REMEDIAL DESIGN WORK PLAN

123 POST AVENUE SITE
OPERABLE UNIT 2
(Offsite Groundwater Remediation)
VILLAGE OF WESTBURY
NASSAU COUNTY, NEW YORK
(SITE N0. 1-30-088)

WORK ASSIGNMENT NO. D003600-48

Prepared For

New York State Department of Environmental Conservation

DECEMBER 2005

DVIRKA AND BARTILUCCI
CONSULTING ENGINEERS
A DIVISION OF WILLIAM F. COSULICH ASSOCIATES, P.C.

REMEDIAL DESIGN
WORK PLAN

123 POST AVENUE
SITE NO. 1-30-088
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PREPARED FOR

NEW YORK STATE DEPARTMENT
OF ENVIRONMENTAL CONSERVATION

BY

DVIRKA AND BARTILUCCI CONSULTING ENGINEERS
WOODBURY, NEW YORK

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REMEDIAL DESIGN
WORK PLAN

123 POST AVENUE
SITE NO. 1-30-0888
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1.0 INTRODUCTION

As part of New York State's program to investigate and remediate hazardous waste sites, the New York State Department of Environmental Conservation (NYSDEC) has issued a work assignment to Dvirka and Bartilucci Consulting Engineers of Woodbury, New York under its Superfund Standby Contract with NYSDEC to prepare a remedial design to address off-site groundwater contamination migrating from an active dry cleaning facility at 123 Post Avenue, located in Westbury, New York. The off-site groundwater remediation is being conducted as Operable Unit 2 (OU2) of the site. Remediation of the soil and groundwater contamination on the 123 Post Avenue site is being conducted by the property owner as Operable Unit 1. The 123 Post Avenue OU2 site is a Class 2 New York State Superfund site (Registry No. 1-30-088). A remedial investigation was completed for OU2 in July 2002 and a feasibility study for OU2 was completed in April 2004.

The major elements of the 123 Post Avenue Site remedy, as presented in the Record of Decision (ROD), are as follows:

1. Complete remedial design program to verify the components of the conceptual design.
2. Install groundwater and soil vapor monitoring points to evaluate the effectiveness of the action and to determine the potential for soil vapor impacts.
3. Inject chemical oxidants into the northern portion of the contaminant plume to act as a pilot test to determine the effectiveness of the oxidant.
4. Evaluate the application of the chemical oxidant in the pilot test and determine its effectiveness for the remainder of the plume.
5. Modify the design as appropriate after evaluating the data collected from the pilot test.
6. Inject the oxidant into the remainder of the contaminant plume.
7. Operate the remedy until the remedial objectives have been achieved.
8. Implement institutional controls.
9. Design a long-term monitoring program to evaluate the effectiveness of in-situ chemical oxidation.

Remediation of the 123 Post Avenue Site is being performed with funds allocated under the New York State Superfund Program. This Work Plan includes a detailed description of the project tasks, a project schedule and budget for the project. In addition, key project milestones are identified and D&B project team organization is presented.

2.0 SITE HISTORY AND BACKGROUND

2.1 Area Description and Land Use

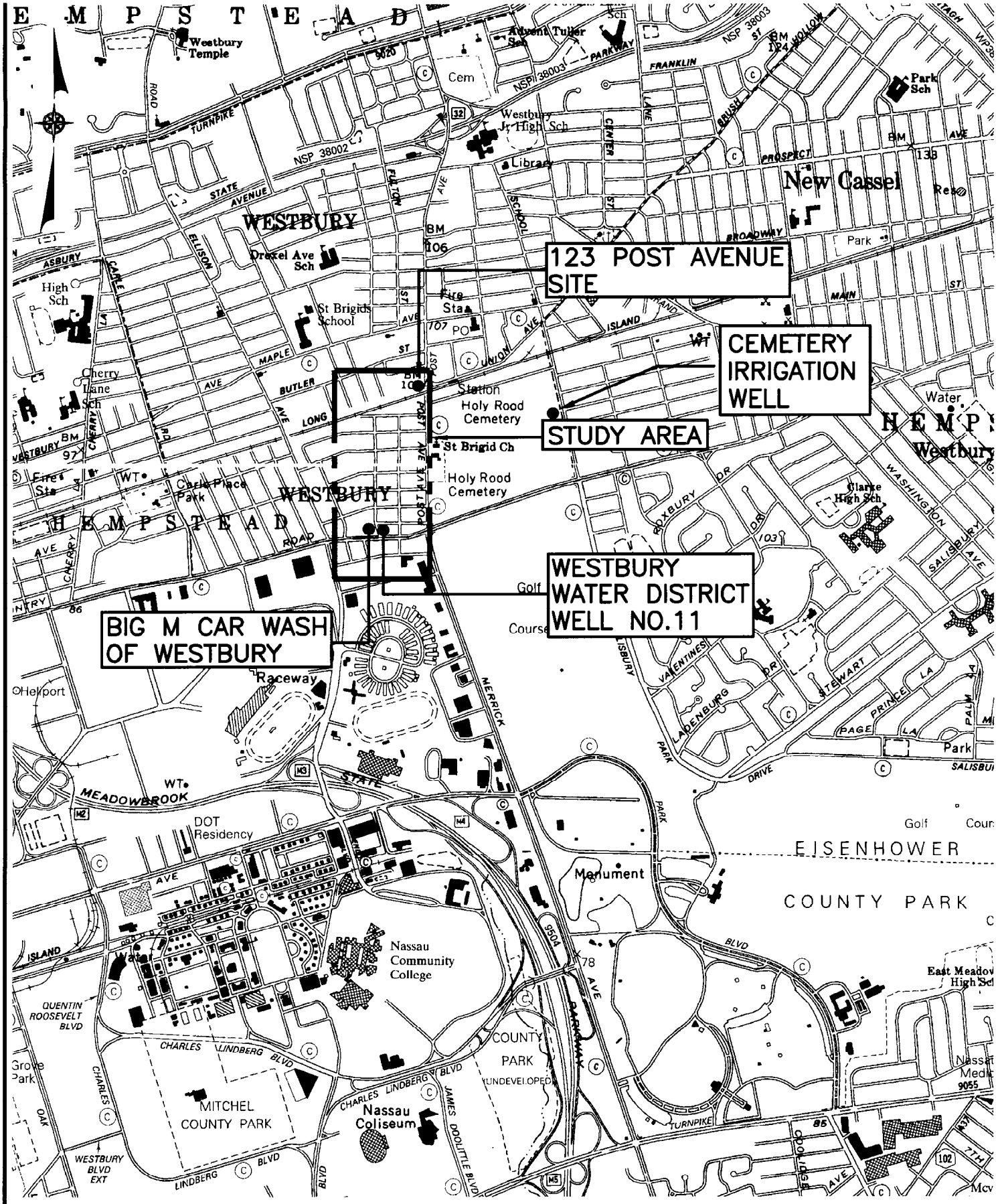
The site is an active dry cleaning facility (Westbury Valet Dry Cleaners) located at 123 Post Avenue in the Village of Westbury, Nassau County, New York. The site location and study area are shown on Figure 2-1. The dry cleaner property is approximately 0.2 acres in size and is bounded by a small shopping center to the north, the Long Island Railroad (LIRR) elevated tracks to the south, Post Avenue to the east and an apartment complex to the west.

As shown on Figure 2-1, the study area for the Operable Unit 2 (OU2) Remedial Investigation (off-site groundwater) extended from north of the site to just south of Old Country Road. The portion of the study area south of the LIRR tracks and north of Old Country Road is primarily residential. Commercial businesses, an assisted living facility, offices and a parking lot occupy the western side of Post Avenue within the study area, and a LIRR station, cemeteries and a church occupy the eastern side of Post Avenue. Commercial businesses occupy the area along and immediately south of Old Country Road.

2.2 Water Supply and Sewers

The study area is served by public water. The Westbury Water District Well No. 11 is located at the intersection of South Grand Street and Myrtle Avenue, approximately 2,000 feet south of the dry cleaning facility. Well No. 11 is screened in the Magothy aquifer from 474 to 535 feet below ground surface and yields approximately 2,000,000 gallons per day (1,400 gallons per minute). The water pumped from this well is not treated prior to distribution.

In addition to Well No. 11, there is also a water supply well at the Big M Car Wash of Westbury, located directly west of Well No. 11 on South Grand Street (see Figure 2-1). This well is screened from 54 to 64 feet below ground surface and has a maximum yield of



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SITE LOCATION MAP

FIGURE 2-1

approximately 37 gallons per minute. The water from this well is used for car washing only. Potable water for the car wash facility is supplied by the Westbury Water District.

The study area is served by public sanitary and storm sewer systems. Sanitary sewage is treated at the Nassau County Department of Public Works Cedar Creek Water Pollution Control Plant. Storm water flows from catch basins in the streets into a large diameter pipe which runs beneath Post Avenue. The discharge point for the storm water is a recharge basin several miles south of the study area.

2.3 Site History and Previous Investigations

2.3.1 Site History

The building at the site was constructed in 1949 with at least one expansion in 1957. The building has been occupied by a dry cleaner since at least 1957. The building was connected to the municipal sanitary sewer system in 1979 or 1980. Prior to this time, wastewater generated on-site was apparently discharged to an on-site disposal system.

2.3.2 Previous On-site Investigations

Periodic inspections of the site have been conducted by the Nassau County Department of Health (NCDH) since at least 1985. In July 1995, a NCDH inspection revealed the presence of two floor drains in the western portion of the building. One floor drain was located in the building's boiler room and the other was located in the workroom near the dry cleaning machine. Due to the presence of the floor drains, the site was referred to the United States Environmental Protection Agency (USEPA) for action under the Underground Injection Control (UIC) program.

In December 1997, the NYSDEC issued a Notice of Intent to Designate the site as a Potential Hazardous Waste Disposal Site. In June 1998, the USEPA approved a UIC Closure Plan for the floor drains in the on-site building. In July 1998, it was revealed to the NCDH by the consultant for the property owner that soil samples had been collected from the two floor

drains in January 1996. At that time, soil samples from the floor drain in the boiler room contained PCE at concentrations up to 18,000 micrograms per kilogram (ug/kg) and TCE at concentrations up to 100 ug/kg. Soil samples from the workroom floor drain contained PCE at concentrations up to 5,800,000 ug/kg and TCE at concentrations up to 40,000 ug/kg.

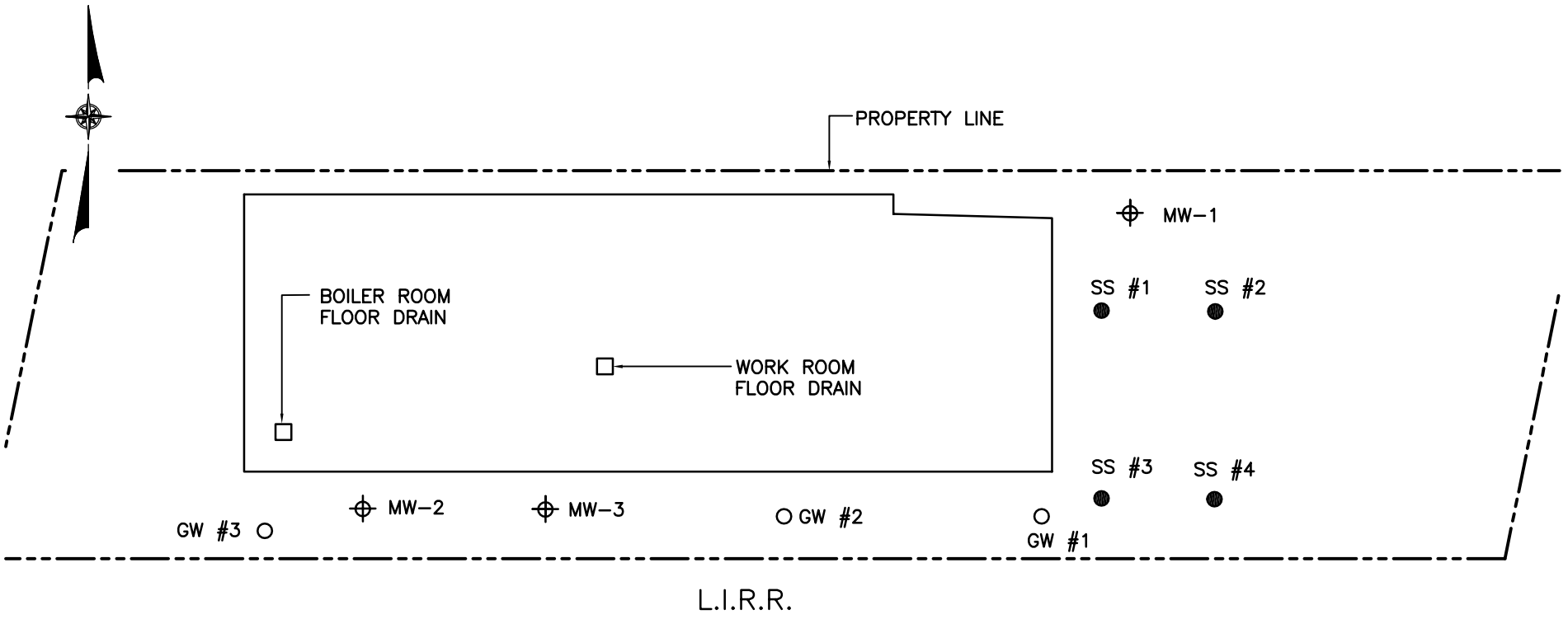
In August 1998, soils were excavated from beneath each of the floor drains. Clean endpoint samples were collected from the boiler room floor drain. Endpoint samples collected from the workroom floor drain contained PCE at concentrations up to 220,000 ug/kg. Since additional soil removal could not be conducted due to concerns about undermining the building foundation, soil vapor extraction was recommended for remediation of the remaining soil contamination. Ten drums (7,000 pounds) of PCE-contaminated soil from the floor drains were transported for off-site disposal as hazardous waste in October 1998. Based on these results, the site was placed on the New York State Registry of Inactive Hazardous Waste Sites in December 1998.

In February 1999, the USEPA approved a source area investigation for the site to evaluate groundwater contamination from the floor drains. As part of this investigation, one monitoring well (MW-1) was constructed at the upgradient boundary of the site and two monitoring wells (MW-2 and MW-3) were constructed between the on-site building and the LIRR tracks in March 1999. PCE was detected in the upgradient well at a concentration of 95 micrograms per liter (ug/l) and in the downgradient wells at concentrations up to 20,000 ug/l. The USEPA response to the June 1999 report describing the groundwater sample results recommended additional on-site investigation, but did not address the need for off-site investigation.

In March 1999, a soil boring was constructed through the workroom floor drain to evaluate the vertical distribution of the detected contamination. PCE was found in each sample collected. The maximum PCE concentration detected was 270,000 ug/kg at 10 to 11 feet below ground surface (bgs). PCE concentrations decreased with depth to the water table (53 ug/kg at 20 to 22 feet bgs and 17 ug/kg at 30 to 32 feet bgs), and increased slightly just below the water table (62 ug/kg at 36 to 40 feet bgs).

In August 2000, a revised work plan for additional investigation at the site was submitted to the NYSDEC. Activities to be conducted under this work plan included collection of soil/ sediment samples from the former on-site disposal system, collection of groundwater samples, including vertical profiling, and performance of a pilot study for an on-site soil and groundwater remediation system utilizing air sparging and soil vapor extraction (SVE). As part of that investigation, four soil borings were constructed immediately east of the on-site building. These borings were reportedly located in the vicinity of the former disposal system, although the source of the information regarding the system's location was not reported. Two or three soil samples from each boring were collected for laboratory analysis. According to the report, the samples with the highest headspace readings, or the samples immediately above the water table, were analyzed. PCE, TCE and 1,2-DCE were not detected in any of the soil samples. The only compound that was detected at a concentration above NYSDEC Recommended Soil Cleanup Objectives (RSCO) was acetone, which was detected in one sample at 210 ug/kg. The RSCO for acetone is 200 ug/kg. On-site sample locations are shown on Figure 2-2.

Groundwater samples were collected from the three existing shallow (water table) monitoring wells on-site and three direct push vertical profile borings located between the southern wall of the dry cleaner building and the LIRR tracks. Three samples were collected from each vertical profile boring, at the approximate water table (depth of 36 to 40 feet or 40 to 44 feet below ground surface) and at depths of 56 to 60 feet and 76 to 80 feet below ground surface. PCE was detected in each of the nine vertical profile groundwater samples at concentrations ranging from 4 ug/l to 3,700 ug/l. At each location, the PCE concentration was greatest in the shallowest sample (16 ug/l to 3,700 ug/l) and decreased significantly with depth. PCE concentrations were highest at the location along the middle of the building's southern wall (3,700 ug/l to 23 ug/l) and lower at the southeastern and southwestern corners of the building (16 ug/l to 4 ug/l and 64 ug/l to 4 ug/l, respectively). TCE and 1,2-DCE were only detected in the deepest sample collected at the northwestern corner of the building, at concentrations of 4 ug/l and 8 ug/l, respectively.



LEGEND

- PERMANENT MONITORING WELL
- GROUNDWATER VERTICAL PROFILE BORING (OCTOBER 2000)
- SOIL BORING (OCTOBER 2000)

SOURCE: DECEMBER 2000 REMEDIAL INVESTIGATION REPORT PREPARED BY ANSON ENVIRONMENTAL LTD.

SCALE: 1"=20'

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ON-SITE SAMPLE LOCATIONS

FIGURE 2-2

PCE was also detected in each of the monitoring wells samples. The two wells located south (downgradient) of the building (MW-2 and MW-3) contained PCE at concentrations of 5,800 ug/l and 16,000 ug/l, respectively. These wells are both located in the western portion of the area between the dry cleaner building and the LIRR tracks. MW-1, located adjacent to the northeastern corner of the building, contained PCE at 1,200 ug/l. Neither TCE nor 1,2-DCE were detected in any of the monitoring well samples.

A 4-well SVE system has been operating at the site since May 2001. A work plan for design of the air sparging system has been prepared, but has not been implemented due to the low concentrations of VOCs detected in on-site groundwater samples.

2.3.3 Previous Off-site Investigations

In 1997, a property transfer investigation was conducted at 117 Post Avenue, immediately south of the LIRR tracks that form the southern boundary of the site. As part of this investigation, seven monitoring wells were constructed in two phases. Shallow groundwater samples from these wells contained elevated concentrations of volatile organic compounds (VOCs), primarily PCE, which was detected in each well at concentrations ranging from 9.6 ug/l to 15,000 ug/l. TCE was detected in five of the seven wells at concentrations ranging from 0.52 ug/l to 110 ug/l. The report prepared for the property transfer investigation concluded that the 123 Post Avenue Site was the source of the detected VOC contamination.

In May 1998, TCE was detected in Westbury Water District Well No. 11 at a concentration of 1.0 ug/l. Since then, TCE consistently has been detected in Well No. 11 at levels below the New York State drinking water standard of 5 ug/l. Trace concentrations of 1,2-DCE have also been sporadically detected in Well No. 11. PCE has never been detected in Well No. 11.

The NCDH collected a groundwater sample from the water supply well at the Big M Car Wash of Westbury on October 31, 2000. The sample was analyzed at the NCDH laboratory for VOCs. PCE, chloroform and methyl tert-butyl ether were detected at concentrations of 1.3 ug/l,

4 ug/l and 15 ug/l, respectively. TCE and 1,2-DCE were not detected in the car wash supply well.

An irrigation well for the Cemetery of the Holy Rood located approximately 1,800 feet east of Post Avenue (outside of the study area) was sampled by the NCDH and NYSDEC on May 10, 2001. The approximate location of this well is shown on Figure 1-1. The screen zone for the irrigation well is 319 to 339 feet below ground surface. Eight VOCs were detected in the sample, including 1,1-dichloroethene (0.7 ug/l), 1,1-dichloroethane (3.0 ug/l), cis-1,2-DCE (1.5 ug/l), chloroform (0.8 ug/l), 1,1,1-trichloroethane (0.8 ug/l), carbon tetrachloride (0.6 ug/l), TCE (14 ug/l) and PCE (35 ug/l). Due to the long distance of the irrigation well from the site in the sidegradient direction, as well as the relatively deep screen zone of the well, it is highly unlikely that the VOCs detected in the cemetery irrigation well are the result of activities at the site, and therefore, likely represent a separate contaminant plume from other sources.

Periodic sampling of ambient indoor air has been performed by the NCDH and NYSDEC at locations surrounding the site since 2000. PCE concentrations above the New York State Department of Health exposure limit for residential properties of 100 micrograms per cubic meter (ug/m^3) were detected in samples collected from the basement of the shopping center immediately north of the site (up to 1,930 ug/m^3) and from the superintendent's apartment on the first floor of the apartment building immediately west of the site (up to 7,400 ug/m^3). Outdoor air samples collected adjacent to the superintendent's apartment contained PCE at concentrations ranging from 1.4 ug/m^3 to 15 ug/m^3. Since the impacted off-site properties are located outside of the area of highly contaminated groundwater in the upgradient and sidegradient directions, respectively, the detected PCE is likely attributable to migration through the unsaturated zone, rather than volatilization from groundwater. These elevated PCE concentrations have been addressed by the NCDH and NYSDEC through installation and operation of an active air filtration unit in the basement of the adjacent shopping center from June 2001 through November 2001, and two air filtration units in the superintendent's apartment from June 2001 through August 2001. PCE concentrations have been less than 100 ug/m^3 in all samples collected since June 2001 from the shopping center basement and the superintendent's apartment, including

samples collected after operation of the air filtration units was discontinued. It is likely that operation of the on-site SVE system has reduced the migration of vapors to off-site buildings.

A passive venting system was incorporated into the design of the newly constructed assisted living facility at 117 Post Avenue, located immediately south of the LIRR tracks from the site. The system was constructed to prevent exposure of residents to vapors that may volatilize from groundwater and migrate into the building.

Between October 2000 and July 2002, D&B conducted a Remedial Investigation (RI) to delineate the off-site groundwater contaminant plume. The field activities that were conducted as part of the RI for off-site groundwater included the following elements:

- Preparation of a site-specific RI Work Plan, including a site-specific Health and Safety Plan and Quality Assurance/Quality Control Plan;
- Existing well survey;
- Direct push soil conductivity logging and geophysical logging of monitoring well boreholes;
- Plume delineation through direct push vertical profile sampling;
- Installation of permanent monitoring wells;
- Monitoring well sampling; and
- Well surveying.

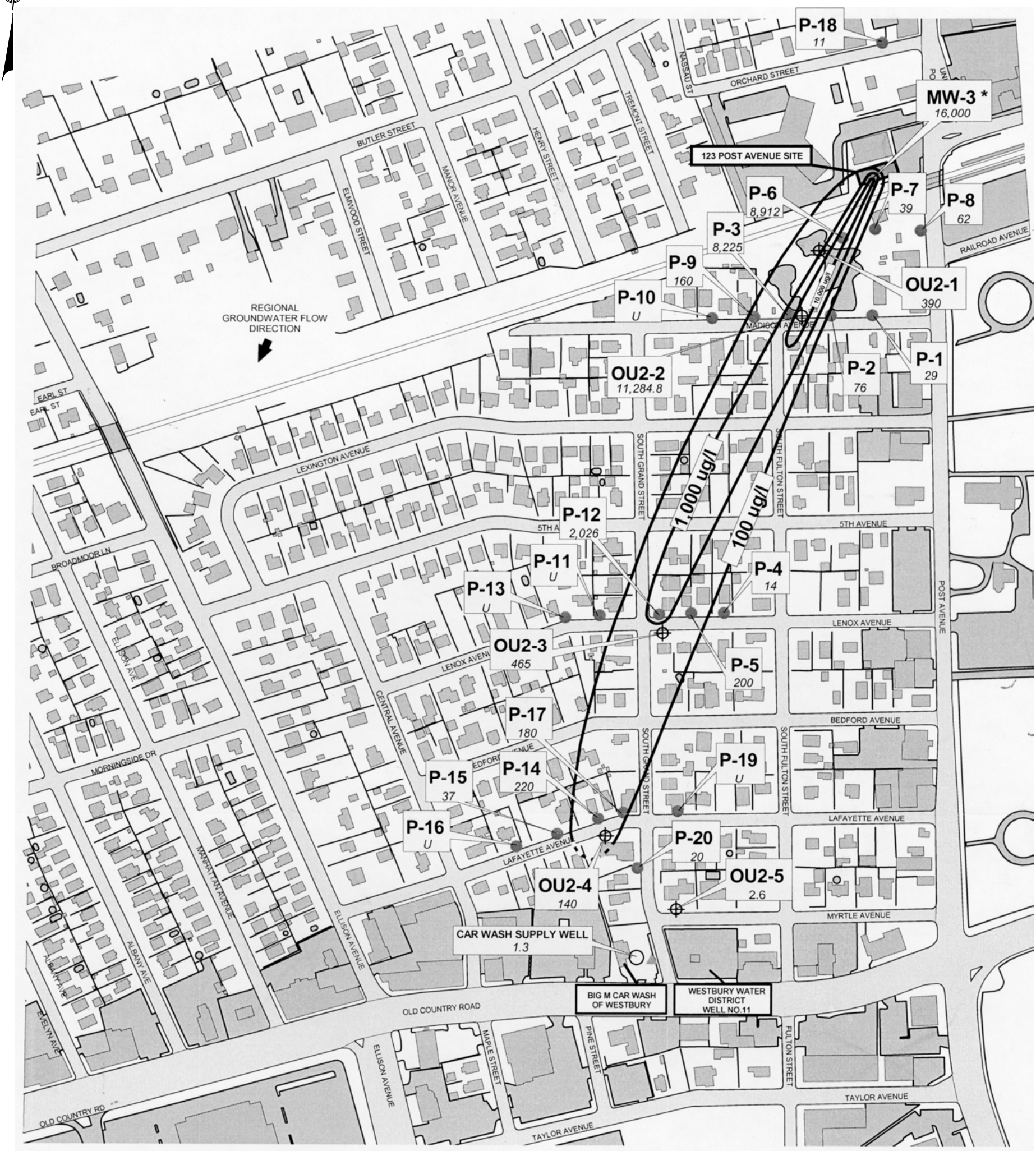
Based on previous on-site and off-site investigations and the historic site use, three chlorinated VOCs typically associated with dry cleaners, PCE and its breakdown products TCE and 1,2-dichloroethene (1,2-DCE) were identified as representative contaminants of concern for the 123 Post Avenue Site. The total concentration of these contaminants detected in off-site groundwater ranged from non-detect to approximately 11,300 ug/l, with the greatest concentrations detected in shallow groundwater nearest the 123 Post Avenue Site, at and immediately south of the 117 Post Avenue property. Concentrations of total targeted VOCs decrease to the south-southwest, downgradient of the site. In addition, the depth of the zone

most highly impacted by the targeted VOCs increases with distance downgradient of the site. The concentration of total targeted VOCs in the sample collected north/upgradient of the 123 Post Avenue Site was 11 ug/l, verifying that the site is the predominant source of the detected chlorinated VOCs.

Based on these results, a narrow contaminant plume, comprised predominantly of PCE, was identified in groundwater downgradient of the 123 Post Avenue Site. The plume extends toward the south-southwest and becomes deeper with distance from the site. In the southern portion of the study area, the vertical migration of the plume appears to be limited by the presence of discontinuous clay layers. Plan and cross-section views of the identified plume are shown on Figure 2-3 and 2-4, respectively.

Since the detected VOC concentrations indicated that remediation of off-site groundwater was warranted, a Feasibility Study was prepared. Based on review of potential remedial technologies for remediation of VOC-contaminated groundwater, it was determined that in-situ chemical oxidation and ozone-enhanced air sparging, among others, could be effective. However, in order to obtain the data necessary for detailed screening of in-situ chemical oxidation and ozone-enhanced air sparging, it was concluded that additional testing was required. As a result, documents were prepared to obtain proposals to conduct a bench-scale treatability study for chemical oxidation and a field-scale pilot test of ozone-enhanced air sparging. However, due to receipt of an insufficient number of responsive bids for the ozone-enhanced air sparging pilot test, only the bench-scale treatability study for chemical oxidation was implemented.

The bench-scale treatability study was conducted to evaluate the effectiveness of chemical oxidation utilizing sodium permanganate. Soil and groundwater collected within the most highly contaminated portion of the off-site plume was utilized for the study. Three samples with different ratios of soil to oxidant were used during the test, to allow determination of the optimal oxidant application rate for full-scale implementation. A control sample with no oxidant was also prepared for comparison purposes. The results of the treatability study showed that



LEGEND

- GROUNDWATER PROBE HOLE LOCATION
- PERMANENT MONITORING WELL LOCATION AND DESIGNATION
- P-4 / 14 — PROBE HOLE DESIGNATION; MAXIMUM TOTAL PCE, TCE AND 1,2–DCE CONCENTRATION (ug/l)
- *U* — UNDETECTED
- * — ON–SITE WELL SAMPLED BY OTHERS ON OCTOBER 3, 2000

0 200' 400'

HORIZONTAL SCALE: 1"=200'

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123 POST AVENUE REMEDIAL DESIGN
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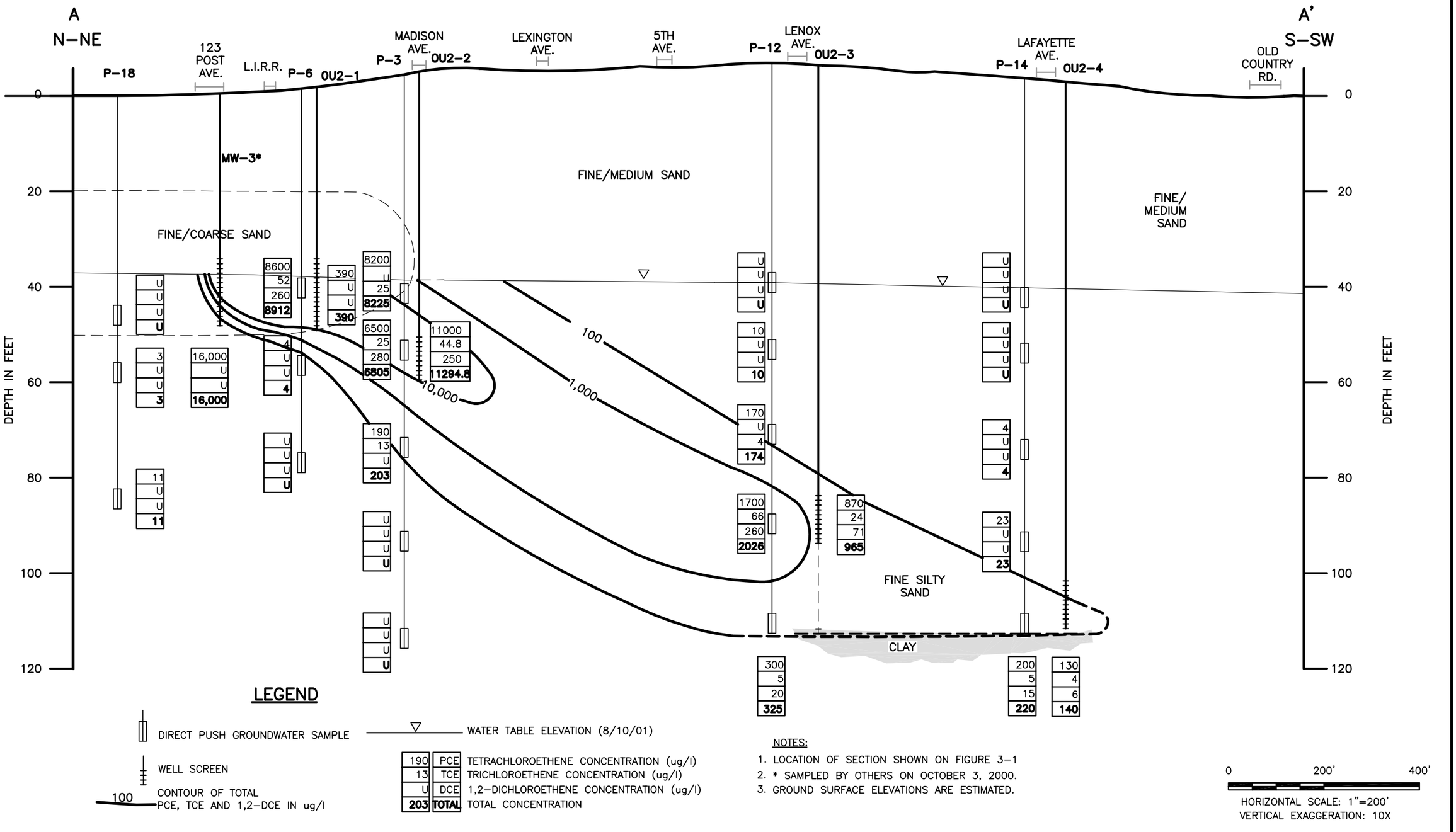
HORIZONTAL EXTENT OF PCE, TCE AND 1,2-DCE IN GROUNDWATER

FIGURE 2-3



LEGEND

- DIRECT PUSH GROUNDWATER SAMPLE
- WELL SCREEN
- 100 — CONTOUR OF TOTAL PCE, TCE AND 1,2–DCE IN ug/l
- WATER TABLE ELEVATION (8/10/01)

190	PCE	TETRACHLOROETHENE CONCENTRATION (ug/l)
13	TCE	TRICHLOROETHENE CONCENTRATION (ug/l)
U	DCE	1,2–DICHLOROETHENE CONCENTRATION (ug/l)
203	TOTAL	TOTAL CONCENTRATION

NOTES:

1. LOCATION OF SECTION SHOWN ON FIGURE 3–1
2. * SAMPLED BY OTHERS ON OCTOBER 3, 2000.
3. GROUND SURFACE ELEVATIONS ARE ESTIMATED.

0 200' 400'

HORIZONTAL SCALE: 1"=200'
VERTICAL EXAGGERATION: 10X

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DISTRIBUTION OF PCE, TCE AND 1,2 DCE IN GROUNDWATER

FIGURE 2-4

sodium permanganate effectively oxidized the contaminants of concern, with VOC concentrations reduced to non-detectable levels in each of the three samples. As a result, this technology was maintained for further evaluation.

Other potential remedial technologies were identified and screened on a preliminary basis, based on implementability and effectiveness. These other technologies included institutional controls, groundwater extraction and treatment, air sparging, in-well air stripping, in-situ bioremediation, reactive wall, chemical reduction, funnel and gate systems and natural attenuation. Based on preliminary screening of these technologies for technical effectiveness and implementability, bioremediation, ozone-enhanced air sparging and chemical oxidation were retained for further consideration. A "no action" alternative was also evaluated further, to serve as a baseline against which to compare the other alternatives.

The retained technologies were combined into four remedial alternatives, which included:

- No action with long-term groundwater monitoring;
- In-situ chemical oxidation with long-term groundwater monitoring;
- In-situ bioremediation with long-term groundwater monitoring; and
- Ozone-enhanced air sparging with long-term groundwater monitoring.

Based on detailed evaluation of the four alternatives, in-situ chemical oxidation with long-term groundwater monitoring was ranked highest. A Feasibility Study (FS) Report was prepared to document the preliminary screening of remedial technologies, treatability study results and development and evaluation of remedial alternatives. The FS Report also included detailed cost estimates for each alternative, including capital costs, engineering fees and present worth operation, maintenance and monitoring costs.

The Record of Decision (ROD) listed in-situ chemical oxidation with long-term groundwater monitoring as the selected remedy for OU2. The selected remedy included the following components:

- remedial design program to verify the components of the conceptual design;
- installation of groundwater and soil monitoring points to evaluate the effectiveness of the action and to determine the potential for soil vapor impacts;
- injection of chemical oxidants into the northern portion of the contaminant plume to act as a pilot test to determine the effectiveness of the oxidant;
- evaluation of the pilot test results, assessment of the oxidant's effectiveness to remediate the remainder of the plume and modification of the design as appropriate;
- injection of oxidant into the remainder of the contaminant plume as described in the Remedial Design documents; and
- long-term monitoring to evaluate the effectiveness of the remediation.

3.0 SCOPE OF WORK

The services to be provided by D&B under this work assignment are comprised of five tasks. These tasks include work plan preparation, conducting a pre-design investigation comprised of groundwater and soil vapor sampling, conducting a field-scale pilot test to further evaluate the effectiveness of the selected remedial technology (in-situ chemical oxidation using permanganate), preparation of plans and specifications (contract documents) for procurement of a remedial contractor and pre-award services for the NYSDEC. Each of these tasks is described in detail in the following sections.

3.1 Task 1 – Work Plan Preparation

This task includes review of project documents and reports, and preparation of this Work Plan. This task includes telephone discussions (and a scoping meeting, if necessary) with NYSDEC representatives to discuss project scoping issues and preparation of a draft Work Plan for submittal to the NYSDEC, the New York State Department of Health (NYSDOH) and the Nassau County Health Department (NCHD) for review. Comments received were incorporated into the final Work Plan. The final Work Plan will be submitted in printed format and portable document format (PDF).

3.2 Task 2 – Groundwater and Soil Vapor Sampling

3.2.1 Groundwater Sampling

Prior to implementation of the in-situ chemical oxidation pilot test (described in Section 3.3 below), the five existing monitoring wells (OU2-1 through OU2-5, see Figure 2-3 for locations) will be sampled to determine the current configuration of the VOC plume, so that the highest VOC concentrations can be targeted for the pilot test and initial phase of remediation. It is assumed that purge water will be contained and discharged to the Nassau County sanitary sewer system. Specific sampling procedures are described in Section 5.0.

Each sample will be analyzed for Target Compound List (TCL) VOCs using NYSDEC Analytical Services Protocol (ASP) procedures. A Category B data package will be provided. Sample analysis will be performed by Mitkem Corporation with one-week turnaround time. The accelerated laboratory turnaround will allow for timely selection of soil vapor probe locations (described in Section 3.2.2). Mitkem is certified under the NYSDOH Environmental Laboratory Approval Program (ELAP) and the NYSDOH Contract Laboratory Program (CLP). It is assumed that access to existing well MW-1, which is located on private property at 117 Post Avenue, will be coordinated by the NYSDEC.

3.2.2 Soil Vapor Sampling

Based on the results of the monitoring well sampling, soil vapor samples will be collected at up to nine locations, above the most contaminated portion of the plume, to evaluate whether significant concentrations of VOCs are migrating from groundwater into the overlying unsaturated zone. It is assumed that these sample locations will be on the 117 Post Avenue property and along South Fulton Street between Madison Avenue and Lexington Avenue (see Figure 2-3), and that access to the 117 Post Avenue property will be coordinated by the NYSDEC. Actual locations will be determined and presented for NYSDEC approval after the monitoring well sample results have been received and reviewed.

The soil vapor samples will be collected from a depth of ten to twelve feet below grade, the approximate depth of building basements. Since these monitoring points will also likely be utilized during the pilot test, permanent probes will be installed in accordance with NYSDOH guidance using the direct push method.

Prior to sampling, one to three probe volumes will be purged, at a maximum flow rate of 0.2 liters per minute. Each sample will be collected over a period of at least four hours, at a maximum flow rate of 0.2 liters per minute. In accordance with NYSDOH guidance, a tracer gas (helium) will be used during sample collection. The helium concentration in soil vapor will be measured immediately after purging, to verify the integrity of the soil vapor sampling point. One duplicate and one ambient air sample will also be collected as part of the soil vapor sampling

task. The duplicate sample will be collected concurrently with the original sample, using a "T" fitting on the sample tubing. Specific sampling procedures are described in Section 5.0.

Each of the eleven samples (nine soil vapor, one duplicate soil vapor and one ambient air) will be analyzed for VOCs using Method TO-15. Standard (4-week) laboratory turnaround time will be utilized for the soil vapor and ambient air samples. Since these results will be used for screening purposes only, batch-certified canisters will be used.

3.2.3 Pre-Design Investigation Report

After the groundwater and soil vapor/ambient air data packages have been received, the results will be reviewed and tabulated by medium. Groundwater results will be compared to the sample results obtained during the Remedial Investigation and Class GA groundwater standards and guidance values. Soil vapor sample results will be compared to the ambient air sample results and NYSDOH chemical-specific guidelines, if available. Full data validation will not be conducted, although the Category B data packages can be validated at a later time, if warranted.

A report will be prepared to document the pre-design investigation. The report will provide documentation of the field investigation, descriptions of sampling methods, maps showing sample locations and analytical results, tabulated analytical results by medium in comparison to applicable standards and guidelines, and evaluation of the current nature and extent of the groundwater contamination. Based on the results of the pre-design investigation, recommendations regarding the area within which the pilot test and initial phase of remediation will be conducted will be provided.

3.2.4 Site Reconnaissance

Task 2 also includes a reconnaissance of the project area to evaluate potential locations for injection wells, monitoring points for groundwater and soil vapor, and staging of equipment and materials that will be required for pilot testing and full-scale implementation of the selected remedy. The reconnaissance will also identify limitations that may impact implementation of the

remedy, such as aboveground or underground utilities and existing structures (houses, driveways, etc.). It is assumed that all injection wells will be installed in rights-of-way and will consist of individual injection wells without interconnecting piping and, therefore, no survey work will need to be performed prior to preparation of the Plans and Specifications.

3.3 Task 3 - Pilot Test

In order to further evaluate the effectiveness of chemical oxidation for remediation of contaminated groundwater, as well as determine design parameters (i.e., injection well dosage rates, spacing, etc.), a pilot test will be performed. The objectives of the pilot test include the following:

- Determine the optimum number and location of the injection points for full-scale implementation;
- Determine the effective zone of influence of the injection point and whether groundwater mounding will occur due to the injection of oxidant;
- Determine the optimum injection depths;
- Determine the optimum injection pressures;
- Determine the optimum mass and volume of oxidant to be injected at each location; and
- Determine the effect of the oxidant and by-products on groundwater quality.

A Request for Proposal (RFP) package will be prepared for procuring a contractor to conduct the pilot test. A draft solicitation package will be provided to NYSDEC for review and comment. A preliminary cost for the pilot test has been estimated at $60,000 and is included in the project budget (see Section 7.0). The vendor and actual cost will be determined using the RFP process.

The RFP will require information from the vendors with respect to their experience in conducting treatability studies and pilot studies, and full-scale projects that would provide the data required to verify the applicability of the technology to remediate contamination

downgradient of the 123 Post Avenue Site. The RFP will include the following sections: project description; contaminant concentrations and groundwater characteristics (based on existing data); project objectives; scope of work; general requirements; minimum pilot study requirements; injection well construction requirements; minimum monitoring requirements; parameters to be analyzed; safety requirements; QA/QC requirements; proposal submittal requirements; reporting requirements; project schedule; and experience and qualifications.

Each potential vendor will also be provided with a copy of D&B's standard subcontractor agreement and the master agreement with NYSDEC. Once finalized, the RFP package will be sent to subcontractors for bidding. Once received, quotations will be reviewed and recommendations will be provided to NYSDEC with regard to subcontractor selection.

It is anticipated that the pilot study will include the installation of one injection point and three groundwater monitoring wells with monitoring at the new and existing groundwater monitoring wells in close proximity to, and downgradient of the injection point. The injection will likely be performed in the vicinity of the intersection of Madison Avenue and South Fulton Street. The exact location of the pilot test will be determined based on the results of the groundwater sampling event that will be conducted under this work assignment.

Groundwater samples will be collected by the subcontractor from the newly installed monitoring wells and three selected existing monitoring wells, if warranted, prior to injection of the oxidant, 24 hours after the injection, and at intervals of one week, two weeks, four weeks and six weeks after injection, to evaluate the dispersion of the oxidant and the effectiveness of the oxidant at reducing the contaminants of concern in groundwater samples. Groundwater samples will be collected using low flow procedures, and purge water will be contained for discharge to the Nassau County sanitary sewer system. Each sample will be analyzed for VOCs, TAL metals, residual permanganate and chloride. Field parameters, including water level, color, pH, oxidation-reduction potential (ORP), dissolved oxygen (DO) and temperature, will also be measured at the time of sample collection. Following completion of the pilot test, D&B will collect samples from the wells sampled during the pilot test at intervals of nine, twelve and sixteen weeks after oxidant injection. These samples will also be collected using low flow

procedures, and the purge water will also be contained for discharge to the Nassau County sanitary sewer system. The samples will be analyzed for the same parameters that were analyzed during the pilot test, except for residual permanganate, which is a proprietary analysis, with standard (4-week) laboratory turnaround time. Sample results will be included in the Engineering Design Report (described in Section 3.4.3).

In order to evaluate soil vapor impacts from the pilot test, it is anticipated that four soil vapor monitoring points will be installed by the subcontractor as part of the pilot study. The subcontractor will be required to monitor these points prior to injection, 24 hours after injection and one week after injection. Prior to sample collection, the probes will be purged using a photoionization detector (PID) to evaluate, in real time, whether significant levels of VOCs are present in the soil vapor. D&B will monitor the points at nine weeks and twelve weeks after injection, concurrent with the groundwater sampling. During each sampling event, one ambient air sample will also be collected. Duplicate soil vapor samples will not be collected during these events. As a result, it is anticipated that eight soil vapor samples and two ambient air samples will be collected by D&B and analyzed for VOCs.

D&B will oversee the pilot test and monitoring well construction. After completion of the pilot test, D&B will perform the required groundwater monitoring. The scope of work for the pilot test is subject to change based on further development of the scope of work during preparation of the solicitation for pilot test services.

3.3.1 Pilot Test Report

After completion of the pilot test and receipt of the analytical data from the groundwater monitoring, a pilot test report will be prepared by the subcontractor. The report will include a description of the pilot test, notation of any deviations from the work plan, interpretation of the data, and conclusions and recommendations, with special consideration of the factors that may influence the remedial design or full-scale implementation of the selected remedy.

The report will also provide an evaluation and recommendations regarding full-scale oxidant injection (e.g., number, depth and locations of injection points, volume and mass of oxidant required, duration of the full-scale remediation, monitoring requirements, etc.), assuming that the pilot study results demonstrate that the technology will be effective for full-scale implementation. Groundwater sample data will be validated by the subcontractor, and the results of the validation will be presented in the Pilot Study Report.

3.4 Task 4 - Plans and Specifications (Contract Documents)

Draft, pre-final and final specifications and drawings will be prepared for the purpose of competitively bidding the remedial construction in conformance with the NYSDEC Standard Contract Documents. The design documents will conform to the selected remedy in the Record of Decision, and will conform to New York State laws, rules, regulations and guidelines. As noted below, this task includes optional items that may be conducted at the request of the NYSDEC.

The specifications will contain contractor submittal requirements, including preparation of a project schedule; site-specific sampling and analysis plan (SAP), including details for verification sampling analysis and reporting; quality assurance/quality control (QA/QC) plan; and a site-specific health and safety plan (HASP) which will include a community air monitoring plan; and operations, maintenance and monitoring plan. The specifications will also include requirements for mobilization/demobilization, site preparation and restoration, waste management and disposal, and site security. In addition, the Contract Documents will contain a bid sheet, estimated quantities for each bid item, and a maximum time period for substantial completion and final completion.

The design documents will specify requirements for the following:

- Site preparation;
- Injection of oxidant to treat VOC contaminated groundwater in the unconsolidated aquifer at predetermined locations and depths;

- Monitoring the success and effectiveness of the remedy;
- Maintenance of traffic (as required);
- Various permit requirements;
- Construction of new groundwater monitoring wells for long term monitoring of the effectiveness of the remediation;
- Soil vapor and/or indoor air monitoring, if required;
- Noise, odor and dust controls; and
- Site restoration.

3.4.1 Preliminary Design Submittal (30% Complete)

The preliminary design submittal will consist of preliminary drawings and an outline of the specifications and will be submitted to the Department when the design is approximately 30% complete. The preliminary drawing set will include a title sheet, index of drawings with symbols and abbreviations, existing conditions plan showing known utilities and preliminary plan showing the area to be targeted for oxidant injection. Five (5) copies of the preliminary design package will be provided to NYSDEC for review and comment.

Supporting documentation, including the basis for design, supporting data, documentation and design calculations, will be summarized in a letter report. The letter report will also identify potentially impacted property owners and property rights, and include a preliminary list of anticipated temporary or permanent easements, rights-of-way and permits necessary to perform the remediation, and identification of non-property permits with which the remediation must be in substantial compliance. It is assumed that NYSDEC will obtain the necessary permits, access agreements and/or easements.

3.4.2 Intermediate Design Submittal (60% Complete)

The intermediate design submittal is an optional task as outlined in the work assignment. If requested by the NYSDEC, an additional draft of the plans and specifications will be submitted when the intermediate design is complete. The estimated cost for this work assignment (see Section 7.0) does not include pricing for Intermediate Design.

3.4.3 Engineering Design Report

A draft Engineering Design Report will be prepared and submitted with the pre-final design as discussed below. The Engineering Design Report will present the results of the pre-design study, including documentation of field activities, notation of any deviations from the approved work plan, a presentation of the data collected, interpretation of the data and conclusions, and recommendations appropriate to the site, including further investigation, if necessary. The pilot test report will be included as an appendix to the Engineering Design Report.

Additionally, the Engineering Design Report will present a description of the major elements of the project, the basis of design, and assumptions and uncertainties associated with the design effort. A draft Engineering Design Report will be submitted for NYSDEC review and comment. The draft Engineering Design Report will be revised based on NYSDEC comments.

3.4.4 Pre-Final and Final Design Submittal

Upon completion of the design documents, five (5) copies of the pre-final plans and specifications and design report will be submitted to NYSDEC for final review. Each copy of the bid package will include a complete set of drawings, a complete specifications package, bid forms, measurement and payment provisions and NYSDEC Standard Contract Documents.

NYSDEC comments will be incorporated into the final plans and specifications. After approval, 75 copies of the Contract Documents will be provided to the NYSDEC. In addition, an electronic copy in Portable Document Format (PDF) will be provided. The final drawings and specifications will be sealed and signed by a professional engineer licensed to practice in New York State. For budget purposes, it is assumed that each set of the Contract Documents will be comprised of 1,000 double-sided pages and 10 (ten) 30-inch by 40-inch drawings.

3.4.5 Project Cost Estimate

A detailed construction, operation and maintenance cost estimate for the project will be prepared under this subtask. The estimate will be prepared on a bid item basis, consistent with the bid schedule in the Contract Documents, in order to provide a cost estimate for each bid item. Based upon comments from the NYSDEC, D&B will revise and submit the final cost estimate with the final drawings and specifications.

3.4.6 Citizen Participation Activities

If requested by the NYSDEC, D&B will attend one public meeting to answer questions regarding the project design, construction techniques and project schedule. D&B will also prepare minutes of the meeting and will provide them to the NYSDEC.

3.5 Task 5 - Pre-Award Services

D&B will provide pre-award services in conjunction with the competitive bidding of the remedial construction project, if requested by the Department. The services under this task have been organized into three subtasks as described below. It is assumed that advertising for bids and distribution of bid documents and any addenda will be performed by the NYSDEC. D&B will provide assistance, as needed, with the content of advertisements and addenda.

3.5.1 Pre-Bid Conference

D&B will attend and assist the NYSDEC with an on-site pre-bid conference and site walkover. At the pre-bid conference, D&B will emphasize to the prospective bidders important aspects of the project. D&B will prepare and submit meeting minutes for the pre-bid conference and respond to technical questions regarding the plans and specifications.

3.5.2 Addenda

D&B will prepare written responses to questions raised at the pre-bid conference and any necessary addenda to the plans and specifications for the timely transmittal by the NYSDEC to the prospective bidders. D&B will provide up to 25 copies of addenda to the NYSDEC for distribution to the bidders. For budget purposes, it is assumed that one addendum will be prepared.

3.5.3 Bid Review

Following the receipt of bids, D&B will perform a technical evaluation of the bids and prepare a tabulation of the bid prices that will be submitted to the NYSDEC. Additionally, as part of this subtask, D&B will review the apparent lowest bidder's technical pre-award submittals to determine conformance with the requirements of the Contract Documents.

4.0 PROJECT MANAGEMENT

4.1 Project Schedule and Key Milestones/Reports

A project schedule for remedial design for the 123 Post Avenue Site is provided in Figure 4-1. Key milestones are identified in order to monitor work progress. Specific deadlines for completion of tasks and subtasks are established throughout the project to ensure timely completion of work. The following is the list of the milestones for this project:

1. Submittal of Draft Work Plan
2. Submittal of 30% Plans and Specifications
3. Submittal of 60% Plans and Specifications (if requested by NYSDEC)
4. Submittal of Engineering Design Report
5. Submittal of Pre-Final Contract Documents and Pre-Final Cost Estimate
6. Submittal of Final Contract Documents and Final Cost Estimate

4.2 Project Management, Organization and Key Technical Personnel

Dvirka and Bartilucci Consulting Engineers will be the prime consultant responsible for preparation of the remedial design. Subcontractors that are expected to be used on the project include the following:

- Zebra Environmental Corporation - Direct Push Services (Soil Vapor Probe Installation)
- Mitkem Corporation (MBE) - chemical analyses
- To Be Determined – chemical oxidation pilot test
- Jamaica Blueprint Company, Inc. (WBE) - document reproduction

The project organization, illustrating both management and project responsibility functions for the project team and key personnel, is provided in Figure 4-2.

Figure 4-1
PROJECT SCHEDULE
123 POST AVENUE REMEDIAL DESIGN

	Task	Start Date	Duration (weeks)	Completion Date
Task 1 - Work Plan Preparation		7/11/05		
1	Work Assignment Acceptance		0	7/11/05
2	Preparation of Draft Work Plan		9	9/12/05
3	NYSDEC Review of Draft Work Plan		12	12/5/05
4	Preparation of Final Work Plan		2	12/19/05
5	NYSDEC Review of Final Work Plan		4	1/16/06
6	Notice to Proceed		1	1/23/06
Task 2 - Pre-Design Investigation		1/30/06		
7	Monitoring Well Sampling [1]		2	2/13/06
8	Soil Vapor/Ambient Air Sampling [2]		5	3/20/06
9	Area Reconnaissance [3]		0	3/20/06
10	Pre-Design Investigation Report [3]		2	4/3/06
Task 3 - Pilot Test		1/30/06		
11	Contractor Procurement			
	Preparation of Draft Bid Documents		4	2/27/06
	NYSDEC Review		2	3/13/06
	Preparation and Transmittal of Final Bid Documents		3	4/3/06
	Receipt and Review of Bids		3	4/24/06
	Contractor Selection and Contract Execution		2	5/8/06
12	Conduct Pilot Test and Follow-up Sampling		6	6/19/06
13	Draft Pilot Test Report		4	7/17/06
14	NYSDEC and D&B Review of Draft Report		1	7/24/06
15	Final Pilot Test Report		2	8/7/06
16	NYSDEC and D&B Review of Final Report		1	8/14/06
17	Additional Groundwater and Soil Vapor Sampling [2,3]		10	9/11/06
Task 4 - Plans and Specifications		8/14/06		
18	Preliminary (30%) Design		6	9/25/06
19	Intermediate (60%) Design (if requested) [4]		4	10/23/06
20	Pre-Final and Final Design [4]		4	11/20/06
21	Engineering Design Report [3]		0	11/20/06
Task 5 - Pre-Award Services				
22	Copying of Bid Documents			[5]
23	Pre-Bid Conference			[5]
24	Addendum to Contract Documents (if required)			[5]
25	Bid Review and Contractor Selection			[5]

[1] Includes laboratory analysis with 1-week turnaround time.

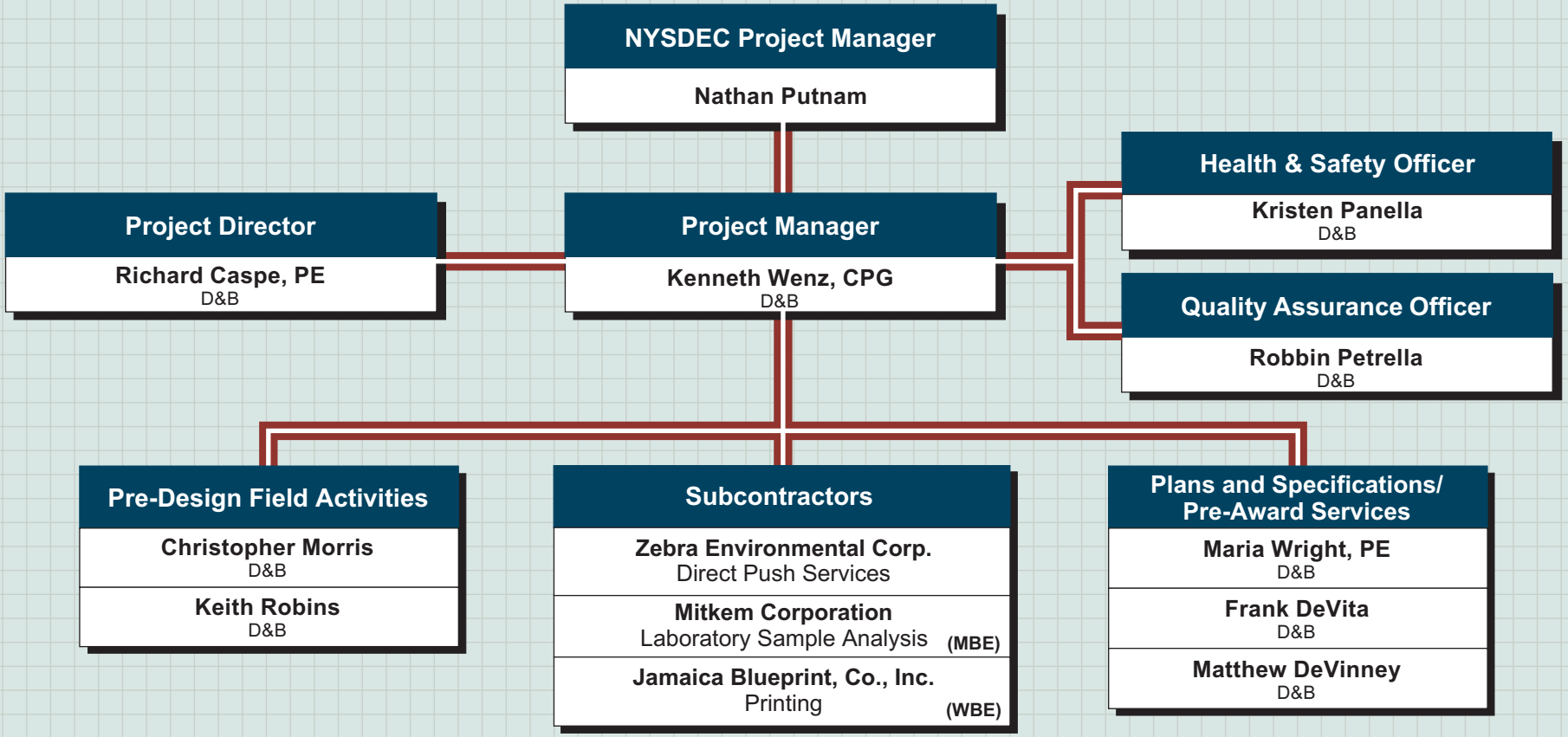
[2] Includes laboratory analysis with 4-week turnaround time.

[3] Item to be conducted concurrently with other items under this task.

[4] It is assumed that NYSDEC review of previous submittals will occur concurrently with this item.

[5] Schedule to be determined.

REMEDIAL DESIGN FOR OFFSITE GROUNDWATER
123 POST AVENUE SITE, WESTBURY, NEW YORK
PROJECT TEAM ORGANIZATION CHART



Dvirka and Bartilucci CONSULTING ENGINEERS
A DIVISION OF WILLIAM F. COSULICH ASSOCIATES, P.C.

FIGURE 4-2

RLA/123PostAvenue2404OR(08/30/05)

5.0 SITE-SPECIFIC QUALITY ASSURANCE/QUALITY CONTROL PLAN

5.1 Sampling Scope and Sampling Procedures

The pre-design field activities for the 123 Post Avenue Site off-site remedial design program will include collection of groundwater samples from five existing monitoring wells at the site. Well locations are shown on Figure 2-3. In addition, soil vapor samples will be collected from up to nine locations and one ambient air sample will be collected.

5.1.1 Groundwater Sampling Procedures

Groundwater samples will be collected using low flow procedures, as follows:

1. Measure the depth to water in the well using a decontaminated water level indicator.

2. Slowly lower the pump, safety cable, tubing and electrical lines into the screen zone of the well. The pump intake must be kept at least two (2) feet above the bottom of the well to prevent disturbance and resuspension of any sediment present in the bottom of the well. Record the depth to which the pump is lowered.

3. Before starting the pump, measure the water level again with the pump in the well. Leave the water level measuring device in the well.

4. Start pumping the well at 200 to 500 milliliters per minute (ml/min). The water level should be monitored approximately every five minutes. Ideally, a steady flow rate should be maintained that results in a stabilized water level (drawndown of 0.3 foot or less). Pumping rates should, if needed, be reduced to the minimum capabilities of the pump to ensure stabilization of the water level. As noted above, care should be taken to maintain pump suction and to avoid entrainment of air in the tubing. Record each adjustment made to the pumping rate and the water level measured immediately after each adjustment.

5. During purging of the well, monitor and record the field indicator parameters (turbidity, temperature, specific conductance, pH, ORP and DO) approximately every five minutes. The well is considered stabilized and ready for sample collection when the indicator parameters have stabilized for three consecutive readings as follows:

   ±0.1 for pH

   ±3% for specific conductance (conductivity)

±10 mv for redox potential

±10% for DO and turbidity

Dissolved oxygen and turbidity usually require the longest time to achieve stabilization. The pump must not be removed from the well between purging and sampling.

6. Remove the laboratory precleaned sample containers from sample cooler, label container with an indelible marker, fill out Sample Information Record and Chain of Custody Form.

7. Obtain a sample from the pump discharge using the lowest sustainable flow rate, taking care not to spill on the outside of the container or overfill container, and replace the cover on the sample container. Samples for volatile organic analyses will have no air space in the sample vial prior to sealing. This is done by filling the vial such that there is a meniscus on top. Carefully slide the septum, Teflon side down, onto the top of the vial and cap the vial. Check for bubbles by turning the vial upside down and tapping it lightly. If bubbles appear, reopen the vial, remove the septum and add more sample (or resample). Replace the septum, recap and check for bubbles. Continue until vial is bubble-free.

8. Return sample containers to iced sample cooler. Sample coolers will be shipped via overnight courier under chain of custody procedures.

9. Decontaminate the pump.

5.1.2 Soil Vapor Sampling Procedures

The following procedures will be utilized for collection of soil vapor samples:

1. Be certain that the sample location is noted on Location Sketch.

2. Remove laboratory-supplied sample container from shipping container, and measure and record initial vacuum reading.

3. Seal the area around the soil vapor probe and apply helium as a tracer gas, in accordance with NYSDOH guidance.

4. Purge one to three probe volumes, at a maximum flow rate of 0.2 liters per minute, using purge pump. Measure the helium concentration in ambient air and soil vapor (after purging) using a direct reading helium meter.

5. If the measured helium concentrations are similar, attach pre-calibrated regulator (if necessary), connect soil vapor sample tubing to sample container and open

container valve. If the helium concentration in soil vapor is significantly higher than that detected in ambient air, the integrity of the probe seal should be evaluated and any necessary repairs made prior to retesting and sampling.

6. At end of sample collection period, close container valve, disconnect sample tubing, and measure and record final vacuum reading.

7. Return sample container to shipping container.

5.1.3 Ambient Air Sampling Procedures

The following procedures will be utilized for collection of ambient air samples:

1. Be certain that the sample location is noted on Location Sketch.

2. Remove laboratory-supplied sample container from shipping container, and measure and record initial vacuum reading.

3. Attach pre-calibrated regulator (if necessary) and open container valve.

4. At end of sample collection period, close container valve, and measure and record final vacuum reading.

5. Return sample container to shipping container.

5.2 Analytical Parameters

The groundwater samples will be analyzed for TCL VOCs as identified in the NYSDEC 2000 Analytical Services Protocol (ASP) and USEPA Contract Laboratory Program (CLP) Statement of Work 5/99 (OLM0 4.2 and ILM0 4.0). All sample analyses will be performed by a laboratory approved under the NYSDOH Environmental Laboratory Approval Program (ELAP).

The soil vapor and ambient air samples will be analyzed for VOCs using USEPA Method TO-15. All sample analyses will be performed by a laboratory approved under the NYSDOH ELAP.

Table 5-1 presents a summary of the parameters/sample fraction to be analyzed together with the sample location, type of sample, sample matrix, type of sample container, method of sample preservation, holding time and analytical method. Category B deliverables are required for all analytical results in order to allow for complete validation of the results, if warranted.

5.3 Matrix Spikes/Matrix Spike Duplicates and Matrix Spike Blanks

Matrix spike samples are quality control procedures, consistent with 2000 NYSDEC ASP specifications, used by the laboratory as part of its internal Quality Assurance/Quality Control program. The matrix spikes (MS) and matrix spike duplicates (MSD) are aliquots of a designated sample (water or soil), which are spiked with known quantities of specified compounds. MS/MSD samples are used to evaluate the matrix effect of the sample upon the analytical methodology, as well as to determine the precision of the analytical method used. Samples to be analyzed as MS/MSDs may be designated in the field (that is, additional aliquots of a particular sample from the site may be collected) or they may be selected by the laboratory.

A matrix spike blank is an aliquot of analyte-free water, prepared in the laboratory, and spiked with the same solution used to spike the MS and MSD. The matrix spike blank (MSB) will be subjected to the same analytical procedure as the MS/MSD and used to indicate the appropriateness of the spiking solution by calculating the spike compound recoveries. The procedure and frequency regarding the MS, MSD and MSB samples are defined in the NYSDEC ASP, and will be collected for groundwater samples only.

5.4 Field Blank (Field Rinsate Blank)/Equipment Blank

Based upon discussion with the NYSDEC, field blanks will not be required for field investigations in which dedicated, disposable sampling equipment (for example, bailers or sterile scoops) are being utilized for sample collection.

Table 5-1

SUMMARY OF MONITORING PARAMETERS

Sample Location	Sample Type	Sample Matrix	Sample Fraction	Container Type/Size/No.	Sample Preservation	Maximum Holding Time	Analytical Method
Monitoring Well Locations	Grab	Groundwater	Volatile Organics	Glass, clear/40 mL/3 ICHEM 300 series or equivalent	Cool to 4°C	7 days after VTSR for analysis	6/00 NYSDEC ASP, Method OLM0 4.2
	Grab	Groundwater	Metals	Plastic/500mL/1 ICHEM 300 series or equivalent	HNO_3	26 days after VTSR for mercury, 6 months after VTSR for all others	6/00 NYSDEC ASP, Method ILM04.0
	Grab	Groundwater	Chloride	Plastic/250mL/1 ICHEM 300 series or equivalent	Cool to 4°C	26 days after VTSR for analysis	6/00 NYSDEC ASP Method 9253
Soil Vapor and Ambient Air Sample Locations	Grab	Air	Volatile Organics	6-liter Summa canister or equivalent	--	14 days after VTSR for analysis	USEPA Method TO-15
Site	Trip Blank	Water	Volatile Organics	Glass, clear/ 40 mL/1 ICHEM 300 series or equivalent	Cool to 4°C	7 days after VTSR for analysis	6/00 NYSDEC ASP, Method OLM0 4.2
	Matrix Spike and Matrix Spike Duplicate	Water	Volatile Organics	Glass, clear/ 40 mL/1 ICHEM 300 series or equivalent	Cool to 4°C	7 days after VTSR for analysis	6/00 NYSDEC ASP, Method OLM0 4.2
	Matrix Spike Blank	Water	Volatile Organics	Glass, clear/ 40 mL/1 ICHEM 300 series or equivalent	Cool to 4°C	7 days after VTSR for analysis	6/00 NYSDEC ASP, Method OLM0 4.2
	Blind Duplicate	Air	Volatile Organics	6-liter Summa canister or equivalent	--	14 days after VTSR for analysis	USEPA Method TO-15
Laboratory	Method Blank	Water	Volatile Organics	Glass, clear/ 40 mL/1 ICHEM 300 series or equivalent	Cool to 4°C	7 days after VTSR for analysis of water 10 days for soil	6/00 NYSDEC ASP, Method OLM0 4.2
	Holding Blank	Water	Volatile Organics	Glass, clear/ 40 mL/1	Cool to 4°C	7 days after VTSR for analysis	6/00 NYSDEC ASP, Method OLM0 4.2

VTSR - Verified Time of Sample Receipt at the laboratory

5.5 Trip Blanks (Travel Blanks)

The primary purpose of a trip blank is to detect other sources of contamination that might potentially influence contaminant values reported in actual samples, both quantitatively and qualitatively. The following have been identified as potential sources of contamination:

- Laboratory reagent water;
- Sample containers;
- Cross contamination in shipment;
- Ambient air or contact with analytical instrumentation during preparation and analysis at the laboratory; and
- Laboratory reagents used in analytical procedures.

A trip blank will consist of a set of 40 ml sample vials filled at the laboratory with laboratory demonstrated analyte free water. Trip blanks will be handled, transported and analyzed in the same manner as the samples acquired that day, except that the sample containers themselves are not opened in the field. Rather, these sample containers only travel with the sample cooler. The temperature of the trip blanks will be maintained at 4°C while on-site and during shipment. Trip blanks will return to the laboratory with the same set of bottles they accompanied in the field.

The purpose of a trip blank is to control sample bottle preparation and blank water quality as well as sample handling. Thus, the trip blank will travel to the site with the empty sample bottles and back from the site with the collected samples in an effort to simulate sample handling conditions. Contaminated trip blanks may indicate inadequate bottle cleaning or blank water of questionable quality. Trip blanks will be implemented only when collecting water samples, including field blanks, and analyzed for VOCs only.

5.6 Method Blanks/Holding Blanks

A method blank is an aliquot of laboratory water or soil, which is spiked with the same internal and surrogate compounds as the samples. The purpose of the method blank is to define and determine the level of laboratory background contamination. Frequency, procedure and maximum laboratory containment concentration limits are specified in the 2000 NYSDEC ASP. A holding blank is an aliquot of analyte-free water that is stored with the environmental samples in order to demonstrate that the samples have not been contaminated during laboratory storage. This blank will be analyzed using the same analytical procedure as the samples.

5.7 Blind Duplicate Samples

In accordance with NYSDOH guidance, one blind duplicate soil vapor sample will be collected. Based on discussions with the NYSDEC, blind duplicates will not be required for groundwater samples.

5.8 Decontamination Procedures

Since dedicated disposable equipment will be utilized for groundwater, soil vapor and ambient air sampling, field decontamination will not be conducted. If a submersible pump is used for well purging, new, dedicated disposable polyethylene or polypropylene tubing will be used. The pump will be decontaminated before its first use on-site, between wells and prior to being removed from the site. Pump decontamination will consist of washing the pump exterior with a solution of non-phosphate detergent and potable water, pumping a solution of non-phosphate detergent and potable water through the pump, followed by pumping clean potable water through it.

6.0 SITE-SPECIFIC HEALTH AND SAFETY PLAN

This section presents the site-specific health and safety information to supplement the generic Health and Safety Plan (HASP) included in the February 1996 draft "Remedial Investigation and Feasibility Study Generic Work Plan, Dry Cleaner Sites."

Project Name:	123 Post Avenue Remedial Design Study area includes Post Avenue, Madison Avenue, Lexington Avenue, Fifth Avenue, Bedford Avenue, Lafayette Avenue, Myrtle Avenue and Taylor Avenue, Westbury, New York
Telephone:	Not available
Date of HASP Preparation	August 2005
Dates of Field Investigation:	October 2005 through May 2006
Project Objectives:	Investigate and characterize groundwater contamination off-site and downgradient of the 123 Post Avenue site and conduct pilot testing of selected remedy.

Project Organization:

	Name	**Telephone**
Project Director:	Richard Caspe	(516) 364-9890
Project Manager:	Kenneth Wenz	(516) 364-9890
Health and Safety Officer (HSO):	Kristen Panella	(516) 364-9890
Field Operations Manager/ Alternate HSO:	Christopher Morris	(516) 364-9890
Field Subcontractor:	Zebra Environmental Corporation	(516) 596-6300

Medical Assistance:

Physician:	Plainview Medical Group, P.C.
Address:	100 Manetto Hill Road, Suite 205
	Plainview, NY 11803
Telephone:	(516) 822-2541

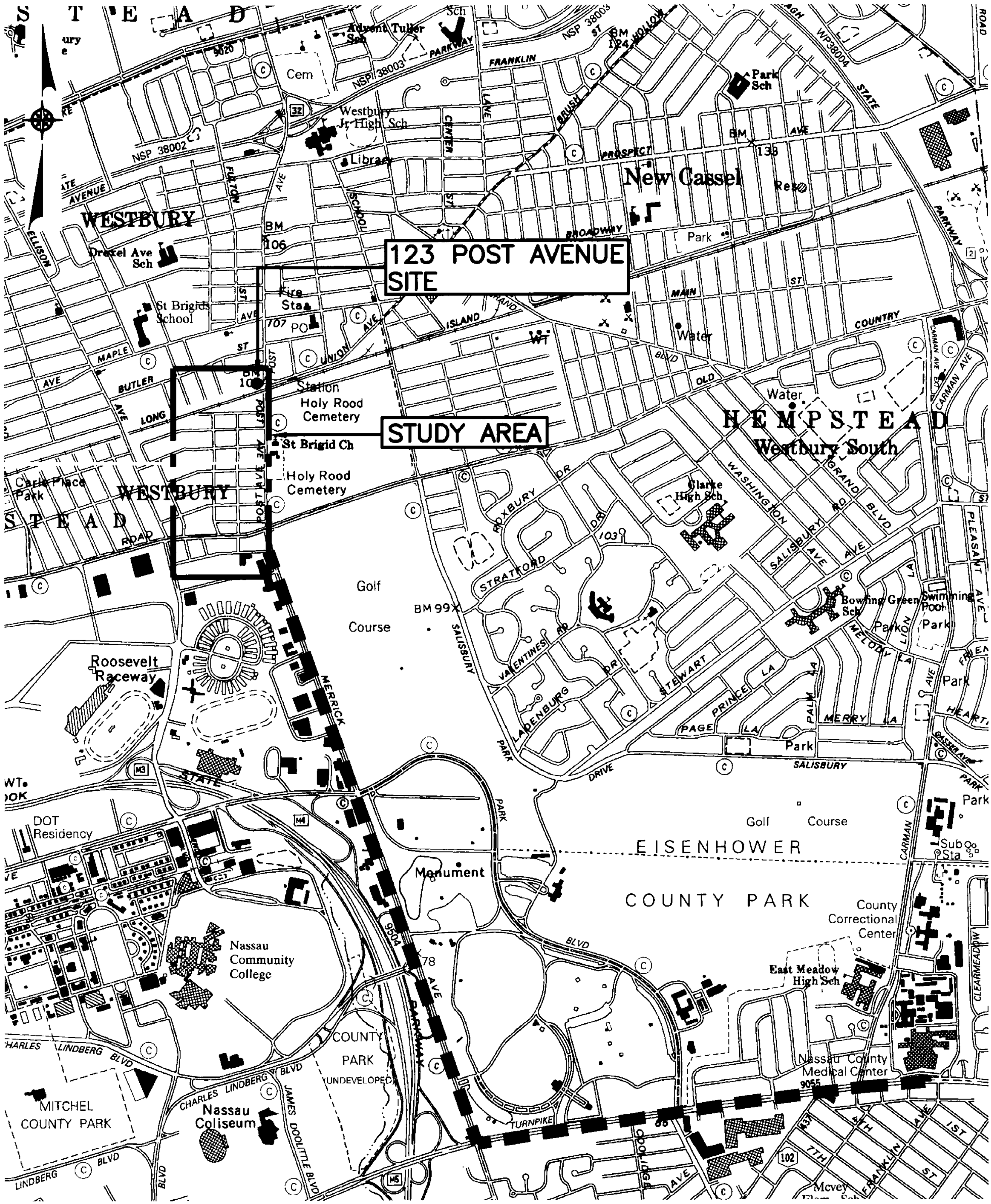
Hospital:	Nassau County Medical Center
Telephone:	(516) 572-0123
Directions: (see Figure 6-1)	Proceed south on Post Avenue (which becomes Merrick Avenue south of Old Country Road) to Route 24 (Hempstead Turnpike). Turn left (east) on Route 24. Hospital is approximately 1 mile on the left (north) side of Route 24.

Emergency Contacts:

Agency/Facility	Telephone	Emergency Telephone
EMS - Ambulance		911
Police Department	(516) 573-6300	911
Westbury Fire Department	(516) 334-7968	911 or (516) 334-7924
Hospital	(516) 572-0123	
Poison Control Center	(516) 542-2323	

Additional site-related information (including special hazards, site control, waste storage and disposal, personal protective equipment, decontamination area location, special engineering controls, etc.):

VOCs and dust will be monitored in the work zone during intrusive activities. If warranted, a Community Air Monitoring Plan will be implemented in accordance with the attached protocol.



Dvirka and Bartilucci CONSULTING ENGINEERS A DIVISION OF WILLIAM F. COSULICH ASSOCIATES, P.C.	**123 POST AVENUE REMEDIAL DESIGN WESTBURY, NEW YORK**

ROUTE TO HOSPITAL

FIGURE 6-1

F:\2404\REPORTS\2404-FIG 6-1.dwg, Layout1, 08/04/05 02:02:42 PM, JRibaudo

APPENDIX 1A

New York State Department of Health
Generic Community Air Monitoring Plan

A Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

The generic CAMP presented below will be sufficient to cover many, if not most, sites. Specific requirements should be reviewed for each situation in consultation with NYSDOH to ensure proper applicability. In some cases, a separate site-specific CAMP or supplement may be required. Depending upon the nature of contamination, chemical- specific monitoring with appropriately-sensitive methods may be required. Depending upon the proximity of potentially exposed individuals, more stringent monitoring or response levels than those presented below may be required. Special requirements will be necessary for work within 20 feet of potentially exposed individuals or structures and for indoor work with co-located residences or facilities. These requirements should be determined in consultation with NYSDOH.

Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

Community Air Monitoring Plan

Depending upon the nature of known or potential contaminants at each site, real-time air monitoring for volatile organic compounds (VOCs) and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary. Most sites will involve VOC and particulate monitoring; sites known to be contaminated with heavy metals alone may only require particulate monitoring. If radiological contamination is a concern, additional monitoring requirements may be necessary per consultation with appropriate NYSDEC/NYSDOH staff.

Continuous monitoring will be required for all ground intrusive activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. "Periodic" monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

- If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

- If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

All 15-minute readings must be recorded and be available for State (DEC and DOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations should be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring should be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m^3 above the upwind level and provided that no visible dust is migrating from the work area.

- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m^3 above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m^3 of the upwind level and in preventing visible dust migration.

All readings must be recorded and be available for State (DEC and DOH) personnel to review.

7.0 SCHEDULE 2.11 FORMS

Schedule 2.11 (a)

Summary of Work Assignment Price
123 Post Avenue Remedial Design

Work Assignment Number D003600-48

1.	Direct Salary Costs (Schedules 2.10 (a) and 2.11(b))	$41,490
2.	Indirect Costs (Schedule 2.10 (g))	$65,678
3.	Direct Non-Salary Costs (Schedules 2.11 (c)and (d))	$4,239

Subcontract Costs

Cost-Plus-Fixed-Fee Subcontracts (Schedules 2.11(e))

Name of Subcontractor	Services To Be Performed	Subcontract Price
4. Total Cost-Plus-Fixed-Fee Subcontracts		$0

Unit Price Subcontracts (Schedules 2.11(f))

Name of Subcontractor	Services To Be Performed	Subcontract Price
Zebra Environmental Corp.	Direct Push Services	$4,710
Mitkem Corporation (MBE)	Sample Analysis	$13,178
To Be Determined	Chemical Oxidation Pilot Test	$60,000
Jamaica Blueprint Co., Inc. (WBE)	Reproduction Services	$8,892
5. Total Unit Price Subcontracts		$86,780
6. Subcontract Management Fee		$2,561
7. Total Subcontract Costs (lines 4 + 5 + 6)		$89,341
8. Fixed Fee (Schedule 2.10 (h))		$9,002
9. Total Work Assignment Price (lines 1 + 2 + 3 + 7 +8)		$209,750

SCHEDULE 2.11 (b)
SUMMARY
123 Post Avenue Remedial Design
WORK ASSIGNMENT NUMBER D003600-48

Average NSPE Wage Rates	IX	VIII	VII	VI	V	IV	III	II	I	TOTAL HOURS
as of July 1, 2002	$63.70	$59.68	$51.87	$41.78	$35.11	$29.65	$26.91	$23.36	$18.63	
Task 1 - Work Plan Development	0	2	0	48	42	0	0	14	0	106
Task 2 - Pre-Design Field Investigation	0	2	0	28	32	20	72	16	0	170
Task 3 - Pilot Test Program	0	4	0	26	28	108	44	70	0	280
Task 4 - Remedial Design	0	20	0	28	120	0	4	582	0	754
Task 5 - Pre-Award Services	0	8	0	32	8	0	0	66	0	114
Total Hours	0	36	0	162	230	128	120	748	0	1,424
Total Direct Labor Cost	$0	$2,148	$0	$6,768	$8,075	$3,795	$3,229	$17,473	$0	$41,490

SCHEDULE 2.11 (b)-1
SUMMARY
123 Post Avenue Remedial Design
WORK ASSIGNMENT NUMBER D003600-48

Average NSPE Wage Rates	IX	VIII	VII	VI	V	IV	III	II	I	TOTAL HOURS
as of July 1, 2002	$63.70	$59.68	$51.87	$41.78	$35.11	$29.65	$26.91	$23.36	$18.63	
Task 1	0	0.5	0	4	0	0	0	4	0	8.5
Task 2	0	0.5	0	1	0	0	0	4	0	5.5
Task 3	0	0.5	0	1	0	0	0	4	0	5.5
Task 4	0	0.5	0	1	0	0	0	12	0	5.5
Task 5	0	0.5	0	1	0	0	0	4	0	5.5
Total Hours	0	2.5	0	8	0	0	0	28	0	38.5
Total Direct Labor Cost	$0	$149	$0	$334	$0	$0	$0	$654	$0	$1,138

Dvirka & Bartilucci Consulting Engineers
123 Post Avenue Remedial Design
Work Assignment Number: D003600-48

BREAKDOWN OF ADMINISTRATIVE
LOE HOURS ON SCHEDULE 2.11(b-1)

ADMIN ACTIVITY	WORK PLAN DEVELOPMENT														REVIEW WORK ASSIGNMENT (WA) PROGRESS													
	Conflict of Interest Checks						Prepare 2.11 Schedules								Conduct Progress Reviews						Prepare Monthly Report & Update Schedules							
NSPE	IX	VIII	VII	VI	V	IV	VIII	VII	VI	V	IV	III	II	I	VIII	VII	VI	V	IV	III	VIII	VII	VI	V	IV	III	II	I
TASK 1		0.5							4																			
TASK 2																							1					
TASK 3																							1					
TASK 4																							1					
TASK 5																							1					
TOTAL	0	0.5	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0

ADMIN ACTIVITY	REVIEW WORK ASSIGNMENT (WA) PROGRESS									CAP PREPARATION																
	MBE/WBE Activities								Program Management						Prepare Monthly Cost Control Report & CAP								Oversee CAP			
NSPE	VIII	VII	VI	V	IV	III	II	I	IX	VIII	VII	VI	V	IV	VIII	VII	VI	V	IV	III	II	I	IX	VIII	VII	VI
TASK 1																					4					
TASK 2										0.5											4					
TASK 3										0.5											4					
TASK 4										0.5											12					
TASK 5										0.5											4					
TOTAL	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	28	0	0.0	0	0	0

ADMIN ACTIVITY	MISCELLANEOUS																									
	Update NSPE List								Equipment Use and Inventory				Word Proc. and Report Preparation				Total Adm. LOE (hrs)									
NSPE	VIII	VII	VI	V	IV	III	II	I	IV	III	II	I	IV	III	II	I	IX	VIII	VII	VI	V	IV	III	II	I	
TASK 1																		0.5		4				4		
TASK 2																		0.5		1				4		
TASK 3																		0.5		1				4		
TASK 4																		0.5		1				12		
TASK 5																		0.5		1				4		
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.5	0	8	0	0	0	28	0	

SCHEDULE 2.11 (c)
DIRECT NON-SALARY COSTS
SUMMARY
123 Post Avenue Remedial Design
Work Assignment No. D003600-48

ITEM	MAXIMUM REIMBURSEMENT RATE	UNIT	ESTIMATED NUMBER OF UNITS	TOTAL ESTIMATED COSTS
IN-HOUSE				
Outside Services*	$200.00	set	0	$0.00
Express Mail	$25.00	package	12	$300.00
Sample Shipping	$50.00	shipment	12	$600.00
Level D Safety Equipment	$14.00	$/person/day	20	$280.00
Level C Safety Equipment	$40.00	$/person/day	0	$0.00
Level B Safety Equipment	$50.00	$/person/day	0	$0.00
TRAVEL				
Transportation (Personal Car)	$0.445	mile	300	$133.50
Van Rental	$100.00	day	5	$500.00
Gas	$50.00	day	5	$250.00
TOTAL DIRECT NON-SALARY COSTS				$2,063.50

* Includes photo finishing, slides and any other costs not associated with in-house capabilities.

SCHEDULE 2.11 (d) 1

EQUIPMENT PURCHASED UNDER THE CONTRACT
SUMMARY
123 Post Avenue Remedial Design
Work Assignment No. D003600-48

ITEM	ESTIMATED PURCHASE PRICE	O&M RATE ($/per month)	TERM OF USAGE (MONTHS)	ESTIMATED USAGE COST (COL. 2 + [3X4])
			TOTAL	$0.00

Schedule 2.11 (d) 2
Summary

Maximum Reimbursement Rates for Consultant/Subconsultant - Owned Equipment
123 Post Avenue Remedial Design
Work Assignment No. D003600-48

ITEM	PURCHASE PRICE X 85%	USAGE RATE ($/day)	CAPITAL RECOVERY RATE ($/Unit of Time)	O & M RATE ($/Unit of Time)	ESTIMATED USAGE (days)	ESTIMATED USAGE COST (Col. 3x6)
						$0
					TOTAL	$0

Notes:
Usage Rate = Capital Recovery Rate + O&M rate

The maximum usage rate for an item of equipment reverts to the O&M rate when the total usage reimbursement exceed 85% of the purchase price.

SCHEDULE 2.11 (d) 3
EQUIPMENT
VENDOR RENTED
SUMMARY
123 Post Avenue Remedial Design
Work Assignment No. D003600-48

ITEM	MAXIMUM REIMBURSEMENT RATE	TIME PERIOD	ESTIMATED USAGE (period of time)	ESTIMATED USAGE COST (Col. 2 X 3)
Century OVA 128	$125.00	day	0	$0.00
Photovac Microtip	$125.00	day	0	$0.00
MIE Miniram Digital Dust Indicator	$200.00	week	0	$0.00
Horiba U22 Water Quality Meter	$100.00	day	5	$500.00
Solinst Water Level Indicator	$25.00	day	0	$0.00
Generator	$60.00	day	5	$300.00
Peristaltic Pump	$50.00	day	0	$0.00
Grunfos Pump	$125.00	day	0	$0.00
GoMac Helium Meter	$75.00	day	5	$375.00
			Total	$1,175.00

SCHEDULE 2.11 (d) 4
SUMMARY
EXPENDABLE SUPPLIES
123 Post Avenue Remedial Design
Work Assignment No. D003600-48

ITEM	ESTIMATED QUANTITY	UNITS	UNIT COST	TOTAL BUDGETED COST (COL. 2 X 3)
Polyethylene tubing	2000	feet	$0.25	$500.00
Disposable bailers	0.0	case of 24	$200.00	$0.00
			TOTAL	$500.00

SCHEDULE 2.11 (d) 5
CONSUMABLE SUPPLIES
SUMMARY
123 Post Avenue Remedial Design
Work Assignment No. D003600-48

ITEM	ESTIMATED QUANTITY	UNIT COST	TOTAL BUDGETED COST (COL. 2 X 3)
Miscellaneous Supplies	5	$100.00	$500.00
		TOTAL	$500.00

SCHEDULE 2.11 (f) 1
UNIT PRICE SUBCONTRACTS
SUMMARY
123 Post Avenue Remedial Design
Work Assignment No. D003600-48

NAME OF SUBCONTRACTOR	SERVICES TO BE PERFORMED	SUBCONTRACT PRICE	MANAGEMENT FEE
Zebra Environmental Corporation	**Direct Push Services**	**$4,710**	**$0**

	Item	Maximum Reimbursement Rate		Estimated No. of Units		Total Estimated Costs
1a	Mobilization and demobilization, including site set-up breakdown, clean-up, repair and site restoration.	$250	Lump sum	1	Event	$250
b	Non-mobile decontamination pad	$95	Lump sum	1	Pad	$95
2	Well set-up	$0	Per location	9	Locations	$0
3	Geoprobe System					
	Truck/Van/ATV-mounted unit	$850	Per 8-hour day	2	Days	$1,700
	Second crew member	$175	Per 8-hour day	2	Days	$350
4	Overtime charge for on-site work	$50	Per person hour	4	Person hours	$200
5	Soil vapor probe installation	$5	Per foot	108	Feet	$540
6	Flush-mounted manholes	$52	Per manhole	9	Manholes	$468
7	Portland cement	$16	Per bag	2	Bags	$32
8	Bentonite powder	$35	Per bag	20	Bags	$700
9	Asphalt patch	$7.50	Per bag	0	Bags	$0
10	Standby time	$75	Per hour	5	Hours	$375

SUBTOTAL	**$4,710**
SUBCONTRACT MANAGEMENT FEE	**$0**
TOTAL	**$4,710**

SCHEDULE 2.11 (f) 2
UNIT PRICE SUBCONTRACTS
SUMMARY
123 Post Avenue Remedial Design
Work Assignment No. D003600-48

NAME OF SUBCONTRACTOR	SERVICES TO BE PERFORMED	SUBCONTRACT PRICE	MANAGEMENT FEE
Mitkem Corporation	**Sample Analysis**	**$13,178**	**$461**

Item	Method	Maximum Reimbursement Rate	Estimated Units	Total Estimated Cost
Groundwater				
VOCs (1-week turnaround time)	EPA SOW OLM04.2 (6/00 ASP)	$137.50 per sample	5	$687.50
VOCs (4-week turnaround time)	EPA SOW OLM04.2 (6/00 ASP)	$110.00 per sample	18	$1,980.00
Target Analyte List metals	EPA SOW ILM04.0 (6/00 ASP)	$90.00 per sample	18	$1,620.00
Chloride		$15.00 per sample	18	$270.00
Soil Vapor/Ambient Air				
VOCs	USEPA Method TO-15	$325.00 per sample	20	$6,500.00
QA/QC Samples				
Groundwater				
Matrix Spike/Matrix Spike Duplicate/Matrix Spike Blank				
VOCs (1-week turnaround time)	EPA SOW OLM04.2 (6/00 ASP)	$137.50 per sample	3	$412.50
VOCs (4-week turnaround time)	EPA SOW OLM04.2 (6/00 ASP)	$110.00 per sample	9	$990.00
Trip Blank				
VOCs (1-week turnaround time)	EPA SOW OLM04.2 (6/00 ASP)	$137.50 per sample	1	$137.50
VOCs (4-week turnaround time)	EPA SOW OLM04.2 (6/00 ASP)	$110.00 per sample	3	$330.00
Soil Vapor/Ambient Air				
Blind Duplicate				
VOCs	USEPA Method TO-15	$250.00 per sample	1	$250.00

SUBTOTAL	**$13,177.50**
SUBCONTRACT MANAGEMENT FEE	**$461**
TOTAL	**$13,638.71**

SCHEDULE 2.11 (f) 3
UNIT PRICE SUBCONTRACTS
SUMMARY
123 Post Avenue Remedial Design
Work Assignment No. D003600-48

NAME OF SUBCONTRACTOR	SERVICES TO BE PERFORMED	SUBCONTRACT PRICE	MANAGEMENT FEE
To Be Determined	**Pilot Test**	**$60,000**	**$2,100**

Item	Maximum Reimbursement Rate	Estimated No. of Units	Total Estimated Costs
Conduct In-situ Chemical Oxidation Pilot Test	$60,000 per test	1 Test	$60,000
	SUBTOTAL		**$60,000**
	SUBCONTRACT MANAGEMENT FEE		**$2,100**
	TOTAL		**$62,100**

SCHEDULE 2.11 (f) 4
UNIT PRICE SUBCONTRACTS
SUMMARY
123 Post Avenue Remedial Design
Work Assignment No. D003600-48

NAME OF SUBCONTRACTOR	SERVICES TO BE PERFORMED	SUBCONTRACT PRICE	MANAGEMENT FEE
Jamaica Blueprint Company, Inc.	**Printing**	**$8,892**	**$0**

Item	Maximum Reimbursement Rate	Estimated No. of Units	Total Estimated Costs
Draft Plans and Specifications			
Specifications, 1,000 double-sided sheets each	$105 per set	7 sets	$735
Drawing Sets, 10 drawings each	$14 per set	7 sets	$95
Draft Final Plans and Specifications			
Specifications, 1,000 double-sided sheets each	$105 per set	7 sets	$735
Drawing Sets, 10 drawings each	$14 per set	7 sets	$95
Draft Plans and Specifications			
Specifications, 1,000 double-sided sheets each	$85 per set	77 sets	$6,541
Drawing Sets, 10 drawings each	$9 per set	77 sets	$693

SUBTOTAL	**$8,892**
SUBCONTRACT MANAGEMENT FEE	**$0**
TOTAL	**$8,892**

Project Name: 123 Post Avenue Remedial Design
Work Assignment No.: D003600-48
Task No./Name: All Tasks
Complete: 0.00%

SCHEDULE 2.11 (g)
SUMMARY

Date Prepared:
Billing Period:
Invoice No.:

MONTHLY COST CONTROL REPORT
SUMMARY OF FISCAL INFORMATION

Expenditure Category	A Costs Claimed This Period	B Paid To Date	C Total Disallowed To Date	D Total Costs Incurred To Date (A+B+B1)	E Estimated Costs To Completion	F Total Work Assignment Price (A+B+E)	G Approved Budget	H Estimated Under/(Over) (G-F)
1. Direct Salary Costs	0.00	0.00	0.00	0.00	0.00	0.00	$41,490	0.00
2. Indirect	0.00	0.00	0.00	0.00	0.00	0.00	$65,678	0.00
3. Subtotal Direct Salary Costs and Indirect Costs	0.00	0.00	0.00	0.00	0.00	0.00	$107,168	0.00
4. Travel	0.00	0.00	0.00	0.00	0.00	0.00	$884	0.00
5. Other Non-Salary Costs	0.00	0.00	0.00	0.00	0.00	0.00	$3,355	0.00
6. Subtotal Direct Non-Salary Costs	0.00	0.00	0.00	0.00	0.00	0.00	$4,239	0.00
7. Subcontractors	0.00	0.00	0.00	0.00	0.00	0.00	$86,780	0.00
7a. Management Fee	0.00	0.00	0.00	0.00	0.00	0.00	$2,561	0.00
8. Total Work Assignment Cost	0.00	0.00	0.00	0.00	0.00	0.00	$200,748	0.00
9. Fixed Fee	0.00	0.00	0.00	0.00	0.00	0.00	$9,002	0.00
10. Total Work Assignment Price	0.00	0.00	0.00	0.00	0.00	0.00	$209,750	0.00

Project Manager (Engineer) _____ Date _____

MONTHLY COST CONTROL REPORT
SUMMARY OF FISCAL INFORMATION

Expenditure Category	A Costs Claimed This Period	B Paid To Date	C Total Disallowed To Date	D Total Costs Incurred To Date (A+B+B1)	E Estimated Costs To Completion	F Total Work Assignment Price (A+B+E)	G Approved Budget	H Estimated Under/(Over) (G-F)
1. Direct Salary Costs	0.00	0.00	0.00	0.00	0.00	0.00	$3,926	0.00
2. Indirect	0.00	0.00	0.00	0.00	0.00	0.00	$6,216	0.00
3. Subtotal Direct Salary Costs and Indirect Costs	0.00	0.00	0.00	0.00	0.00	0.00	$10,142	0.00
4. Travel	0.00	0.00	0.00	0.00	0.00	0.00	$0	0.00
5. Other Non-Salary Costs	0.00	0.00	0.00	0.00	0.00	0.00	$50	0.00
6. Subtotal Direct Non-Salary Costs	0.00	0.00	0.00	0.00	0.00	0.00	$50	0.00
7. Subcontractors	0.00	0.00	0.00	0.00	0.00	0.00	$0	0.00
7a. Management Fee	0.00	0.00	0.00	0.00	0.00	0.00	$0	0.00
8. Total Work Assignment Cost	0.00	0.00	0.00	0.00	0.00	0.00	$10,192	0.00
9. Fixed Fee	0.00	0.00	0.00	0.00	0.00	0.00	$852	0.00
10. Total Work Assignment Price	0.00	0.00	0.00	0.00	0.00	0.00	$11,044	0.00

Project Manager (Engineer) _____ Date _____

MONTHLY COST CONTROL REPORT
SUMMARY OF FISCAL INFORMATION

Expenditure Category	A Costs Claimed This Period	B Paid To Date	C Total Disallowed To Date	D Total Costs Incurred To Date (A+B+B1)	E Estimated Costs To Completion	F Total Work Assignment Price (A+B+E)	G Approved Budget	H Estimated Under/(Over) (G-F)
1. Direct Salary Costs	0.00	0.00	0.00	0.00	0.00	0.00	$5,317	0.00
2. Indirect	0.00	0.00	0.00	0.00	0.00	0.00	$8,417	0.00
3. Subtotal Direct Salary Costs and Indirect Costs	0.00	0.00	0.00	0.00	0.00	0.00	$13,734	0.00
4. Travel	0.00	0.00	0.00	0.00	0.00	0.00	$353	0.00
5. Other Non-Salary Costs	0.00	0.00	0.00	0.00	0.00	0.00	$1,029	0.00
6. Subtotal Direct Non-Salary Costs	0.00	0.00	0.00	0.00	0.00	0.00	$1,382	0.00
7. Subcontractors	0.00	0.00	0.00	0.00	0.00	0.00	$17,888	0.00
7a. Management Fee	0.00	0.00	0.00	0.00	0.00	0.00	$461	0.00
8. Total Work Assignment Cost	0.00	0.00	0.00	0.00	0.00	0.00	$33,464	0.00
9. Fixed Fee	0.00	0.00	0.00	0.00	0.00	0.00	$1,154	0.00
10. Total Work Assignment Price	0.00	0.00	0.00	0.00	0.00	0.00	$34,618	0.00

Project Manager (Engineer) _____ Date _____

MONTHLY COST CONTROL REPORT
SUMMARY OF FISCAL INFORMATION

Expenditure Category	A Costs Claimed This Period	B Paid To Date	C Total Disallowed To Date	D Total Costs Incurred To Date (A+B+B1)	E Estimated Costs To Completion	F Total Work Assignment Price (A+B+E)	G Approved Budget	H Estimated Under/(Over) (G-F)
1. Direct Salary Costs	0.00	0.00	0.00	0.00	0.00	0.00	$8,330	0.00
2. Indirect	0.00	0.00	0.00	0.00	0.00	0.00	$13,186	0.00
3. Subtotal Direct Salary Costs and Indirect Costs	0.00	0.00	0.00	0.00	0.00	0.00	$21,515	0.00
4. Travel	0.00	0.00	0.00	0.00	0.00	0.00	$531	0.00
5. Other Non-Salary Costs	0.00	0.00	0.00	0.00	0.00	0.00	$2,126	0.00
6. Subtotal Direct Non-Salary Costs	0.00	0.00	0.00	0.00	0.00	0.00	$2,657	0.00
7. Subcontractors	0.00	0.00	0.00	0.00	0.00	0.00	$60,000	0.00
7a. Management Fee	0.00	0.00	0.00	0.00	0.00	0.00	$2,100	0.00
8. Total Work Assignment Cost	0.00	0.00	0.00	0.00	0.00	0.00	$86,272	0.00
9. Fixed Fee	0.00	0.00	0.00	0.00	0.00	0.00	$1,807	0.00
10. Total Work Assignment Price	0.00	0.00	0.00	0.00	0.00	0.00	$88,079	0.00

Project Manager (Engineer) _____ Date _____

MONTHLY COST CONTROL REPORT
SUMMARY OF FISCAL INFORMATION

Expenditure Category	A Costs Claimed This Period	B Paid To Date	C Total Disallowed To Date	D Total Costs Incurred To Date (A+B+B1)	E Estimated Costs To Completion	F Total Work Assignment Price (A+B+E)	G Approved Budget	H Estimated Under/(Over) (G-F)
1. Direct Salary Costs	0.00	0.00	0.00	0.00	0.00	0.00	$20,280	0.00
2. Indirect	0.00	0.00	0.00	0.00	0.00	0.00	$32,103	0.00
3. Subtotal Direct Salary Costs and Indirect Costs	0.00	0.00	0.00	0.00	0.00	0.00	$52,383	0.00
4. Travel	0.00	0.00	0.00	0.00	0.00	0.00	$0	0.00
5. Other Non-Salary Costs	0.00	0.00	0.00	0.00	0.00	0.00	$100	0.00
6. Subtotal Direct Non-Salary Costs	0.00	0.00	0.00	0.00	0.00	0.00	$100	0.00
7. Subcontractors	0.00	0.00	0.00	0.00	0.00	0.00	$8,892	0.00
7a. Management Fee	0.00	0.00	0.00	0.00	0.00	0.00	$0	0.00
8. Total Work Assignment Cost	0.00	0.00	0.00	0.00	0.00	0.00	$61,375	0.00
9. Fixed Fee	0.00	0.00	0.00	0.00	0.00	0.00	$4,400	0.00
10. Total Work Assignment Price	0.00	0.00	0.00	0.00	0.00	0.00	$65,775	0.00

Project Manager (Engineer) _____ Date _____

MONTHLY COST CONTROL REPORT
SUMMARY OF FISCAL INFORMATION

Expenditure Category	A Costs Claimed This Period	B Paid To Date	C Total Disallowed To Date	D Total Costs Incurred To Date (A+B+B1)	E Estimated Costs To Completion	F Total Work Assignment Price (A+B+E)	G Approved Budget	H Estimated Under/(Over) (G-F)
1. Direct Salary Costs	0.00	0.00	0.00	0.00	0.00	0.00	$3,637	0.00
2. Indirect	0.00	0.00	0.00	0.00	0.00	0.00	$5,757	0.00
3. Subtotal Direct Salary Costs and Indirect Costs	0.00	0.00	0.00	0.00	0.00	0.00	$9,394	0.00
4. Travel	0.00	0.00	0.00	0.00	0.00	0.00	$0	0.00
5. Other Non-Salary Costs	0.00	0.00	0.00	0.00	0.00	0.00	$50	0.00
6. Subtotal Direct Non-Salary Costs	0.00	0.00	0.00	0.00	0.00	0.00	$50	0.00
7. Subcontractors	0.00	0.00	0.00	0.00	0.00	0.00	$0	0.00
7a. Management Fee	0.00	0.00	0.00	0.00	0.00	0.00	$0	0.00
8. Total Work Assignment Cost	0.00	0.00	0.00	0.00	0.00	0.00	$9,444	0.00
9. Fixed Fee	0.00	0.00	0.00	0.00	0.00	0.00	$789	0.00
10. Total Work Assignment Price	0.00	0.00	0.00	0.00	0.00	0.00	$10,234	0.00

Project Manager (Engineer) _____ Date _____

SCHEDULE 2.11 (g) SUPPLEMENTAL
MONTHLY COST CONTROL REPORT
SUBCONTRACTS

Subcontract Name	Subcontract Costs Claimed This Application Incl. Resubmittals	Subcontract Costs Approved for Payment on Previous Application	Total Subcontract costs to Date (A plus B)	Subcontract Approved Budget	Management Fee Budget	Management Fee Paid	Total Costs To Date
1. Zebra Environmental Corp.	$0.00	$0.00	$0.00	$4,710	$0		
2. Mitkem Corporation	$0.00	$0.00	$0.00	$13,178	$461		
3. Pilot Test Contractor (TBD)	$0.00	$0.00	$0.00	$60,000	$2,100		
4. Jamaica Blueprint Co., Inc.	$0.00	$0.00	$0.00	$8,892	$0		
Total				$86,780	$2,561		

Schedule 2.11 (h)

Date Prepared:

Project Name: 123 Post Avenue Remedial Design
Billing Period

Work Assignment No.: D003600-48
Invoice No.

Monthly Cost Control Report
Summary of Labor Hours
Expended to Date/Estimated To Completion

NSPE Labor Classification	IX EXP/EST	VIII EXP/EST	VII EXP/EST	VI EXP/EST	V EXP/EST	IV EXP/EST	III EXP/EST	I & II EXP/EST	ADMIN/ SUPPORT	TOTAL NUMBER OF DIRECT LABOR HOURS EXP/EST
Task 1	0/ 0	0/ 2	0/ 0	0/ 48	0/ 42	0/ 0	0/ 0	0/ 10	0/ 4	0/ 106
Task 2	0/ 0	0/ 2	0/ 0	0/ 28	0/ 32	0/ 20	0/ 72	0/ 12	0/ 4	0/ 170
Task 3	0/ 0	0/ 4	0/ 0	0/ 26	0/ 28	0/ 108	0/ 44	0/ 66	0/ 4	0/ 280
Task 4	0/ 0	0/ 20	0/ 0	0/ 28	0/ 120	0/ 0	0/ 4	0/ 570	0/ 12	0/ 754
Task 5	0/ 0	0/ 8	0/ 0	0/ 32	0/ 8	0/ 0	0/ 0	0/ 62	0/ 4	0/ 114
Total Hours	0/ 0	0/ 36	0/ 0	0/ 162	0/ 230	0/ 128	0/ 120	0/ 720	0/ 28	0/ 1424
TOTAL HOURS	0/ 0	0/ 36	0/ 0	0/ 162	0/ 230	0/ 128	0/ 120	0/ 720	0/ 28	0/ 1424

MBE/WBE
UTILIZATION PLAN
SUMMARY
123 Post Avenue Remedial Design
Work Assignment No. D003600-48

Areas to be Subcontracted	Subcontractor Name	MBE/WBE	Total Subcontract Value	% MBE/WBE Utilization
1. Sample Analysis	Mitkem Corporation	MBE	$13,178	6.3%
2. Reproduction Services	Jamaica Blueprint Co., Inc.	WBE	$8,892	4.2%
Total MBE Utilization	MBE Subcontract Value / Total Contract Value	=	$13,178 / $209,750	6.3%
Total WBE Utilization	WBE Subcontract Value / Total Contract Value	=	$8,892 / $209,750	4.2%
Total MBE/WBE Utilization	MBE/WBE Subcontract Value / Total Contract Value	=	$22,070 / $209,750	10.5%