WORKPLAN
FOR
ADDITIONAL SITE CHARACTERIZATION

5710 Smithway Street
Commerce, California

September 6, 2006

Prepared For:
Community Development Commission of the
City of Commerce
2535 Commerce Way
Commerce, California

Prepared By:

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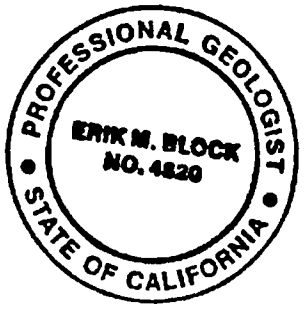

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1.0 INTRODUCTION

1.1 PROJECT DESCRIPTION

Based on the results of the Preliminary Endangerment Assessment Report for the subject property, the California Department of Toxic Substances Control (DTSC) has requested additional site characterization including soil, soil vapor, and groundwater sampling to evaluate the environmental condition of the subject property. The primary objectives of the assessment are:

- Verifying the existing contamination previously found on or near the Property and evaluating its extent:

- To further assess if additional contamination exists on the Property: and

- To provide information useful to evaluate whether the Site poses a potential threat to public health and the environment.

The Site consists of an approximately 12.3-acre portion of a larger property previously occupied by the Pacific Tube Company (PATCO). 5710 Smithway, the City of Commerce, California. The Site is currently part of the adjacent Citadel Outlet Store Center, which is located to the southwest. The Defense Plant Corporation, which manufactured metal tubes for aircraft, occupied the Site from 1943 to 1946. From 1946 to 2001, PATCO occupied the Site and manufactured tubing and piping products. In September 2001, PATCO terminated operations and vacated the Property. In 2002, the structures on the Property were demolished and removed. In 2004, the Site was redeveloped for expansion of the Citadel Outlet Store Center including the construction of new retail stores and a parking lot. A Site Plan is included as Figure 2.

The surrounding areas are primarily industrial and retail/commercial businesses. Adjacent to the southeast is the remaining portion of PATCO property which has been redeveloped with commercial/industrial buildings. Northeast of the Site across Smithway Street and adjacent to the northwest are industrial businesses. Retail businesses are located adjacent to the southwest.

During 1946 through 2001, the PATCO facility used various hazardous chemicals in their daily operations. Hazardous materials used or stored during facility operations included oil-base lubricants, coolants, acid and base solutions, compressed gases, petroleum fuels, laboratory chemicals and other inorganic chemicals.

Prior investigations included a Phase I Environmental Site Assessment by Ninyo and Moore and limited Phase II investigations completed by Geocon Inc., Premier Environmental Services Inc., and URS Corporation. Their findings indicated the presence of total petroleum hydrocarbons, volatile organic compounds (VOCs), and metals in soil.

During demolition activities, petroleum hydrocarbon-affected soil and free oil were discovered northwest of the Main Power Station (MPS) and petroleum hydrocarbon-affected soil was discovered beneath former Buildings 1, 2, 3 and 4, along the western property boundary. In addition, tetrachloroethene (PCE)-impacted soil was encountered beneath the north end of Building 5 and polychlorinated biphenyls (PCB)-affected soil was encountered beneath the former MPS. VOC-affected soil was excavated until no additional discoloration was observed and no organic vapor concentrations were measured with a portable photoionization detector (PID). Southern California Edison reportedly remediated that PCB-affected soil.

An additional soil, groundwater and soil vapor investigation was conducted by Block Environmental in March and April 2003. The laboratory analytical results indicated the presence of VOCs, metals and total petroleum hydrocarbons as diesel in soil. The soil vapor analytical results detected no concentrations of VOCs. VOCs and metals were detected in the groundwater.

The previous site investigation data indicate that the complete or potentially complete exposure pathways are:

- Inhalation of airborne dust from contaminated surficial soil;
- Inhalation of VOCs from soil and/or groundwater;

- Incidental ingestion of surficial soil: and

- Direct contact with surficial soil.

1.2 PROJECT ORGANIZATION AND RESPONSIBILITIES

The following personnel will be responsible for implementing the Quality Assurance Project Plan (QAPP).

Project Manager:	Erik Block, Block Environmental	(949) 455-0325
Training:	40-hour OSHA Hazardous Waste Site Safety Course 8-Hour OSHA Hazardous Waste Site Supervisor Course	
Responsibilities:	Overall coordination and implementation of the QAPP. Interact with client, DTSC, field personnel and laboratory to ensure the QAPP is followed during the site investigation.	
Alternate Project Manager:	Paul Breen, Block Environmental	(949) 455-0325
Training:	40-Hour OSHA Hazardous Waste Site Safety Course 8-Hour OSHA Hazardous Waste Site Supervisor Course	
Responsibilities:	Fulfill project field officer duties if the project safety officer is unavailable.	

2.0 SAMPLING PLAN

2.1 SAMPLING OBJECTIVES

An additional soil investigation will be conducted to further evaluate the presence of metals and PCBs at the various sample locations requested by the DTSC. Soil vapor samples will be collected and analyzed for VOCs. The following sample locations are required by DTSC:

- Additional sampling and analysis will be performed for at the former Building 1 and 2 locations, where PCBs were stored, and at the MPS where the remediation of the affected soil was performed by the Southern California Edison to further assess the presence of PCBs. Four (4) soil borings (BE-56 through BE-59), will be advanced to a maximum depth of 40 feet. Soil samples will be collected every five feet.

- Additional soil vapor sampling will be performed on the southeastern half on the property to evaluate the possible presence of VOC contamination. Twelve (12) soil vapor borings (BE-42 through BE-54), will be advanced and soil vapor samples will be collected at depths of approximately 5 and 15 feet.

- A minimum of four (4) offsite locations (BS-1 through BS-4) will be sampled at depths of 1 and 5 feet to obtain additional background metal concentrations.

- Soil sampling will be performed in the vicinity of Monitoring Well UGW-10 to evaluate whether an additional source is present for metals. One (1) soil boring (BE-55) will be advanced to a maximum depth of approximately 95 feet. Soil samples will be collected every 5 feet.

- Soil vapor sampling will be performed near Monitoring Well UGW-5 to evaluate if potential VOCs are present in the vadose zone. Three borings (BE-39 through BE-41) will be advanced and soil vapor samples will be collected at 5 and 15 feet.

In addition, two (2) new groundwater monitoring wells (UGW-11 and UGW-12) are proposed near the west corner of the Citadel property near the intersection of Telegraph Road and Hoefner Road. The purpose of these wells is to further evaluate the downgradient extent of the dissolved-phase VOC plume.

2.2 SAMPLE LOCATION AND FREQUENCY

The following table lists the sample matrix and constituents to be analyzed during field operations.

Proposed Sample Identification	Approximate Depth	Matrix	Analytes	EPA Method
BE-39-5 through BE-54-5, -15	5 and 15 feet	Soil Vapor	VOCs	EPA Method 8260
BE-55-5 through B-55-95	5, 10, 20, 30, 40, 50, 60, 70, 80 90, 95 feet (every other 5 foot sample will be held for possible add'l analysis)	Soil	Metals Hexavalent Chromium pH	EPA Method 6010/7000 EPA Method 7199 EPA Method 9045C
BE-56-5 through BE-59-40	5, 10, 20, 30, 40 feet (every other 5 foot sample will be held for possible add'l analysis	Soil	PCBs	EPA Method 8082
BS-1 through BS-4	5	Soil	Metals	EPA Method 6010/7000
UGW-11	20, 40, 60, 80, 100, 110 feet	Soil	VOCs Metals Hexavalent Chromium	EPA8260B EPA Method 6010/7000 EPA Method 7199
UGW-12	20, 40, 60, 80, 100, 110 feet	Soil	VOCs Metals Hexavalent Chromium	EPA8260B EPA Method 6010/7000 EPA Method 7199

Proposed soil boring, soil vapor, and monitoring well locations are included on Figure 2.

2.3 SAMPLE DESIGNATION

Soil borings and soil vapor borings will have the designation of "BE-", background samples will have the designation "BS-", and soil samples from monitoring wells will have the designation "UGW-" followed by the boring/well number and sample depth. (see table above). Sampling will consist of collection of soil vapor samples on the southeast section of the property and around Monitoring Well UGW-5 for VOCs; discrete soil sampling for metals around Monitoring Well UGW-10; and discrete soil sampling for PCBs at the former MPS, and Buildings 1 and 2.

2.4 SAMPLING EQUIPMENT AND PROCEDURES

2.4.1 Soil Sampling Procedures

The soil borings will be advanced using 8-inch diameter continuous-flight hollow-stem augers. Prior to drilling, each boring will be hand excavated to a minimum depth of 5 feet below grade using an air knife or post-hole digger. To minimize cross-contamination, the augers will be steam cleaned prior to each use.

Soil samples will be retrieved at 5-foot intervals ahead of the lead auger using an 18-inch long, 2-inch diameter; standard penetration split spoon sampler driven by the 30-inch free fall of a 140-pound hammer. Blow counts will be recorded for three successive 6-inch intervals. The split spoon sampler will be fitted with three stainless steel or brass sample tubes. The sampler and sample tubes will be washed with a non-phosphate detergent and rinsed in tap water before each sampling event.

Immediately after each sample collected, the sample tube will be removed from the sampler and securely sealed with Teflon sheeting and polyurethane caps. The sample will be labeled with the project number, well or boring number, sample depth, geologist's initials, and the date of collection. EPA method 5035 (Encore sampling system) will be used for soil samples to be analyzed for VOCs. Soil samples will be stored in a chilled cooler or in a refrigerator prior to analysis by a state-certified laboratory. Additional soil

from the sampler will be screened in the field for hydrocarbon vapors using a photoionization detector (PID). The PID readings will be recorded on the boring logs.

2.4.2 Soil Vapor Sampling Procedures

Hydraulically-driven soil vapor probes constructed of either 1.25- or 1.5-inch outside diameter steel and equipped with a hardened drop-off steel tip will be used. The probes are nominally 4 feet long and threaded together to reach multiple depths. The probe is driven into the subsurface with direct push *STRATAPROBE*™ or similar system. Once inserted to the desired depth, the probe is retracted slightly to expose the vapor sampling port. A small diameter inert tubing is then inserted through the center of the rod and threaded into a gas tight fitting just above the tip. After a sample is obtained the tubing is removed, the probe advanced to the next depth or removed. This design prevents clogging of the sampling port and cross-contamination from soils during insertion.

Vapor samples are withdrawn from the probe sampling syringe with a 5 cc syringe and injected with surrogates into a purge & trap instrument for VOC analysis. Separate aliquots are directly injected into gas chromatographs for fixed gases and methane analysis. The injection syringe is flushed 2 times with the sample prior to injection. Injection syringes are flushed several times with clean air or discarded between injections.

2.4.3 Monitoring Well Installation Procedures

Two additional groundwater monitoring wells (UGW-11 and UGW-12) will be installed using 10-inch diameter hollow stem augers to depths of approximately 110 fbg. Prior to drilling, each soil boring will be hand excavated to a minimum depth of 5 fbg using a hand auger. This procedure is intended to minimize potential subsurface utilities not revealed by other methods. To minimize cross-contamination, the augers will be steam cleaned prior to each use. Soil samples will be collected for possible laboratory analysis at approximately 5-foot intervals, field conditions permitting, using a California modified split spoon sampler. The soil samples will be collected from the split spoon sampler using three stainless steel or brass sample tubes. Soil samples will be capped, labeled, bagged, and placed in an ice chest with blue ice. In addition, a sample tube will be securely sealed with Teflon sheeting and polyurethane caps. EPA method 5035 will be

used for samples to be analyzed for VOCs. The samples will be labeled with the project number, well number, sample depth, geologist's initials, and the date of collection. Soil samples will be stored in a chilled cooler or refrigerated prior to analysis by a state-certified laboratory. The location of the proposed monitoring wells is shown on Figure 2.

Following the collection of soil samples, 4-inch diameter Schedule 40, flush threaded, PVC casing will be installed through the augers. The well will be constructed with approximately 10 feet of 0.020-inch slotted casing and 100 feet of blank casing. The annulus of the well will be backfilled with No. 3 sand to approximately 2 feet above the top of the screened interval. The remaining annulus will be backfilled with bentonite to approximately one fbg. The groundwater monitoring well will be finished with a traffic grade well box and secured with a watertight locking cap. A well construction diagram is included as Figure 3.

Following placement of the filter pack, the well will be developed using a surge block and bailed to settle the filter pack and remove fine material. Approximately three to four wetted casing volumes will be bailed from the well during development. Groundwater samples will be collected from the newly installed wells following development activities as part of the regular groundwater monitoring program. Soil cuttings and auger rinse water generated during drilling activities will be temporarily stored onsite in labeled 55-gallon drums prior to transport to an appropriate disposal/recycling facility (within 90 days).

2.4.4 Other Procedures

Upon completion of the field hydrocarbon vapor screening, each soil sample will be described in accordance with the Unified Soil Classification System (USCS). For each sample, field estimates of density, moisture, color, grading, and soil type will be recorded on the boring log.

Daily field sheets will document soil and soil vapor sample collection, sampling conditions, and analysis to be performed.

2.5 SAMPLING CUSTODY

A chain-of-custody form will be completed for all soil, groundwater, and vapor samples collected, providing a continuous record of possession of the samples at all times prior to possible analysis by a state-certified laboratory.

2.6 SAMPLE HANDLING AND ANALYSIS

The following table lists sample preservation methods, sample containers, shipping requirements and holding times.

Compound	Preservation Methods	Sampling container	Shipping requirements	Holding times
pH	Blue ice	Stainless steel tube	Lab courier	no holding time
VOCs	Blue ice	Encore sampler	Lab courier	14 days
Title 22 metals	Blue ice	Stainless steel tube	Lab courier	6 months
Hexavalent Chromium	Blue ice	Stainless steel tube	Lab courier	24 hours after extraction
PCBs	Blue ice	Stainless steel tube	Lab courier	Need to extract within 14 days

Soil samples will be picked up by a laboratory courier. Soil vapor samples will be analyzed for VOCs immediately using an onsite mobile laboratory.

The chain-of-custody will be filled out in pen, completely and clearly, and have the following information:

The date, page number, project number, project name, site address, project manager, samplers, laboratory name, sample identification number, date, time, matrix, number of containers, analysis, method of shipment, turn around time and samplers signature.

The sample will be labeled with waterproof pen and have the following information: the project number, well or boring number, sample depth, geologist's initials, and the date of collection.

Soil cuttings and auger rinse water generated during drilling activities will be temporarily stored onsite in labeled 55-gallon drums prior to transport to an appropriate disposal/recycling facility.

3.0 QA OBJECTIVES FOR MEASUREMENT [provided by Enviro-Chem Laboratory]

3.1 LABORATORY SOIL SAMPLE QUALITY CONTROL

Enviro-Chem Laboratory (DHS certified) will perform all soil sample analysis. Alternate laboratoryies include: HP Labs, C&E Laboratories, and/or American Scientific Laboratory.

3.1.1 Soil Sample Analysis

After receipt of sample(s), the laboratory director or their client services supervisor fills out the sample analysis request and meets with lab supervisors to discuss analytical requirements and scheduling. Analytical requirements and goals are delineated and noted on the laboratory sheets. The written analytical protocol, analysis schedule, and quality assurance requirements are then assigned to appropriate personnel. As the analysis proceeds, each manipulation of the sample is noted on the laboratory sample sheet and entered into the computer sample tracking system. The progress of each sample is monitored by the laboratory supervisors. A complete assessment of the total laboratory status is available at all times from the document control supervisor.

3.1.2 Calibration Standard Traceability

The preparation of analytical standards is documented in the laboratory Standards Log. This log contains the analyst's initials, date of preparation, concentration, and the type of solvent used. The standards are prepared from pure materials or purchased as certified solutions. Working standards are prepared by diluting the standard solution and may be prepared as an individual standard or as a mixture.

The working standards are checked regularly for deterioration and are discarded if degradation is evident or if the predetermined stable lifetime has been exceeded. From time to time, Quality Control Check Standards, available from EPA, are used to determine the accuracy of the calibration standards. Such checks are recorded in the Standards Log.

3.1.3 Ongoing or Routine Lab Operations

Proper sample tracking and documentation are ensured by the operations of our quality assurance coordinator. Correct data also require a substantial program of quality control in the laboratory. This program consists of the following procedures:

- Personal logbooks are maintained to supplement data logged on lab sheets.
- Instrument logs are maintained with each instrument listing use, operating conditions, and maintenance. Performance standards are run regularly to demonstrate operating capability.
- Gas Chromatograph/Mass Spectrometer (GC/MS) tuning and chromatographic performance for DFTTPP and BFB are checked against accepted EPA performance criteria.
- Chromatograms and spectra are labeled carefully with information including sample number, date, analyst's identity, chromatographic column, and amount injected.

- Quality control sheets are prepared to record the results of runs for blanks, duplicates, and spikes. It is the policy of the laboratory to run at least one blank and one matrix spike and one matrix spike duplicate for each sample matrix, each sample batch, or each ten samples, whichever is more frequent.

- Quantification work sheets are maintained to organize data processing into a readily checked format.

- All samples are analyzed according to approved EPA methods or methods established by a state government regulatory agency. In-house methods are used only if no government-approved method is available and are based on a literature review of the topic.

A high state of laboratory cleanliness is practiced to minimize the potential for sample contamination. Only the highest-grade solvents and reagents are used, and are regularly monitored by using laboratory blanks for signs of a problem. Service agreements are maintained on all major instrumentation and on standard laboratory equipment such as balances.

3.1.4 Lab Quality Assurance/Quality Control

The laboratory QA/QC program is established to assess precision and accuracy and to detect unsatisfactory results. This is accomplished by the preparation and analysis of:

- Field or trip blanks,

- Method blanks for each type of extraction and analysis,

- Matrix and method duplicates/spike duplicates,

- USEPA standard samples,

- USEPA calibration check samples.

Quality control limits are established for precision (relative percent difference) and accuracy (spike percent recovery range) from the laboratory's quality control sample results. If quality control sample results fall outside of the control limits, the chemist notifies the section supervisor and corrective action is taken. Prior to each day's analyses, instruments are subject to performance tests, which must be passed before analysis can begin. Most priority pollutant work dictates the use of surrogates to monitor extraction recoveries and internal standards for concentration determinations. The percent recovery for each surrogate is determined after each run and deviation from acceptable recovery ranges triggers further examination of the analysis.

Blanks are routinely analyzed and the results monitored to eliminate possible contamination. When a problem arises, corrective action is taken. This action can range from repeating the analysis to making a complete review of the procedure.

3.1.5 Data Production, Reduction, and Transcription

The production of data involves the following:

The analyst compiles the data generated and prepares a summary of results. The analyst is responsible for checking data and calculations for arithmetic errors, use of proper units, and clear labeling of all chromatograms and spectra.

The analyst also calls attention to unusual values or discrepancies, and reviews the quality control data to ensure conformance with accepted norms. The analyst signs off and forwards the file to the section supervisor.

A peer reviewer then checks the data package. If no errors are found, the data is forwarded to the section supervisor. If the supervisor finds errors or problems, the data package is returned to the analyst with questions.

The section supervisor reviews the results, checking for calculation errors and completeness of the file. The section supervisor signs-off and forwards the file to the laboratory director.

The quality assurance coordinator reviews the results, checks to see that the proper analytical methods were followed, and reviews the quality assurance package to ensure that

adequate quality assurance was performed, and acceptable accuracy and precision were achieved. The results are signed-off and given to the document control supervisor.

The document control supervisor prepares the report and submits it for typing.

After the typist completes the report, the document control supervisor checks to see that all numbers have been transcribed correctly, then returns the finished report to the quality control supervisor for proofreading, review, and signature. The signed report is given to the laboratory manager and director of laboratory services.

3.2 SOIL GAS QUALITY CONTROL [provided by HP Labs]

A mobile laboratory will be used for sample analysis. HP Labs will perform all soil vapor samples analysis.

3.2.1 Analytical Methodology

3.2.1.1 Operating Conditions and Instrumentation

Volatile Organic Compounds (VOCs) by EPA 8260

Instrument: Hewlett-Packard 6890/5973 or 5890/5972 GCMS
Column: 60 meter HP-624, 0.32mm x 1.8u, capillary.
Carrier flow: Helium at 15 ml/min.
Detectors: Quadruple MS, full scan mode
Detectors: parate column.
Column oven: 20°C for 1 min, 35°C to 230°C at 8°C/min.

3.2.1.2 Standard Preparation

Primary (stock) standards: Made from certified neat components or from traceable standards purchased from certified suppliers.
Secondary (working) Standards: Made by diluting primary standard. Typical concentrations are 1 ug/ml, 10 ug/ml, and 50 ug/ml.

Laboratory Check Samples are prepared at the midpoint concentration from a standard purchased from a source different than the primary standards.
Lot numbers and preparations of all standards are recorded on a log sheet and kept in the mobile laboratory.

3.2.1.3 Initial Multi-Point Calibration Curve

An initial calibration curve of a minimum of 3 points is performed either:

- At the start of the project.
- When the GC column or operating conditions have changed
- When the daily mid-point calibration check cannot meet the requirements as specified below.

Calibration curves for each target component are prepared by analyzing low, mid, and high calibration standards covering the expected concentration range. The lowest standard concentration will not exceed 5 times the reporting limit for each compound. A linearity check of the calibration curve for each compound is performed by computing a correlation coefficient and an average response factor. If a correlation coefficient of 0.990 or a percent relative standard deviation (%RSD) of $\pm$ 20% is obtained, an average response factor is used over the entire calibration range. If the linearity criteria are not obtained, quantitation for that analyte is performed using a calibration curve. After each initial multi-point calibration, the validity of the curve is further verified with a laboratory control standards (LCS) prepared at the mid-point of the calibration range. The LCS includes all target compounds and the response factor (RF) must fall within $\pm$ 20% of the factor from the initial calibration curve.

3.2.1.4 Continuing Calibration (Daily Mid-point Calibration Check)

Continuing calibration standards prepared from a traceable source are analyzed at the beginning of each day. Acceptable continuing calibration agreement is set at $\pm$ 20% to the average response factor from the calibration curve, except for freon, chloroethane, and vinyl chloride when a 25% agreement is required. When calibration checks fall outside this acceptable range for analytes detected on the site, corrective action, consisting of verification of the standard and/or a new calibration curve for the analytes out of specifications is performed by the on-site chemist. The continuing calibration includes all

compounds expected or detected at the site in addition to any specific compounds designated in the project workplan.

3.2.1.5 Detection Limits

Reporting limits for this program are defined as 5 times lower than the lowest concentration standard of the calibration curve, as follows:

Compound	Detector	Report Limit
VOCs	Mass Spec	0.1 to 1 ug/l-vapor
Methane	FID	10 ppmv
Fixed Gases	TCD	0.1% by vol
H2S	Gold Film	0.10 ppmv

3.2.1.6 Compound Identification and Quantification

All analyses are performed with multiple detectors on megabore capillary columns generally following EPA Method 8000 protocols, modified for soil vapor. All compounds detected in the soil gas samples are identified by mass spectrum or by chromatographic retention time and quantified using the average response factor from the active calibration curve. The analytical configuration provides the required compound separation as well as dual-detector confirmation.

3.2.1.7 Laboratory Data Logs

The field chemist maintains injection and sample analysis records including date and time of analysis, sampler's name, chemist's name, sample ID number, concentrations of compounds detected, calibration data, and any unusual conditions.

3.2.2 Quality Control Procedures

3.2.2.1 Compliance With Standards

Sampling and analytical procedures complied with the American Society for Testing and Materials' *Standard Guide for Soil Gas Monitoring in the Vadose Zone* (ASTM D5314-93), the LA-RWQCB Soil Gas Guidelines (Feb 1997 version), and the San Diego County SAM Soil Gas Guidelines (October, 2001).

3.2.2.2 Method Blanks

Prior to sampling each day, all components of the sampling system are checked for contamination by drawing ambient air from above ground through the sampling equipment, and injecting a sample into a gas chromatograph. The analysis results are compared to that of the ambient air and recorded in the data tables as blanks.

3.2.2.3 Sample Quality Control

Each sample is given a unique identification number specifying location and depth. Purge and sample volumes are monitored closely using small calibrated syringes to assure a proper flow of soil gas. This ensures a representative sample is obtained from the sample zone without excessive pumping, which could result in sampling of surface air.

3.2.2.4 Decontamination Procedures

To minimize the potential for cross-contamination between sites, all external soil vapor probe parts are wiped or washed cleaned of excess dirt and moisture with solvents or de-ionized water as appropriate. The probe's internal nylaflow tubing is purged with clean air between sampling locations or replaced as necessary. Sampling syringes are flushed with clean air after each use or replaced.

3.2.2.5 Corrective Action

Corrective action is taken when unexpected contaminant levels are detected. First duplicate samples are taken to verify the initial detection of petroleum hydrocarbons. If contamination is suspected, then the sample probes are disassembled, wiped cleaned of excess dirt and moisture, rinsed with deionized water, washed with Alconox and water, and rinsed again with deionized water. The sample tubing in the probe is replaced. Contaminated sampling syringes are discarded.

3.2.2.6 Analytical Quality Control

- **Method Blanks**

Method blanks are performed at the start of each day by drawing clean air through the sampling equipment and analyzing. These blanks verify all components of the sampling and analytical system are free of contamination. Additional blanks are performed more often as appropriate depending upon the measured concentrations, at a minimum 1 every 20 samples. The results of all blank analyses are recorded in the data tables. If a blank shows a measurable amount of any target compound, the on-site chemist will investigate and determine the source, and resolve the contamination problem prior to analyzing any samples.

3.2.2.7 Duplicate Samples

Duplicate (repetitive) analysis of a sample is performed when inconsistent data are observed, but at least one every 20 samples. Because soil vapor duplicates can vary widely, nominal relative percent difference (RPD) acceptance criteria is $\pm$ a factor of 2.

3.2.2.8 Continuing Calibration (Daily Mid-point Calibration Check)

As described this document, continuing calibration standards prepared from a traceable source are analyzed at the beginning of each day. The continuing calibration includes all compounds expected or detected at the site and any specific compounds designated in the project workplan.

3.2.2.9 Laboratory Check Samples (LCS)

Laboratory check samples, prepared at the midpoint concentration from a standard purchased from a source different than the calibration standards, are analyzed at the end of each day. Acceptance criteria is ± 20% from the true value. If the LCS falls outside this acceptance range for analytes detected on site, corrective action, consisting of verification of the standard and/or a new calibration curve for the analytes out of specifications, is performed

3.3 CALIBRATION PROCEDURES

Refer to section 3.1 and 3.2 for laboratory calibration procedures. Field instrumentation will be calibrated on a daily basis. The photoionization detector (PID) will be calibrated with 100 ppm isobutylene.

3.4 ANALYTICAL PROCEDURES

Analytical methods used for laboratory results are summarized below:

Summary of Analytical Methods	
Soil Matrix	EPA Method No. 8082 (PCBs)
	EPA Method 9045 (pH)
	EPA Method 7199 (Hexavalent Chromium
	EPA Method 6010/7000 (Title 22 metals)
Soil Vapor Matrix	EPA Method No. 8260 (VOCs)

3.5 DATA REDUCTION, VALIDATION, AND REPORTING

Refer to section 3.1 and 3.2

3.6 INTERNAL QUALITY CONTROL

Refer to section 3.1 and section 3.2.

3.7 PREVENTIVE MAINTENANCE

See section 3.1 and 3.2 for laboratory maintenance. The field instrumentation will be maintained according to the owner's manual 2020 Photoionization Manual.

3.8 SPECIFIC ROUTINE PROCEDURES USED TO ASSESS DATA

Refer to section 3.1 and 3.2

3.9 CORRECTIVE ACTIONS

Refer to section 3.1 and 3.2 for laboratory corrective actions. Corrective actions in the field be handled by the Field Project Manager.

3.10 QUALITY ASSURANCE PROJECT PLANS

Refer to section 3.1 and 3.2 for laboratory quality assurance.

4.0 SITE SAFETY PLAN

4.1 INTRODUCTION

The purpose of this Site Safety Plan (SSP) is to establish guidelines and procedures to protect site personnel and the community from physical or chemical hazards associated with Block Environmental activities being performed at this site. The provisions set forth in this plan apply to Block Environmental employees, subcontractors, and third parties working under the supervision of Block Environmental. All of the above personnel must read this SSP prior to conducting work at this site. The scope of work covered by this plan includes, air monitoring, drilling and sampling activities.

4.2 KEY PERSONNEL AND RESPONSIBILITIES

All project personnel will be responsible for understanding and complying with the Site Safety Plan (SSP) requirements. No unauthorized person will be allowed in the work zone.

Company Safety Officer:	Erik Block, Block Environmental	(949) 455-0325
Training:	40-hour OSHA Hazardous Waste Site Safety Course 8-Hour OSHA Hazardous Waste Site Supervisor Course	
Responsibilities:	Overall coordination and implementation of the SSP. Interact with client and agencies to obtain information any known physical and chemical hazards.	
Project Safety Officer:	Erik Block, Block Environmental	(949) 455-0325
Training:	40-hour OSHA Hazardous Waste Site Safety Course 8-Hour OSHA Hazardous Waste Site Safety Course	
Responsibilities:	Administer safety protocol during field operations.	

Conduct morning safety meeting. All injuries or accidents must be reported to the Project Safety Officer

Alternate Safety Officer: Paul Breen, Block Environmental (949) 455-0325

Training: 40-Hour OSHA Hazardous Waste Site Safety Course
8-Hour OSHA Hazardous Waste Site Supervisor Course

Responsibilities: Fulfill project safety officer duties if the project safety officer is unavailable.

Client Contact: Mr. Bob Zarilli, City of Commerce (323) 887-4441

Responsibilities: Inform project manager of all known physical and chemical hazards, including providing available maps of underground utilities, piping, and tanks.

4.3 HEALTH AND SAFETY RISK ANALYSIS

4.3.1 Physical Hazards

Hazard	Preventive Measure
Physical injury during drilling of borings or monitoring wells using heavy equipment.	Only a qualified, licensed driller contractor will be used. Hard hats, steel toed boots and safety glasses will be worn by all personnel. Nonessential workers will be restricted to outside the work zone.
Physical injury during groundwater and soil sampling	Chemical-resistant gloves will be worn by all personnel.

Electrocution or explosion by active underground or above ground electrical lines or utilities.	An underground service alert will be performed prior to all drilling activities. The first five feet of every boring will be hand excavated to verify the absence of underground utilities. When specified by the client an air-knife will be utilized rather than hand excavation. Additionally, a geophysical survey may be performed.
Noise	All workers in the vicinity of operating heavy equipment, which produces significant noise, shall use hearing protection devices.
Heat Stress	Rest breaks will be taken at the discretion of each individual or the project officer (which ever comes first). Beverages will be provided, if necessary.

TABLE 1
Monitoring Rest Breaks of Workers

Temperature	Frequency of Monitoring
90°F or above	After each 45 minutes of work
87.5°F - 90°F	After each 60 minutes of work
82.5°F - 87.5°F	After each 90 minutes of work
77.5°F - 82.5°F	After each 120 minutes of work
72.5°F - 77.5°F	After each 150 minutes of work

Signs and Symptoms of Heat Stress

- Heat rash
- Heat cramps: muscle spasms, pain in the hands, feet, and abdomen.
- Heat exhaustion; pale, cool, moist skin, heavy sweating, dizziness, nausea, fainting.

- Heat stroke; red, hot, usually dry skin, lack of or reduced perspiration, nausea, dizziness and confusion, strong, rapid pulse, coma.

4.3.2 Chemical Hazards

Hazard	Preventive Measure
Inhalation, ingestion, or skin adsorption of vapors, liquids, or associated dust. Hazardous chemicals may include tetrachloroethene, trichloroethene, metals and PCBs.	Air monitoring for VOCs vapors will be performed during drilling activities using a photoionizatoin detector calibrated . All workers shall have a minimum of half face respirators equipped with NIOSH-approved organic vapor cartridges (See respirator protocol section for respirator use).

4.4 RISK ASSESSMENT SUMMARY

The chemical hazards potentially present at the site consist of VOCs, metals and PCBs. None of these chemicals is anticipated to be present in concentrations that would present a risk of exposure above permissible levels either to personnel working on site or the community.

4.5 EXPOSURE MONITORING PLAN

Air monitoring for volatile organics shall be performed during drilling activities using a properly calibrated photoionization detector (PID). All workers shall have a minimum of half-face respirators equipped with NIOSH-approved organic vapor cartridges (See respiratory protocol section for respiratory use available).

4.6 PERSONAL PROTECTIVE EQUIPMENT (PPE)

During site investigation, PPE required for each worker shall consist of a minimum of Level D protection. These activities include drilling, soil and groundwater sampling. PPE will be upgraded in accordance with the protocol listed below. Conditions at this site are not expected to require Level A or B protection. Should Level A or B protection be required, all work will immediately cease, the site will be secured, appropriate agencies will be notified, and the Site Safety Plan will be amended.

The type of equipment used and the overall level of protection should be reevaluated periodically as the amount of information about the site increases, and as the workers are required to perform different tasks. Personnel should be able to upgrade or downgrade their level of protection with concurrence of the Project Safety Officer.

Level D

- Hard hat
- Safety glasses with side-shields, or splash goggles.
- Chemical-resistant gloves.
- Steel-toed boots.
- Hearing protection device.
- Reflective vest (used at an active station or when performing street work).

Level C (modified)

- Half-face respirator equipped with organic vapor cartridges
- Level D PPE

Level C

- Chemical resistant clothing
- Chemical resistant steel-toed boots
- Face shield and/or chemical splash goggles (optional if respirator includes full face-piece)

- Chemical resistant gloves
- Level D PPE

Conditions to upgrade to Level C

1. Limited direct skin and eye contact with hazardous compounds or air contaminants will not result in severe damage and/or irreversible effects.
2. Work function only involves potential for minor splashes and excludes total body splashes or immersion.
3. Concentrations or skin absorbing compounds less than TLV.
4. Request of the individual performing the task.

Conditions to upgrade to Level C (modified)

1. Compounds of concern do not have adverse skin and eye effects.
2. Vapor concentrations above exposure limit but no dermal hazard.
3. Work function precludes splashes, immersion, or potential for unexpected respiratory hazards.
4. No exposure anticipated above TLV levels.

Conditions to return to Level D

1. New information indicating that the situation is less hazardous than was originally thought.
2. Change in site conditions that decrease the hazard.
3. Change in work task that will reduce contact with hazardous materials.

Respirator Protocol

Project personnel will be required to wear half-face air-purifying respirators with organic vapor cartridges in accordance with the following guidelines:

- When the permissible exposure level-time waited average (PEL-TWA) for TCE and PCE (100 ppm) is exceeded in breathing area.

- When the permissible exposure level- short-term exposure level (PEL-STEL) for TCE and PCE (300 ppm) is exceeded in breathing area.
- If the concentration in the breathing zone exceeds 150 ppm for TCE work stops and respiratory protection will be revised.
- If the concentration in the breathing zone exceeds 1000 ppm for PCE work stops and respiratory protection will be revised.

The permissible exposure level-time weighted average (PEL-TWA) is the average concentration for a normal 8-hour workday and a 40-hour work week, to which nearly all workers may be repeatedly exposed, day after day, without adverse effect. The permissible exposure level-short-term exposure limit (PEL-STEL), is the concentration to which workers can be exposed continuously for a short period of time without suffering from irritation, chronic or irreversible tissue damage, or narcosis of sufficient degree to increase the likelihood of accidental injury, impair self-rescue or materially reduce work efficiency, provided that the daily TLV-TWA is not exceeded.

4.7 MEDICAL SURVEILLANCE REQUIREMENTS

Project personnel will be required to have a medical surveillance medical examination annually.

4.8 WORK ZONES AND SECURITY MEASURES

The work zone shall be identified with orange traffic cones, delineators, and/or fluorescent marking tape. For closed facilities the perimeter fence shall be considered the work zone. Approved traffic control plans will be followed at all times when working in the street. Only essential personnel will be permitted to enter the work zone.

4.9 DECONTAMINATION MEASURES

If decontamination of equipment is necessary, all practical measures will be taken to ensure that contaminated equipment is cleaned before leaving the work area. The drilling rig augers will be steam cleaned. If tyvek suits are used, workers shall remove suits prior

to leaving the site. The suits shall be properly disposed of. Reusable work gloves, boots, and other equipment will be stored separately and away from personnel, while not in use.

4.10 GENERAL SAFE WORK PRACTICES

The following safe work practices will be followed during the site activities:

- Eating, smoking, and drinking will not be allowed at any time within the work zone. Workers shall wash their hands and faces prior to eating or drinking.
- All equipment shall be kept in proper working order. Only qualified personnel or subcontractors will be used to operate heavy equipment.
- Respirators will be maintained in a clean and sanitary condition.
- Fire extinguishers will be present onsite.
- A first aid kit will be present onsite.

4.11 STANDARD OPERATING PROCEDURES

Safety Meetings

To ensure that the Site Safety Plan is being followed, the Site Safety Officer should conduct a safety meeting each day prior to initiating any site activity. The purpose of these safety meetings is to:

- Describe the assigned tasks and their potential hazards.
- Coordinate activities.
- Identify methods and precautions to prevent injuries.
- Describe any changes in the Site Safety Plan.
- Review emergency procedures.

Workers shall conduct field operations in a safe and workman-like manner. All reasonable precautions will be undertaken to minimize both physical and chemical hazards.

4.12 TRAINING REQUIREMENTS

All personnel working onsite shall have completed an OSHA-approved 40-hour health and safety training course for hazardous waste sites, with an 8-hour annual refresher, as necessary.

4.13 EMERGENCY PROCEDURES

The emergency procedures outlined below serve as guidelines only.

In case of an injury:

- Administer first aid to the injured person (this should be done by qualified individuals).
- Notify, or designate other project personnel to notify, one or more of the emergency services listed in this plan, as needed.
- Stop work activities if necessary.
- Notify the Company Safety Officer.

In case of a utility line rupture:

- If safe, shut off equipment.
- Evacuate and cord off the hazardous area created by the rupture.
- Notify one or more of the emergency services listed in this plan, as needed.
- Notify Underground Service Alert who will then notify the affected utility companies.
- Remain present at the site to answer any question that emergency personnel may have.
- Notify the client and/or property owner.

4.14 CONTINGENCY PLAN

In the event of an emergency, the project safety officer will immediately contact one or more of the following services, as needed. In the event the project safety officer is not available. The alternate safety officer will assume these responsibilities.

CONTINGENCY / EMERGENCY INFORMATION

Facility	Telephone Number
Emergency Medical Facilities:	
Los Angeles Community Hospital 4081 E. Olympic Boulevard Los Angeles, CA	(323) 267-0477
Route Description: From site, Smithway becomes Flotilla Street. Flotilla becomes Camfield Avenue, turn right on Telegraph Road, bear right onto I-5 north, exit#130B-Eastern Aven., turn left on Telegraph Road, bear right on Olympic Boulevard, go 0.5 mile, the hospital is on the right hand side	See Appendix A
Fire Department	911
Police Department	911
Poison Control Center	(714) 634-5003 (800) 544-4404

Office of Emergency Service	(800) 852-7550
National Response Center	(800) 424-8802
Underground Service Alert	(800) 422-4133
Dig Alert Ticket	

I have read and understand the Site Safety Plan and hereby agree to comply with all safety requirements outlined herein.

Date	Arrival Time	Departure Time	Signature	Company

FIGURES

5710 Smithway Street **Commerce, California**	**INDEX MAP**	**FIGURE** **1**	**BLOCK ENVIRONMENTAL** 23265 South Pointe Drive, Suite 100 Laguna Hills, California 92653

NORTH

HOEFNER ROAD

FLOTILLA STREET

SMITHWAY STREET

TELEGRAPH ROAD

GASPAR AVENUE

UGW-12

UGW-11

UGW-1

UGW-2

UGW-8

UGW-9

UGW-3

UGW-4

UGW-5

UGW-6

UGW-7

UGW-10

BE-39

BE-40

BE-41

BE-42

BE-43

BE-44

BE-45

BE-46

BE-47

BE-48

BE-49

BE-50

BE-51

BE-52

BE-53

BE-54

BE-55

BE-56

BE-57

BE-58

BE-59

BS-1

BS-2

BS-3

BS-4

Conroy & Knowlton, Inc.

CITADEL OUTLET STORES

OFFICE BLDG.

OFFICE BLDG.

OFFICE BLDG.

OFFICE BLDG.

HOTEL

Barry Owen

Kassir Import

MGM Transformer

Jefferson Smurfit Corp.

Former Pacific Tube Company

Ernst Paper Products

LEGEND

- Subject Property
- Proposed Boring Location
- Proposed Monitoring Well Location
- Proposed Soil Vapor Location
- UGW-3 Monitoring Well Location
- Former Building
- Existing Building
- Planned Building
- Remedial Excavation

APPROXIMATE SCALE (in feet)

0 80 160 320

5710 Smithway Street Commerce, California	**PROPOSED BORING, MONITORING WELL, AND SOIL VAPOR SAMPLING LOCATIONS**	**FIGURE 2**	**BLOCK ENVIRONMENTAL** 23 Musick, Suite 100 Irvine, California 92618

APPENDIX A

YAHOO! DRIVING DIRECTIONS

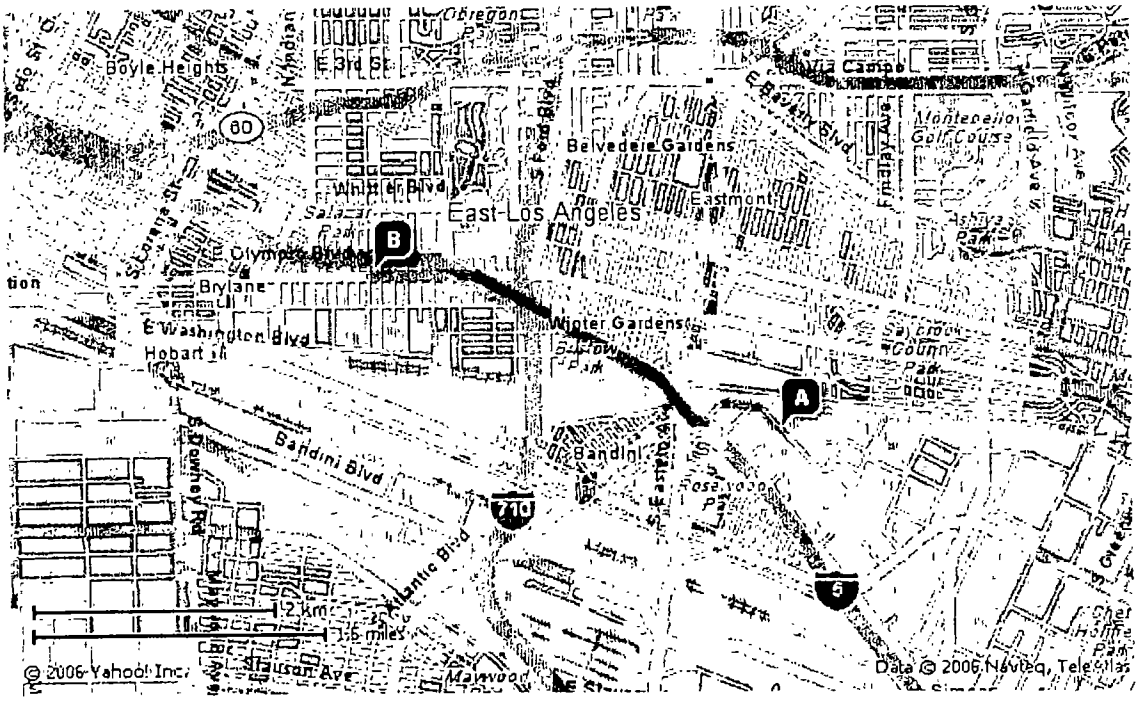
A 5710 Smithway St Commerce, CA 90040-1508

1. Start at **5710 SMITHWAY ST, COMMERCE** - **go 0.2** mi
2. Bear L on **FLOTILLA ST** - **go 0.2** mi
3. Continue on **CAMFIELD AVE** - **go 0.2** mi
4. Bear R onto **I-5 NORTH** - **go 0.8** mi
5. Take exit **#130B** toward **EASTERN AVE** - **go 0.2** mi
6. Turn L on **TELEGRAPH RD** - **go 0.4** mi
7. Bear L on **E OLYMPIC BLVD** - **go 0.5** mi
8. Arrive at **4081 E OLYMPIC BLVD, LOS ANGELES,** on the R

Distance: 2.5 miles, Travel Time: 5 mins

B 4081 E OLYMPIC BLVD LOS ANGELES, CA

Total Distance: 2.5 miles, Total Travel Time: 5 mins



When using any driving directions or map, it's a good idea to do a reality check and make sure the road still exists, watch out for construction, and follow all traffic safety precautions. This is only to be used as an aid in planning.