3	NA	1x2	28
	BTEX[e]	8	1	1	1	1x2	13
2. Perched Ground-Water Sampling							
Water	TAL Metals[f]	16	1	3	NA	1x2	22
	BTEX	4	1	1	1	1x2	9

(a) Field blank frequency estimates based on one per twenty, or one per day minimum, whichever is more frequent.
(b) The number of trip blanks is estimated due to requirement of one trip blank per cooler.
(c) Matrix Spike/Matrix Spike Duplicate.
(d) Target Analyte List
(e) Benzene, Toluene, Ethylbenzene and Xylene
(f) Includes filtered and unfiltered metals.
NA Not Applicable.

FIGURES

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

Title:

SITE LOCATION MAP

SITE B
SUPPLEMENTAL SOIL AND PERCHED GROUND-WATER INVESTIGATION
WORK PLAN

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

ROUX
ROUX ASSOCIATES INC
Environmental Consulting & Management

Compiled by:	S.J.G.	Date:	10/96	FIGURE
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Project Mgr:	S.J.G.	Revision:		
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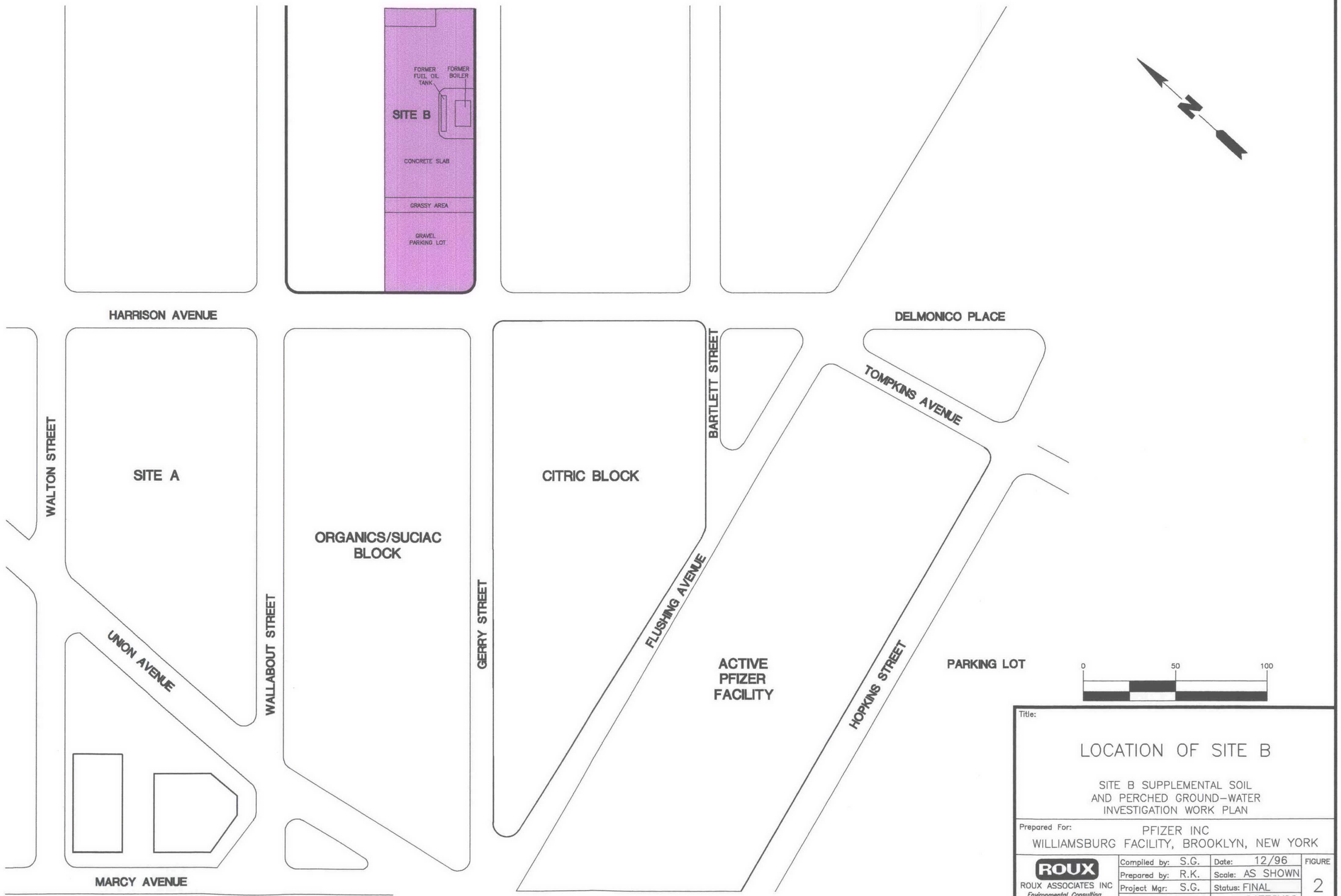

Title:

LOCATION OF SITE B

SITE B SUPPLEMENTAL SOIL
AND PERCHED GROUND–WATER
INVESTIGATION WORK PLAN

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

ROUX
ROUX ASSOCIATES INC
Environmental Consulting & Management

Compiled by: S.G.	Date: 12/96	FIGURE
Prepared by: R.K.	Scale: AS SHOWN	2
Project Mgr: S.G.	Status: FINAL	
File No: 78103002	Project: 04778Y02	

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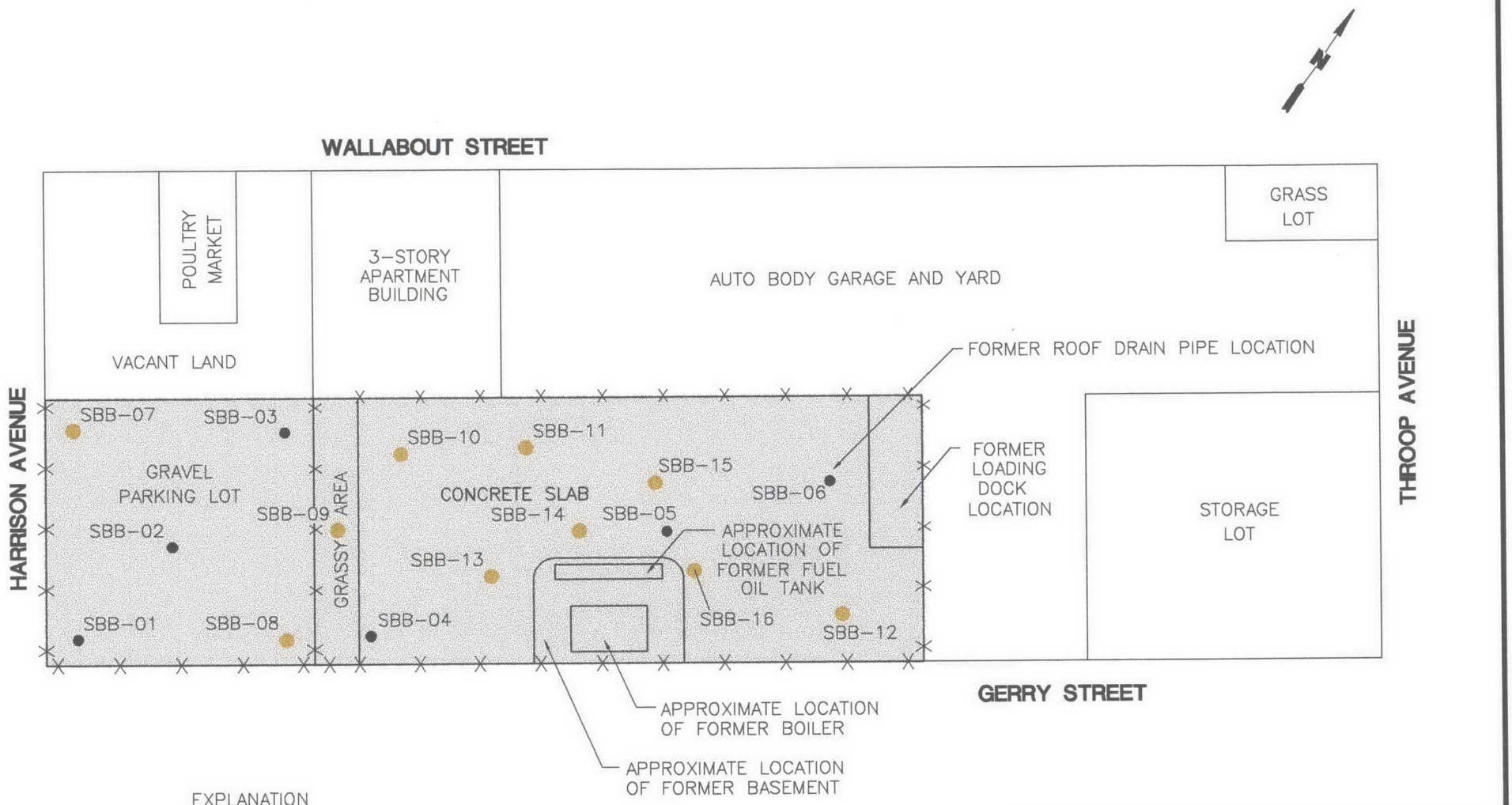

EXPLANATION

SBB-01 PREVIOUS SOIL BORING LOCATION AND DESIGNATION

SBB-07 PROPOSED SOIL BORING LOCATION AND DESIGNATION

CHAIN LINK FENCING

SITE B

Title:

PROPOSED SOIL BORING LOCATIONS

SITE B SUPPLEMENTAL SOIL AND PERCHED GROUND-WATER INVESTIGATION WORK PLAN

Prepared For:

PFIZER INC

WILLIAMSBURG FACILITY, BROOKLYN, NEW YORK

ROUX ASSOCIATES INC
Environmental Consulting & Management

Compiled by: S.J.G.	Date: 12/96	FIGURE
Prepared by: R.K.	Scale: NTS	3
Project Mgr: S.J.G	Status: FINAL	
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