SUFFOLK COUNTY FORMER CANINE KENNEL
GABRESKI AIRPORT, WESTHAMPTON BEACH, NY
SITE: #152079

PWGC Project No. DPW0701

REMEDIAL INVESTIGATION WORK PLAN

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New York State Department of Environmental Conservation

Prepared for:

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1.0 Introduction and Purpose

The former Canine Kennel site is located at the Francis S. Gabreski Airport in Westhampton Beach, New York (Suffolk County Tax Map Number 900-312-1-1) (**Figure 1**). The property is owned by Suffolk County and managed by the Department of Economic Development and Workforce Housing.

The purpose of this work plan is to determine the vertical and horizontal extent of soil contaminated with polychlorinated biphenyls (PCBs) and pesticides and to confirm that there has been no groundwater impact from the contamination identified at the site.

2.0 Site Description and History

Past sampling activities at the site have determined that soil near the Canine Kennel is contaminated with dieldrin, 4,4 DDE and PCBs. The extent of the contamination has not been thoroughly delineated, but appears to be confined to an irregularly shaped, one half-acre parcel of property located behind a leased commercial building, currently used to store boats, in the southeastern portion of the airport. The kennel was listed as a Class 2 site on the New York State Department of Environmental Conservation (NYSDEC) list of Inactive Hazardous Waste Disposal Sites (Site Number 152079). An application for inclusion into the Brownfield Cleanup Program (BCP) was prepared and submitted to the NYSDEC on April 6, 2005. The site was approved for the BCP program on December 30, 2005. A Citizen Participation Plan (CPP) was prepared and submitted to the NYSDEC in October 2006 and later approved.

2.1 Site Description

The area of concern is a section of disturbed ground, irregular in shape; approximately 0.5 acres (**Figure 2**). The site is located in a remote portion of the airport, south of a former canine kennel and just east of a boat storage yard near the eastern property line. Currently, the former dog kennel is abandoned and in a state of disrepair.

The Suffolk County Airport has no commercially scheduled service, but does support private planes and presently is the home of the 106th Rescue Wing of the New York Air National Guard (NYANG).

The western portion of the airport consists of largely developed space with support buildings and hangers, the central portion of the site consists of the airport runways and maintained open space. The eastern third of the airport is largely undeveloped.

The airport is located within the Long Island Pine Barrens. The Pine Barrens are characterized by open, sunlit woodlands dominated by pitch pine interspersed with white and scarlet oak. The nearby Quogue Wildlife Refuge is characterized by dwarf pitch pines ranging from 3 to 6 ft tall. The airport itself is characterized by surrounding wooded areas consisting of 25 ft pitch pines and scattered scrub oak.

2.2 Site History

In 1943, the Federal government built the airport for use as an Air Force base during World War II. After the war, it was given to Suffolk County. In 1951 it was reclaimed for the Korean War National Emergency. In 1960, it was leased by the US Air Force for an Air Defense Command Base, deactivated in 1969, then released back to Suffolk County in 1970.

The Canine Kennel Area was used by Suffolk County Air Force Base during deactivation activities (Spring 1970) for the burial of inert wastes, such as office

furniture. It appears from the PCB contamination discovered in the surface soils, electrical distribution equipment such as transformers and capacitors were also disposed of in this area. To the best of the County's knowledge, based on a review of its files, any potential liability of the County arises solely as a result of ownership of the site, and the contamination did not arise as a result of County actions at the site after it received the site back from the Air Force in 1970. It should also be noted that the NYSDEC superfund report summary indicates that the US Department of the Air Force was the owner and operator during the time of disposal.

The NYSDEC discovered the site in March 1984 in response to a complaint from a local citizen's group. At that time, a ten-foot deep pit was observed with several half buried capacitors leaking PCB oil. In May of 1984, nine soil samples were taken. Eight were found to contain PCBs (Aroclor 1254) in concentrations ranging from trace to 1700 ppm. The affected area as recorded by the NYSDEC is shown in **Figure 3**.

In January 1986, a contractor for the NYSDEC noted that the pit was only half as deep with signs of recent earthwork activities and that the capacitors were no longer visible. The area was devoid of vegetation.

In November 1996, Dvirka and Bartilucci Consulting Engineers (D & B) installed and sampled five downgradient and one upgradient geoprobe monitoring wells (**Figure 2**). Regional groundwater flow direction is towards the southeast. Groundwater was encountered 9' to 12' below grade. Two samples were obtained from each sampling location, at the top of the water table and 15' below the top of the water table. All samples were non-detectable for PCBs with trace concentrations of 4,4'-DDD and 4,4'-DDT found in the upgradient well only. Based upon the groundwater results, D & B prepared a Preliminary Site Assessment (PSA) in 1998 that determined that PCBs previously detected in surface soils were not impacting local groundwater quality. The NYSDEC has also concluded that there was no impact to local groundwater.

In July 2000, the NYSDEC performed additional soil sampling (**Appendix A**). Thirteen soil samples were collected from six locations at two depths (surface (0-4") and subsurface (2-4') below grade) and one soil sample was collected from the end of a capacitor located at the site. The highest soil concentration found was 280,000 ppm from the capacitor. There was a "hot spot" identified near soil samples #1, 2 and 5, where the levels ranged from 150,000 ppm to 1,900 ppm at the surface and 20,000 ppm to 120 ppm at 2.5' to 3.5' below grade. Soil #3 and #4 contained PCBs levels of 3.9 ppm and 17 ppm at the surface, and less than 10 ppm at a depth of 2.5'. Concentrations of PCBs at soil sample #6 were less than 1 ppm. NYSDEC sampling results are summarized on **Table 1**, locations are provided on **Figure 2**. These samples were obtained from the same area sampled in May 1984.

The Suffolk County Department of health Services (SCDHS) Farmingville Office of Pollution Control performed an inspection of the site on May 15, 2003. This inspection noted the following:

- The area was strewn with partially buried and unburied metal debris, such as rusted drums, car parts, and scrap metal. It was noted that this may interfere with any non-invasive exploratory instruments such as ground penetrating radar (GPR) and magnetometers.

- Pine tree re-growth was greater than expected. The area is thickly wooded in spots with trees about 10'-12' high and an occasional sandy clearing.

The six July 2000 sampling locations were re-established using measurements and the site sketch provided by the NYSDEC.

2.3 Site Hydrology

The hydrogeology of Suffolk County, Long Island, consists generally of a seaward-thickening wedge of Cretaceous sedimentary strata, forming three aquifers, on top of a southeast-dipping impermeable basement of Precambrian crystalline bedrock. The sedimentary strata in ascending order are the Lloyd Aquifer, the Raritan Clay, Magothy Aquifer and at the ground surface, the Upper Glacial Aquifer. Together, these three water-bearing zones form Long Island's sole source aquifer system.

The aquifer of concern at the Canine Kennel site is the Upper Glacial Aquifer which is an unconsolidated mixture of sand and gravel. The approximate thickness of the Upper Glacial Aquifer in Suffolk County is 100 feet with an estimated average horizontal hydraulic conductivity (permeability) of 270 feet/day and a vertical hydraulic conductivity of 27 feet/day.

Clay layers, such as the Gardiners Clay and the "20 Foot Clay," where present, may act as local confining units, separating the Upper Glacial Aquifer from the underlying Magothy Aquifer which is the principal source of drinking water in Suffolk County.

During the sampling program performed by D & B depth to groundwater ranged from 9 to 12 feet below ground surface and a confining unit (clay) was not present at the drilling depths performed. Regional groundwater flow at the site is to the southeast.

2.4 Site Features

PWGC performed an inspection of the site on February 22, 2007. The site is located approximately 20 to 30 feet above mean sea level. The site has been disturbed as detailed on **Figure 3**. Several areas of mounded/stockpiled soils are present on the north and east side of the site. Several depressions and mounds were observed within the central portion of the site. The entire area is covered with metal debris, with several areas of concentrated metal as shown on **Figure 4**. Several capacitors were identified. No recent disturbances were observed, small trees and shrubs have almost re-vegetated the entire area. Photographs of the recent site inspection are included in **Appendix B**.

Topography slopes gently away from the site, from the northwest to the southeast. No erosion of surface areas was noted and no drainage ditches or swales are present on the site. Precipitation recharges directly into the subsurface with no evidence of overland flow away from the site towards surface water bodies.

The nearest surface water bodies are North Pond and Old Ice Pond located approximately 1200 feet to the east on the Quogue Wildlife Refuge (**Figure 1**). Based upon site observations, no overland flow to surface water bodies should occur.

2.5 Current and Future Site Use

The site is located in the Pine Barrens Core Area. The current use of the site is as open space with no active residential, commercial or industrial use.

The proposed future use is the restoration of the environmental quality within this Pine Barrens parcel and maintenance as open space, consistent with the Pine Barrens Protection Act of 1993, as amended, and as a buffer zone for the Suffolk County Gabreski Airport.

2.5.1 Surrounding Site Uses

The site is located on the eastern edge of the Francis S. Gabreski Airport. The area adjacent to and west of the site is occupied by a boat storage facility, further west are the runways and the support buildings for the airport. Immediately north and south of the site are undeveloped portions of the airport. The Quogue Wildlife Refuge is located to the east of the site.

The nearest residential properties are located approximately 0.5 miles to the east and south of the site (**Figure 5**). These residential areas have municipal water service provided by the Suffolk County Water Authority (SCWA). Several SCWA municipal supply wells are located in the vicinity of the airport. Municipal supply wells are shown on **Figure 6**.

3.0 Standards, Criteria, and Guidance (SCGs)

The following contaminants of potential concern (COPCs) have been identified based on previous sampling activities:

- Dieldrin
- 4,4'-DDE
- Aroclor-1254, and
- Aroclor-1260

The NYSDEC Technical Administrative and Guidance Memorandum (TAGM) 4046 established recommended soil cleanup objectives (RSCOs) for PCBs of 1 mg/kg for surface soil (generally 0"-6") and 10 mg/kg in subsurface soils (>6" below the surface). RSCOs for Dieldrin and 4,4-DDE are 0.044 and 0.0033 mg/kg, respectively.

NYSDEC 6 NYCRR Part 375 provides soil cleanup objectives based upon future site use. In addition, Track 3 (restricted use with modified soil cleanup objectives) and Track 4 (restricted use with site-specific cleanup objectives) cleanup options can include complete removal of contaminated soils using site specific soil objectives, partial removal with surface capping, in situ treatment, and Institutional Controls and/or Engineering Controls to prevent exposure.

Table 2 summarizes the identified soil cleanup objectives for pesticides and PCBs.

Groundwater sample results will be compared to the NYSDEC Class GA groundwater quality standards as specified in the Technical Operation and Guidance Series (TOGS 1.1.1) guidance document. **Table 3** identifies the NYSDEC groundwater standards for PCBs and pesticides.

4.0 Objectives, Scope, and Rationale

The objective of this work plan is to determine the vertical and horizontal boundaries of soil contamination and also to confirm that groundwater has not been impacted.
The Scope of Work includes the following tasks:

1. Geophysical Investigation
2. Test Pit Excavation Activities
3. Surface and Subsurface Soil Sampling
4. Monitoring Well Installation
5. Groundwater Sampling
6. Remedial Investigation Report Preparation

4.1 Geophysical Investigation

A geophysical survey will be conducted within the area identified on **Figure 7**. The purpose of the geophysical surveys are to identify anomalies that can be evaluated via test pits and ensure that the entire area of suspect PCB contamination is identified. Descriptions of the geophysical methods are described below.

4.1.1 Electromagnetic Survey

The electromagnetic (EM) method uses the principle of electromagnetic induction to measure the variability of electrical conductivity of subsurface materials and the presence of buried metal objects. Significant contrasts in the electrical properties between non-indigenous materials and surrounding soil enable accurate delineation of buried waste materials, fill, and air spaces. The large EM response to metal makes this technique particularly well suited to identifying buried metal objects such as underground storage tanks (USTs), metallic wastes, buried drums, pipelines, reinforced building foundations, or other metal components of buried structures. It is, however, equally sensitive to metal objects on the ground surface, and it is important to take careful field notes that indicate the position of surface metal to avoid mis-interpretation.

A Geonics EM-61 high-resolution time domain metal detector, or equivalent, will be used to conduct the first phase of the investigation. The EM-61 is used to detect both ferrous and non-ferrous metals buried in the upper 10 feet of the subsurface. This corresponds to the approximate top of the groundwater table at the site and represents the approximate depth of excavation activities identified by the NYSDEC in 1984.

A powerful transmitter generates a pulsed primary magnetic field, which induces eddy currents in nearby metal objects. The decay of these currents is measured by upper and lower receiver coils mounted in the coil assembly. The responses are recorded and

displayed by an integrated data logger as two-channel information. The bottom channel is more sensitive to metallic objects in the shallow (upper few feet) subsurface, and the differential response is more sensitive to metal objects from 3 to 10 feet below ground surface. The EM-61 can detect a single 55-gallon drum at a depth of more than 10 feet beneath the instrument, yet it is relatively insensitive to interference from nearby surface metal such as fencing, buildings, and automobiles. The instrument is pulled along the ground surface by a single operator, and measurements are collected at desired intervals along the ground surface. The terrain at the site may limit the areas where the EM-61 survey can be completed.

A survey of the area will also be performed using a hand held split-box metal detector (Fisher Model TW-6). The TW-6 is a split-box electromagnetic metal detector that is very sensitive to near surface ferrous metal objects and is very useful in detecting the surface expression of subsurface ferrous objects. This instrument is commonly used to identify buried storage tanks and other metallic objects.

Following the geophysical survey, exploratory test pits will be conducted in the vicinity of identified anomalies.

4.2 Exploratory Test Pits

Exploratory test pits will be performed at the locations provided on **Figure 4**. These locations represent areas of mounded soil, elongated raised areas and depressions. These locations were identified as areas of concern using the field sketch prepared by the NYSDEC in 1984 (**Figure 3**) and during recent site surveillance performed by PWGC on February 22, 2007.

In addition, test pits will be excavated in other areas not already identified based upon the results of the geophysical survey. Test pit logs will be prepared for each excavation. An example Test Pit Log is provided (**Figure 8**). The test pit log will include description of soil types, wastes encountered, changes in lithology and depth of waste encountered. A photographic log of each test pit will be documented.

If suspect PCB containing equipment is identified during the remedial investigation and/or when test pit excavations are ongoing they will be flagged for later characterization and disposal.

4.3 Soil Sampling

Soil samples will be collected at the site to determine the horizontal and vertical extent of PCB and pesticide contamination. Sampling will be biased towards locations expected to be contaminated based upon previous sampling and known areas of waste disposal.

A sampling grid has been established based upon the NYSDEC 2000 sampling

locations. Soil samples will be collected centered from the five (5) soil locations which had elevated levels of PCBs when sampled in 2000 by the NYSDEC. Locations have been established using measurements from existing site features provided by the NYSDEC. At each of the 5 locations soil samples will be collected in a 20-foot spacing to the north, south, east, and west (**Figure 9**). Samples from each location will be collected at selected intervals of 0-2 inches, 2.0-2.5 feet, and 4.0-4.5 feet. Sampling will generally extend out 40 feet (two levels) from the calculated NYSDEC sampling location. In addition, several proposed sampling locations, in areas not previously sampled, have been included in the sampling grid to ensure the full extent of contamination at the site is delineated.

Samples will be placed in appropriate containers provided by the laboratory (Section 5.0). All samples will be submitted to the laboratory, however not all samples will be analyzed initially. First the surface samples and the 2.0-2.5 foot samples collected from the five (5) central locations and from the first 20 foot grid spacing will be analyzed. Results will be evaluated and if samples show levels above 10 mg/kg the next sample in the grid will be analyzed. This will proceed until both the horizontal and vertical extent of the contamination has been determined.

The proposed sampling protocol will provide for the delineation of the already identified "hot spots" and areas not previously sampled and allow for minimizing the number of samples needing analysis by evaluating results before processing the next sample depth.

The proposed grid sampling may be modified or additional samples taken based upon the results of the geophysical survey and/or exploratory test pits. If modifications to the grid pattern are warranted a revised sampling figure will be submitted to the NYSDEC prior to initiating sampling.

Samples will be collected from each location using hand augers and stainless steel sampling equipment. If mechanical drilling is deemed necessary, the samples may be collected using a small track mounted Geoprobe following manufacturer's standard operating procedures (SOPs) or taken directly from test pits using a small excavator.

During sampling, each location will be monitored for volatile organic compounds (VOCs) using a photoionization detector (PID).

4.4 Monitoring Well Installation

The groundwater sampling plan will include the installation of six (6) groundwater monitoring wells at locations provided on **Figure 9**. One upgradient and five downgradient monitoring wells with respect to the site will be installed. The monitoring wells will be used to obtain groundwater quality data for this investigation and for future groundwater monitoring, as necessary.

Due to the site terrain limitations and in order to minimize damage to existing site vegetation given its location in the core pine barrens, a track mounted Geoprobe™ unit will be used to install the wells with 3.25-inch outer diameter (OD) probe rods using standard Geoprobe™ drilling methods.

The wells will be constructed of one-inch diameter, schedule 40 PVC casing and screen with 0.010 inch slot. The wells will be pre-packed by the manufacturer with 20/40 mesh sand (2.5-inch outside diameter). The wells will be constructed with a 10 foot screen section and riser to grade unless precluded by hydrogeologic conditions. The screen will be set with seven (7) feet into and three (3) feet above the water table at the time of installation. A two-foot fine sand layer will be installed above the pre-packed screen followed by a two-foot bentonite seal. Above the bentonite layer, the annulus around the well will be filled with a cement/bentonite grout. A concrete surface pad (2 feet by 2 feet by 6-inch) will installed. The wells will be finished with a locking stick-up protective cover. Monitoring well construction diagrams will be developed for each of the monitoring wells. Typical well construction detail is provided on **Figure 10**.

Development water will initially be monitored for organic vapors with a PID. In addition, the development water will be observed for the presence of non-aqueous phase liquids (NAPLs) or sheens. Monitoring wells will be developed by over-pumping and/or surging to restore the hydraulic properties of the aquifer. The development of each well will continue until the turbidity is less than or equal to 50 Nephelometric Turbidity Units (NTUs), and when pH, temperature, and conductivity measurements stabilize. Stabilization is considered achieved when three consecutive readings within five percent of each other are collected in five minutes. In no case will well development exceed 8 hours per well. Portable field instruments will be used to collect measurements. If turbidity cannot be reduced to 50 NTUs, but other parameters stabilize, the well will be considered developed. All monitoring well development will be recorded on a well development log (**Figure 11**).

4.5 Site Survey

The new monitoring wells will be surveyed so that groundwater elevations can be calculated. Surveying will be performed by a NYS licensed surveyor, and points will be located relative to a known elevation at the site. Water level measurements will be obtained and converted into groundwater elevation data to construct groundwater contour maps and determine flow direction. Well casing elevations will be reported to 0.01 foot accuracy and will be reported relative to Mean Sea Level (MSL). The measuring point on the well casing will be marked.

Several soil sample locations will be surveyed. The remaining sampling locations will be determined from measurements off of the wells and sampling points established by the licensed surveyor.

4.6 Groundwater Sampling

After well installation a complete round of groundwater sampling will be performed. Low-flow purging and sampling methods will be used to collect samples from each well. Low-flow purging and sampling will be performed following the procedure specified in **Appendix C**. Depth to bottom and depth to water measurements will be collected at each monitoring well. Water level measurements will be obtained with an electronic water level probe relative to the marked measuring point. Measurements will be recorded in a dedicated bound project field notebook along with the time collected. Measuring equipment will be decontaminated between wells using a laboratory-grade detergent and water solution and reagent grade water rinse.

4.7 Qualitative Exposure Assessments

Qualitative human heath and ecological exposure assessments will be performed as discussed below.

4.7.1 Human Health Exposure Assessment

A qualitative human health exposure assessment will be completed for the site, characterizing the exposure setting, identifying exposure pathways, and evaluating contaminant fate and transport.

The Qualitative human health exposure assessment will follow DER-10, appendix 3B and Section 3.3 (b) 8.

4.7.2 Fish and Wildlife Resources Impact Analysis

The purpose of the Fish and Wildlife Resources Impact Analysis (FWRIA) is to identify actual or potential impacts to fish and wildlife resources from site contaminants of ecological concern. The FWRIA provides steps that include decision points for determining when the process is complete and further assessment is unnecessary. The FWRIA will be completed following DER-10 Section 3.10.1.

It is anticipated that the FWRIA evaluation will include appropriate maps detailing topography, drainage and covertypes, including major vegetative communities, wetlands, NYSDEC Significant Habitats, and areas of special concern. A description of fish and wildlife resources at the site will be documented by site reconnaissance and available literature, and qualitative descriptions of fish and wildlife resource values will be provided. A pathway analysis will be performed; if no resources and/or potential pathways are identified then the analysis will be considered complete. However, if present recommendations will be made for a more detailed Ecological Impact Assessment.

5.0 Quality Assurance Project Plan

This quality assurance project plan (QAPP) presents the objectives, functional activities, methods, and quality assurance / quality control (QA/QC) requirements associated with sample collection and laboratory analysis for characterization activities. The QAPP follows requirements detailed in DER-10, Section 2.

5.1 Project Organization

The investigative efforts defined in this RI work plan will be coordinated by PWGC on behalf of the SCDHS. The following text identifies the responsibilities of various organizations supporting the RI:

- The NYSDEC Project Manager (Heather Bishop) will be responsible for reviewing and approving this work plan, coordinating approval of requested modifications, and providing guidance on regulatory requirements.

- The SCDHS Project Manager (James Meyers) will be responsible for reviewing and approving this work plan, providing technical support and acting as a liaison to SCDHS personnel working on the RI and the NYSDEC Project Manager.

- The PWGC Program Manager (James Rhodes) will provide technical expertise for review of the project plans, reports and ongoing field activities. The program manager will be responsible for the coordination of the overall Brownfields Program with the SCDHS. The Program manager will act as the projects Quality Assurance Manager.

- PWGC Project Manager (Andrew Lockwood) will be responsible for the day to day project management, task leadership, and project engineering support and for the planning and implementation of RI activities. The Project Manager is responsible for ensuring that the requirements of this RI work plan are implemented. The project manager will also act as the site Health and Safety Manager (HSM).

- PWGC Field Team Leader (Rocky Wenskus) will be responsible for sample collection, oversight of subcontractor personnel, and coordination of daily field activities. Mr. Wenskus will act as the Site Health and Safety Officer ensuring implementation of the Site Health and Safety Plan.

- Chemtech Environmental Laboratory, a NYSDOH ELAP certified laboratory, will be the analytical laboratory performing required analyses and reporting.

- Subcontractors will perform surveying, drilling, and/or sampling at the direction of the Field Team Leader in accordance with this work plan.

An organizational flow chart showing the lines of responsibility for the project activities is included as **Figure 12**.

5.2 Laboratory Analysis

Requirements for sample analysis are described below.

5.2.1 Soil Samples

Soil samples will be collected as described in Section 4.3. The soil sampling locations are shown in **Figure 9**. Soil samples will be submitted to Chemtech Environmental Laboratory, Mountainside, New Jersey a NYSDOH ELAP certified laboratory. Soil samples will be analyzed for PCBs by EPA Method 8082 and chlorinated pesticides by EPA method 8080A or 8121.

Analysis will conform to NYSDEC Analytical Services Protocol (ASL). Category B data deliverables will be submitted for all samples analyzed.

Analytical methods, preservation, container requirements, and holding times are shown in (**Table 4**).

TABLE 4
ANALYTICAL METHODS
(SOIL)

Sample Matrix	Sample Designations	Location	Parameters	EPA Method	Sample Preservation	Holding Time	Sample Container	Laboratory
Soil	Sampling Grid	Various Depths	PCBs	8082	Cool to 4°C	5 days extraction/ Analysis 40 days after extraction	8 oz. wide mouth glass	Chemtech Environmental Laboratory
Soil	Sampling Grid	Various Depths	Chlorinated pesticides	8081	Cool to 4°C	5 days extraction/ Analysis 40 days after extraction	8 oz. wide mouth glass	Chemtech Environmental Laboratory

Actual number of samples may vary depending on field conditions and field observations.

5.2.2 Groundwater Samples

The six monitoring wells installed at the site will be sampled for PCBs and chlorinated pesticides. Groundwater samples will be submitted to Chemtech Environmental Laboratory, Mountainside, New Jersey a NYSDOH ELAP certified laboratory. Samples will be analyzed for PCBs by EPA Method 8082 and chlorinated pesticides by EPA method 8080A or 8121.

The samples will be collected directly from the pump's discharge and will be sent to the selected laboratory for PCB and chlorinated pesticide analysis. The samples will be analyzed in accordance with NYSDEC ASP methods. Category B data deliverables will be submitted for all samples analyzed.

Analytical methods, preservation, container requirements, and holding time are shown in **Table 5.**

TABLE 5
ANALYTICAL METHODS
(GROUNDWATER)

Sample Matrix	Sample Designations	Location	Parameters	EPA Method	Sample Preservation	Holding Time	Sample Container	Laboratory
Groundwater	Monitoring Wells	Figure 3	PCBs	8082	Cool to 4°C	5 days extraction/ Analysis 40 days after extraction	1 L amber glass jars.	Chemtech Environmental Laboratory
Groundwater	Monitoring Wells	Figure 3	Chlorinated pesticides	8081	Cool to 4°C	5 days extraction/ Analysis 40 days after extraction	1 L amber glass jars.	Chemtech Environmental Laboratory

Actual number of samples may vary depending on field conditions and field observations.

5.3 Field/Laboratory Data Control Requirements

Quality Control (QC) procedures must be followed in the field and at the laboratory to ensure that reliable data are obtained. When performing this field sampling effort, care shall be taken to prevent the cross-contamination of sampling equipment, sample bottles, and other equipment that could compromise sample integrity.
QC samples to be collected in the field are provided in **Table 6**.

TABLE 6
FIELD/LABORATORY QC REQUIREMENTS

Sample Type	Frequency	Purpose
Field Duplicate	One duplicate sample, or One per 20 samples of the same matrix.	To evaluate the precision of the field sampling and laboratory analyses.
Equipment Blank	One per type of sampling method used for each batch of sampling equipment. Equipment blanks are collected in the field using analyte-free water supplied by the laboratory.	To assess the cleanliness of the sampling equipment and the effectiveness of the decontamination process.

Trip Blank	One VOA (volatile organic analysis) trip blank per sample cooler that contains site samples to be analyzed for VOAs.	To detect VOC cross-contamination during sample shipping and handling. No trip blanks are anticipated because VOCs are not part of the proposed analytical analysis.
Method Blank	One per 20 samples of same matrix	To document contamination resulting from the analytical process.
Matrix Spike	One per 20 samples of same matrix	It is used to measure the efficiency of all steps of the sampling and analytical methods in recovering the target analytes from the sample. It is a sample spiked with known quantities of analytes and subjected to the entire analytical procedure.
Matrix Spike Duplicate	One per 20 samples of same matrix.	To reinforce the matrix spike information. It is a second aliquot of the same sample as the matrix spike.

5.4 Sample Identification

Soil sampling rational is provided in Section 4.3 and 4.4. Multiple samples will be collected from each sampling location. Each soil sample will be identified with a set of information relating individual sample characteristics (i.e. surface soil, subsurface soil, or groundwater). The required information consists of Sample ID, Depth, Date, Time, and Matrix. Examples of soil sample IDs are shown below.

SS-1 (surface soil sample, sampling location #1 from 0-2 inches)
SB-1A or SB-1B (subsurface soil sample, sampling location #1 from 2.0-2.5 feet and from 4.0-4.5 feet)
MW-1 (groundwater sample from monitoring well MW-1)

However sample frequency, locations, depths, and nomenclature may change subject to field decisions and professional judgement. Estimated sample numbers are provided on **Table 7**.

TABLE 7
ESTIMATED NUMBER OF SOIL AND GROUNDWATER SAMPLES

Sample Type	**Estimated # of samples to be collected**
Surface soils samples for PCBs and Pesticides	47
Subsurface soil samples for PCBs and Pesticides	94
Groundwater Samples	6

Note: Not all samples may be analyzed, does not include QC samples

5.5 Chain-of-Custody, Sample Packaging and Shipment

For each day of sampling, a chain-of-custody sheet will be completed and submitted to the laboratory. A copy of the chain-of-custody sheet will also be retained by the Project Manager. The chain-of-custody sheet will include the project name, the sampler's signature, the sampling locations, the date and time of sample collection, and analysis parameters requested.

All samples must be packaged and shipped in a manner that maintains sample preservation requirements during transport (i.e., ice to keep samples cool until receipt at the laboratory), ensure that sample holding times can be achieved by the laboratory, and that the samples cannot be tampered with without being noticed.

If a commercial carrier ships samples, a bill of lading (waybill) may be used as documentation of sample custody. Receipts for bills of lading and all other documentation of shipment shall be maintained as part of the permanent custody documentation. Commercial carriers are not required to sign the chain-of-custody as long as it is enclosed in the shipping container and the evidence tape (custody seal) remains in place.

5.6 Data Usability and Validation

The main purpose of the data is for use in defining the extent of contamination at the site, to aid in evaluation of potential human health and ecological exposure assessments, and to support remedial action decisions. Based upon this data use usability and validation will be performed as described below. Complete data packages will be archived in the project files, and if deemed necessary additional validation can be performed using procedures in the following sections.

5.6.1 Data Usability and Validation Requirements

Data usability and validation are performed on analytical data sets, primarily to confirm that sampling and chain-of-custody documentation are complete, sample numbers can be tied to the specific sampling location, samples were analyzed within the required holding times, and the analyses met the data quality requirements specified in the sampling plan.

5.6.2 Data Usability and Validation Methods

A designee of the PWGC Project Manager will complete a data usability evaluation for the data collected during the RI, a data usability summary report (DUSR) will be prepared. The DUSR will be performed following guidance in DER-10, Appendix 2B.

Independent third party data validation will be performed on 5% of the sample data, or on one sample from each sample delivery group (SDG) whichever is greater. Data validation will be performed by a qualified subcontractor independent of the project.

5.7 Field Equipment Calibration

All equipment will be inspected and approved by the Field Team Leader before being used. All equipment will be calibrated to factory specifications, if required. Monitoring equipment will be calibrated following manufacturers recommended schedules. Daily field response checks and calibrations will be performed as necessary (i.e. PID calibrations) following manufacturers standard operating procedures. All equipment calibrations will be documented in the field logbook.

5.8 Management of Investigation Derived Waste

Waste materials generated from the field operations may consist of soil cuttings, purge water, and miscellaneous solid materials such as personal protective equipment (PPE) and supplies. Use of direct push drilling technology and low-flow sampling will minimize the volumes of investigation-derived waste (IDW) generated. PWGC will arrange for the disposition of all IDW generated during the field operations.

Soil cuttings generated from the well installation activities will be stored in 55-gal drums. The drums will be labeled to indicate the source of the soil and will be stored in a designated area on site. Soil cores and soil cuttings will be field screened using a PID, while performing drilling operations. Drummed soils will be sampled to determine if spreading on-site is appropriate or off-site disposal is required. Following receipt of the analytical results, recommendations for disposition of the drummed soil will be provided to SCDHS.

Development and purge water generated during the field activities will be stored in 55-gal drums. The drums will be labeled to indicate the source of the fluid and will be stored in a designated area on site. Following receipt of the groundwater sampling results, recommendations for disposition of the water will be provided to SCDHS.

5.9 Field Documentation

All documentation will take place on either appropriate file forms or in a site logbook. Only permanent black or blue ink will be used to record information in the logbook. Errors in field documentation will be lined through, initialed, dated, and corrected. All forms will be kept by the PWGC Field Team Leader during the field activities. All field activities will be documented in the field logbook. The logbook will contain waterproof pages that are consecutively numbered, and be permanently bound with a hard cover. Upon completion of daily activities, any unused portions of pages will be lined-through and initialed.

The primary purpose of the field logbook is to contain the daily field activities and to provide descriptions of each activity. All entries in the field logbook will be recorded and dated by person making the entry.

6.0 Remedial Investigation Report Preparation

The RI Report will incorporate the methods and findings of the RI activities performed as outlined in this work plan. The report will identify specific contamination concentrations throughout each media (e.g. soil, groundwater, etc), delineate the extent of contamination in soil and groundwater, evaluate potential exposure pathways, and provide conclusions and recommendations for additional investigation and/or remedial action. Electronic copies of the RI Report will be submitted to the NYSDEC along with hard copies. An example table of contents for the RI Report is provided below:

1.0 INTRODUCTION
- 1.1 Site Location and Description
- 1.2 Site History
- 1.3 Previous Investigations

2.0 INVESTIGATION
- 2.1 Field Investigation and Technical Approach
- 2.2 Geophysical Investigation
- 2.3 Test Pit Excavation
- 2.4 Soil Sampling
- 2.5 Groundwater Sampling
- 2.6 Data Analysis
- 2.6 Analytical Results

3.0 HYDROGEOLOGIC ASSESSMENT AND PHYSICAL SETTING
- 3.1 Site Topography
- 3.2 Surrounding Land Use
- 3.3 Regional Geology/Hydrogeology
- 3.4 Site Geology/Hydrogeology

4.0 NATURE AND EXTENT OF CONTAMINATION
- 4.1 Identification of Source Areas
- 4.2 Groundwater Impacts
- 4.3 Qualitative Exposure Assessments

5.0 CONCLUSIONS AND RECOMMENDATIONS
- 5.1 Conclusions
- 5.2 Recommendations

6.0 REFERENCES

6.1 Remedial Investigation Schedule

The preliminary schedule for the major project milestones is presented in **Table 8**. The field work is anticipated to start in April 2007 and be completed by July 2007. A draft RI Report will be submitted to the NYSDEC by July 2, 2007.

PWGC
Strategic Environmental Engineering Solutions

TABLE 8
PROJECT SCHEDULE
CANINE KENNEL REMEDIAL INVESTIGATION

WEEK	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
TASK																			
NYSDEC approved workplan																			
Ten day notice to NYSDEC																			
Geophysical and Test Pit Investigation																			
Soil Sampling																			
Monitoring Well Installation																			
Groundwater Sampling																			
Laboratory Analysis																			
Data Usability and Validation																			
Prepare Remedial Investigation Report																			
Submission of Draft RI Report to NYSDEC																			
NYSDEC 30 Day Review Period																			

7.0 Health and Safety

All field operations will be performed in accordance with the health and safety requirements as provided in the attached Health and Safety Plan (HASP) (**Appendix D**). The HASP outlines the requirements for training, medical surveillance, daily tailgate meetings, emergency response, and accident and injury reporting.

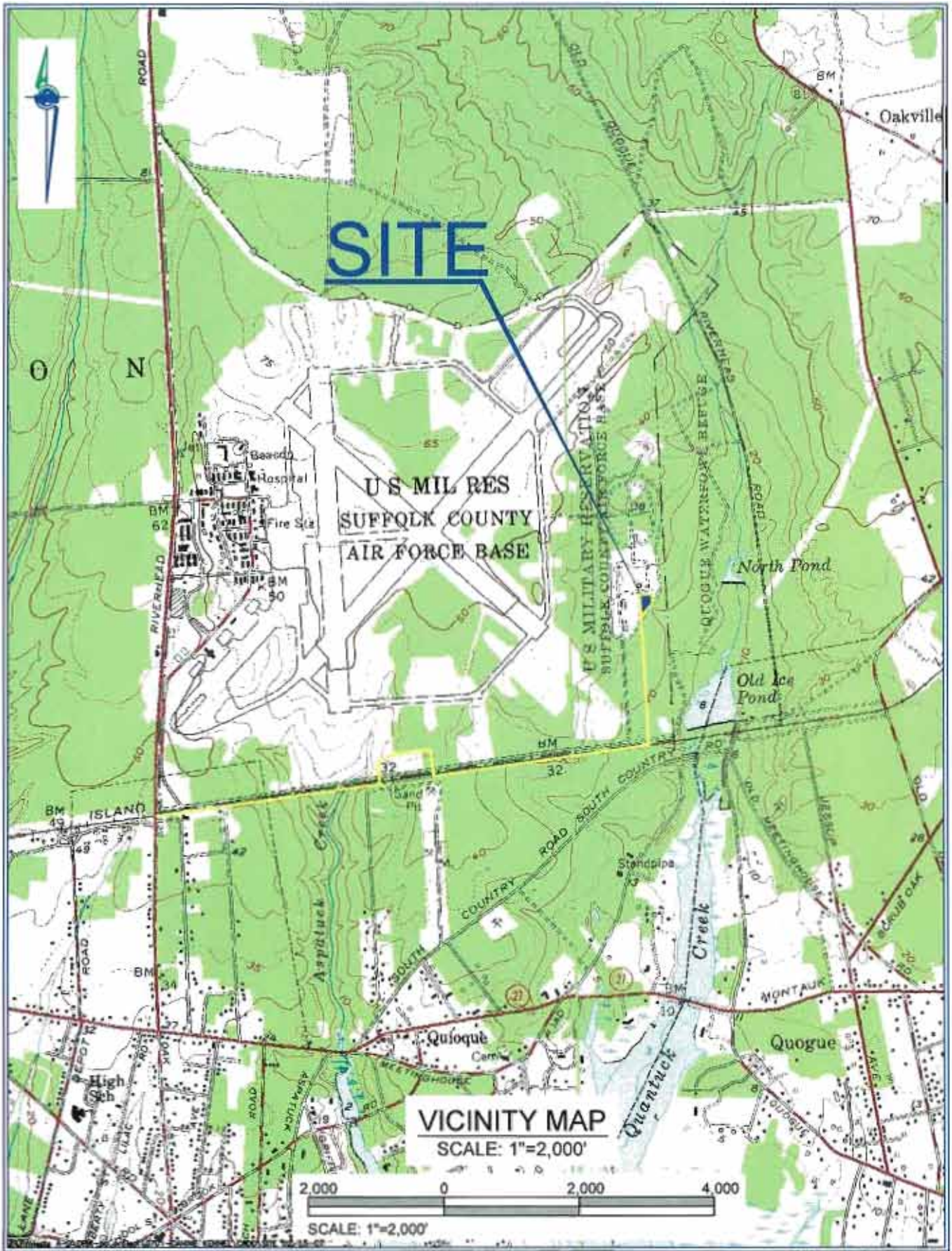
Activity hazard analyses (AHAs) have been completed for all of the identified work activities planned for the investigation.

The PWGC Field Team Leader will be responsible for implementing the HASP, completing the daily tailgate safety meetings and performing necessary Industrial Hygiene (IH) monitoring as specified in the HASP.

8.0 Community Air Monitoring Plan

The Community Air Monitoring Plan (**Appendix E**) provides measures for protection for on-site workers and the downwind community from potential airborne contaminants as a direct result of the RI at the Canine Kennel. The Community Air Monitoring Plan will be implemented and executed in accordance with 29 CFR 1910.120(h), the New York State Department of Health's (NYSDOH) Generic Community Air Monitoring Plan, and the New York State Department of Environmental Conservation (NYSDEC) TAGM #4031.

FIGURES



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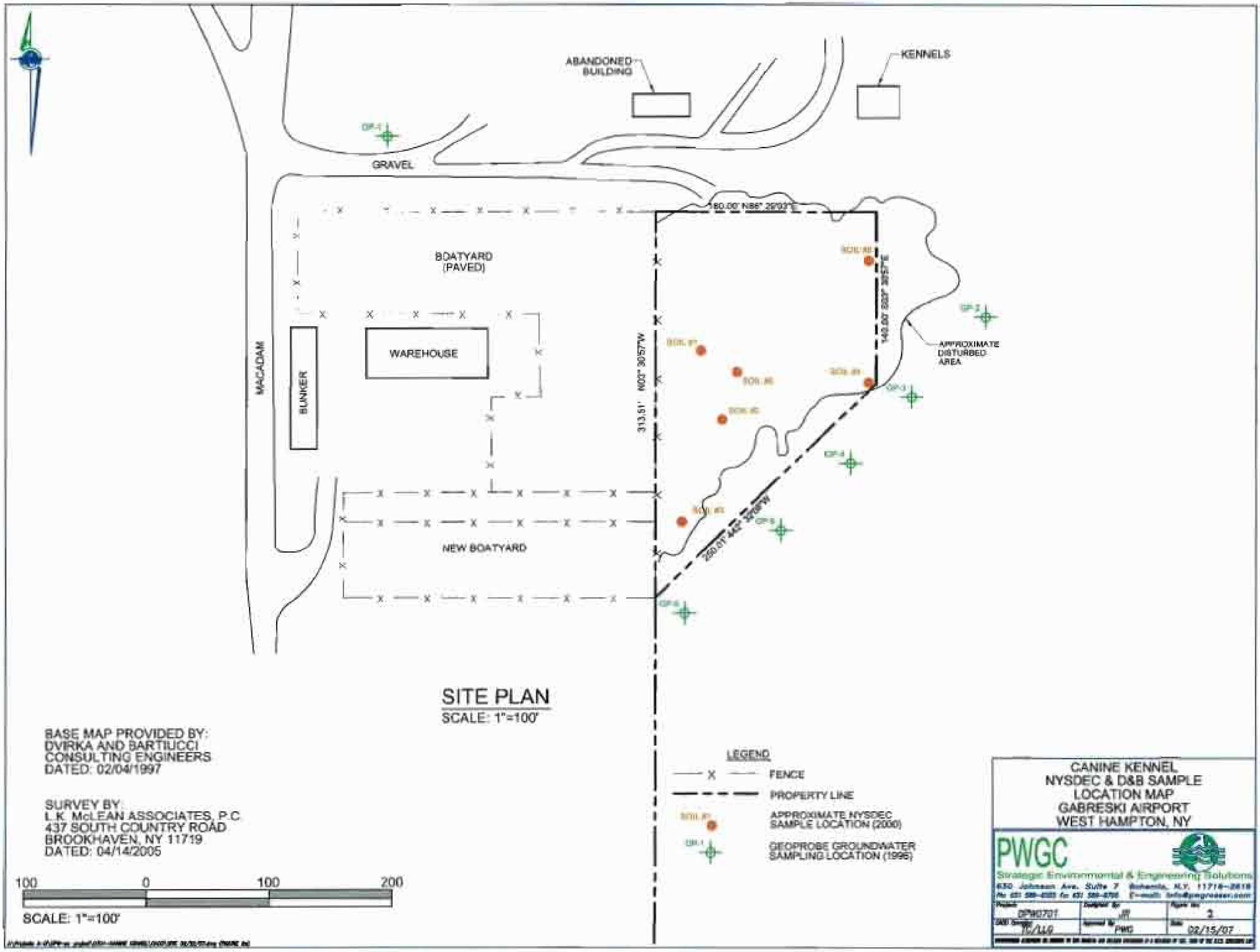
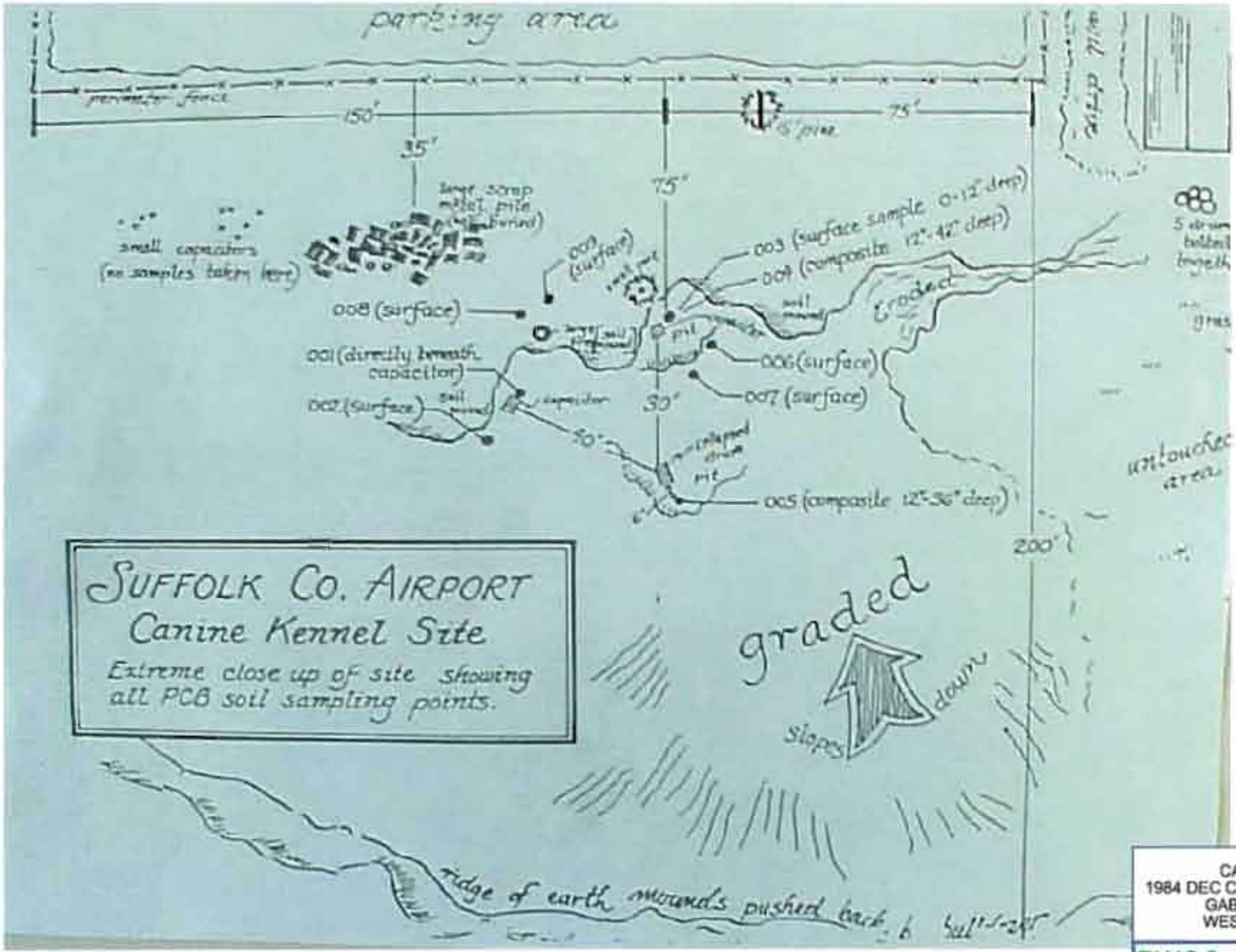
CANINE KENNEL SITE
GABRESKI AIRPORT
WEST HAMPTON, NY

	1
	2/15/07



ABANDONED BUILDING
KENNELS
GRAVEL
BOATYARD (PAVED)
MACADAM
BUNKER
WAREHOUSE
NEW BOATYARD
APPROXIMATE DISTURBED AREA
313.51' N03° 30'57"W
SITE PLAN
SCALE: 1"=100'
BASE MAP PROVIDED BY:
DVIRKA AND BARTILUCCI
CONSULTING ENGINEERS
DATED: 02/04/1997
SURVEY BY:
L.K. McLEAN ASSOCIATES, P.C.
437 SOUTH COUNTRY ROAD
BROOKHAVEN, NY 11719
DATED: 04/14/2005
100 0 100 200
SCALE: 1"=100'
LEGEND
FENCE
PROPERTY LINE
APPROXIMATE NYSDEC SAMPLE LOCATION (2000)
GEOPROBE GROUNDWATER SAMPLING LOCATION (1996)
CANINE KENNEL
NYSDEC & D&B SAMPLE
LOCATION MAP
GABRESKI AIRPORT
WEST HAMPTON, NY
PWGC
Strategic Environmental & Engineering Solutions
JR
2
PWG
02/15/07



SUFFOLK CO. AIRPORT
Canine Kennel Site

Extreme close up of site showing all PCB soil sampling points.

BASE MAP BY:
DEC FIELD SKETCH
DATED: 1984

FIELD SKETCH
SCALE: NTS

CANINE KENNEL
1984 DEC CLOSEUP FIELD SKETCH
GABRESKI AIRPORT
WEST HAMPTON, NY

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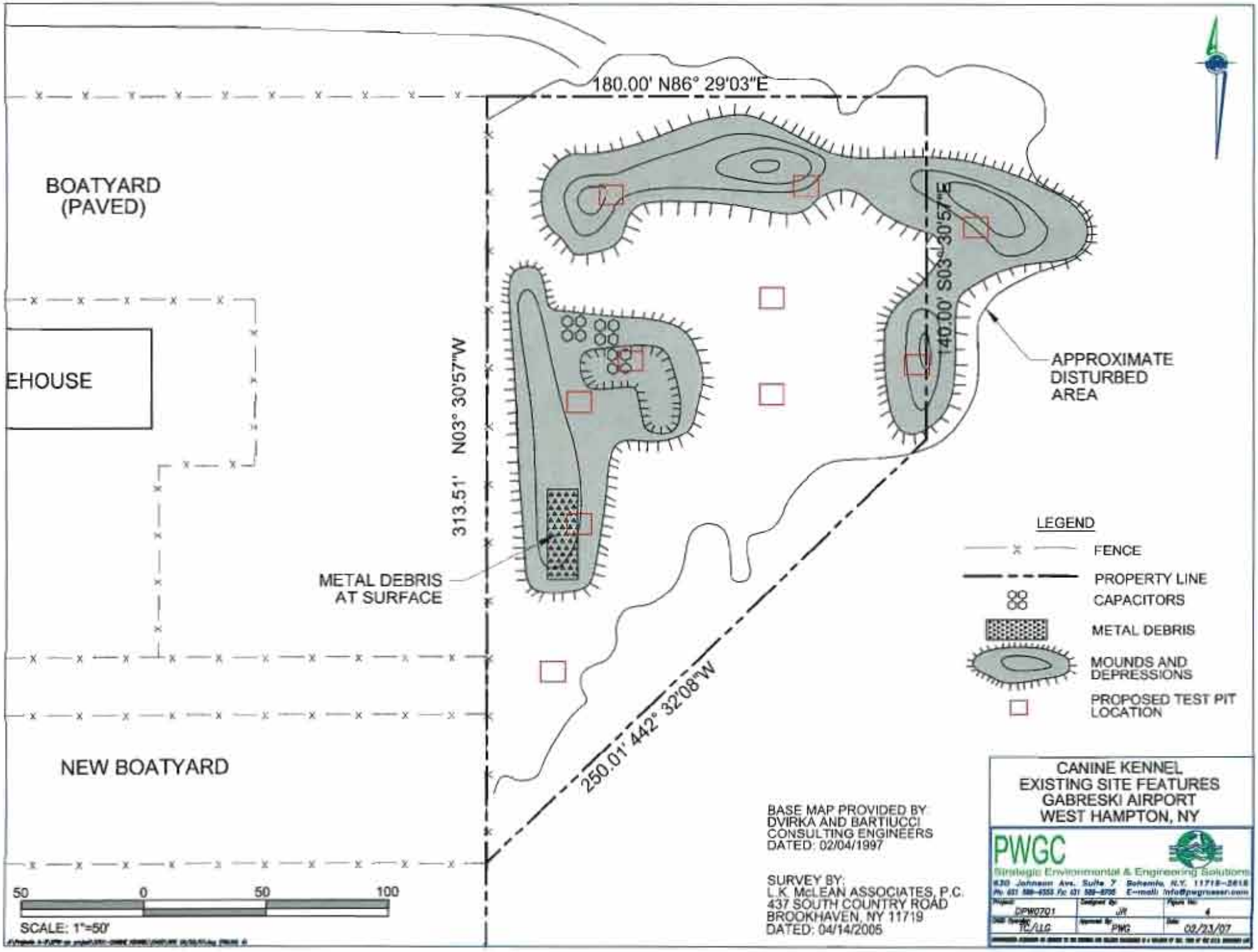
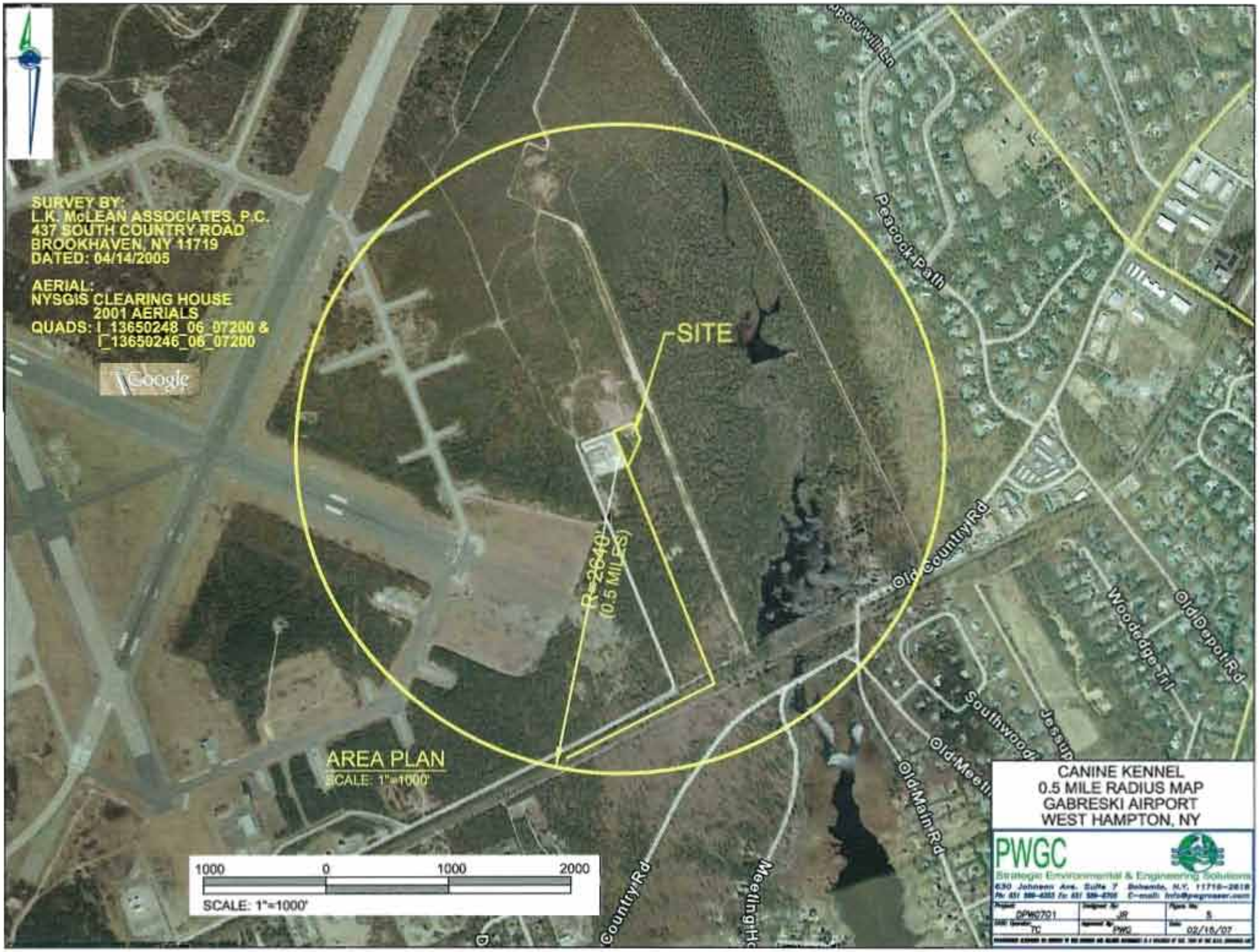
DPW0701	JR	3
TC	PWG	02/15/07


180.00' N86° 29'03"E
BOATYARD
(PAVED)
EHOUSE
313.51' N03° 30'57"W
140.00' S03° 30'57"E
APPROXIMATE
DISTURBED
AREA
METAL DEBRIS
AT SURFACE
NEW BOATYARD
250.01' 442° 32'08"W
LEGEND
FENCE
PROPERTY LINE
CAPACITORS
METAL DEBRIS
MOUNDS AND
DEPRESSIONS
PROPOSED TEST PIT
LOCATION
50 0 50 100
SCALE: 1"=50'
BASE MAP PROVIDED BY
DVIRKA AND BARTIUCCI
CONSULTING ENGINEERS
DATED: 02/04/1997
SURVEY BY:
L.K. McLEAN ASSOCIATES, P.C.
437 SOUTH COUNTRY ROAD
BROOKHAVEN, NY 11719
DATED: 04/14/2005
CANINE KENNEL
EXISTING SITE FEATURES
GABRESKI AIRPORT
WEST HAMPTON, NY
PWGC
Strategic Environmental & Engineering Solutions
DPW0701
TC/LLC
PWG
02/23/07


SURVEY BY:
L.K. McLEAN ASSOCIATES, P.C.
437 SOUTH COUNTRY ROAD
BROOKHAVEN, NY 11719
DATED: 04/14/2005
AERIAL:
NYSGIS CLEARING HOUSE
2001 AERIALS
QUADS: I_13650248_06_07200 &
I_13650246_06_07200
Google
SITE
R=2640'
(0.5 MILES)
AREA PLAN
SCALE: 1"=1000'
1000 0 1000 2000
SCALE: 1"=1000'
Peacock Path
Old Country Rd
Woodedge Trl
Old Depot Rd
Old Main Rd
Country Rd
CANINE KENNEL
0.5 MILE RADIUS MAP
GABRESKI AIRPORT
WEST HAMPTON, NY
PWGC
Strategic Environmental & Engineering Solutions
DPW2701
JR
5
TC
PWG
02/15/07

AREA PLAN

SCALE: 1"=3,000'

3,000 0 3,000 6,000

SCALE: 1"=3,000'

BASE MAP BY:
PEER CONSULTANTS, P.C.
78 MITCHELL ROAD
OAK RIDGE, TENNESSEE
DATED: DECEMBER 2004

CANINE KENNEL
PUBLIC DRINKING WATER SUPPLY
WELL LOCATIONS
GABRESKI AIRPORT
WEST HAMPTON, NY

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630 Johnson Ave, Suite 7 Bohemia, N.Y. 11716-2615
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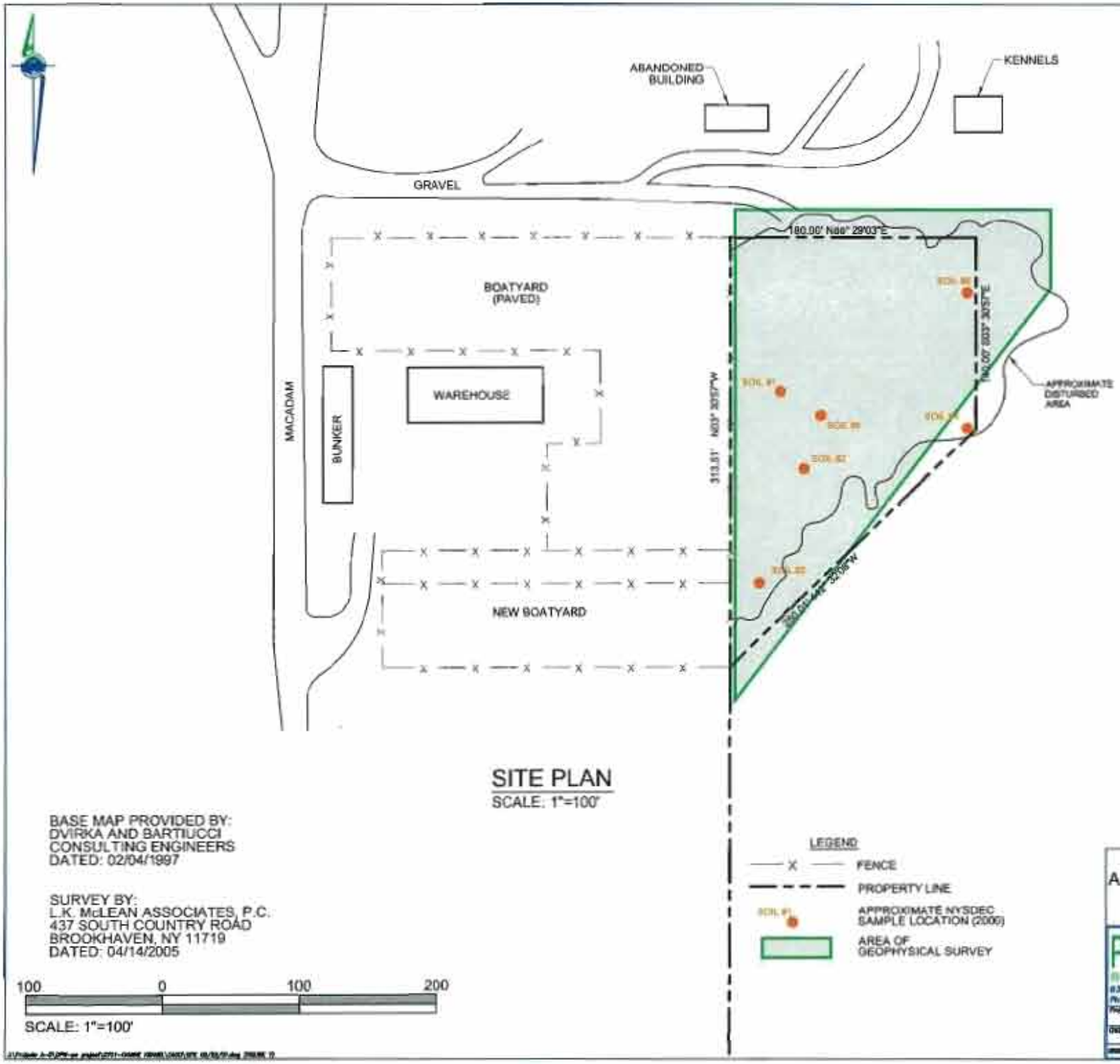
DPW0701	JR	6
TC	PWG	02/15/07



SITE PLAN

SCALE: 1"=100'

BASE MAP PROVIDED BY:
DVIRKA AND BARTIUCCI
CONSULTING ENGINEERS
DATED: 02/04/1997

SURVEY BY:
L.K. McLEAN ASSOCIATES, P.C.
437 SOUTH COUNTRY ROAD
BROOKHAVEN, NY 11719
DATED: 04/14/2005

100 0 100 200

SCALE: 1"=100'

CANINE KENNEL
AREA OF GEOPHYSICAL SURVEY
GABRESKI AIRPORT
WEST HAMPTON, NY

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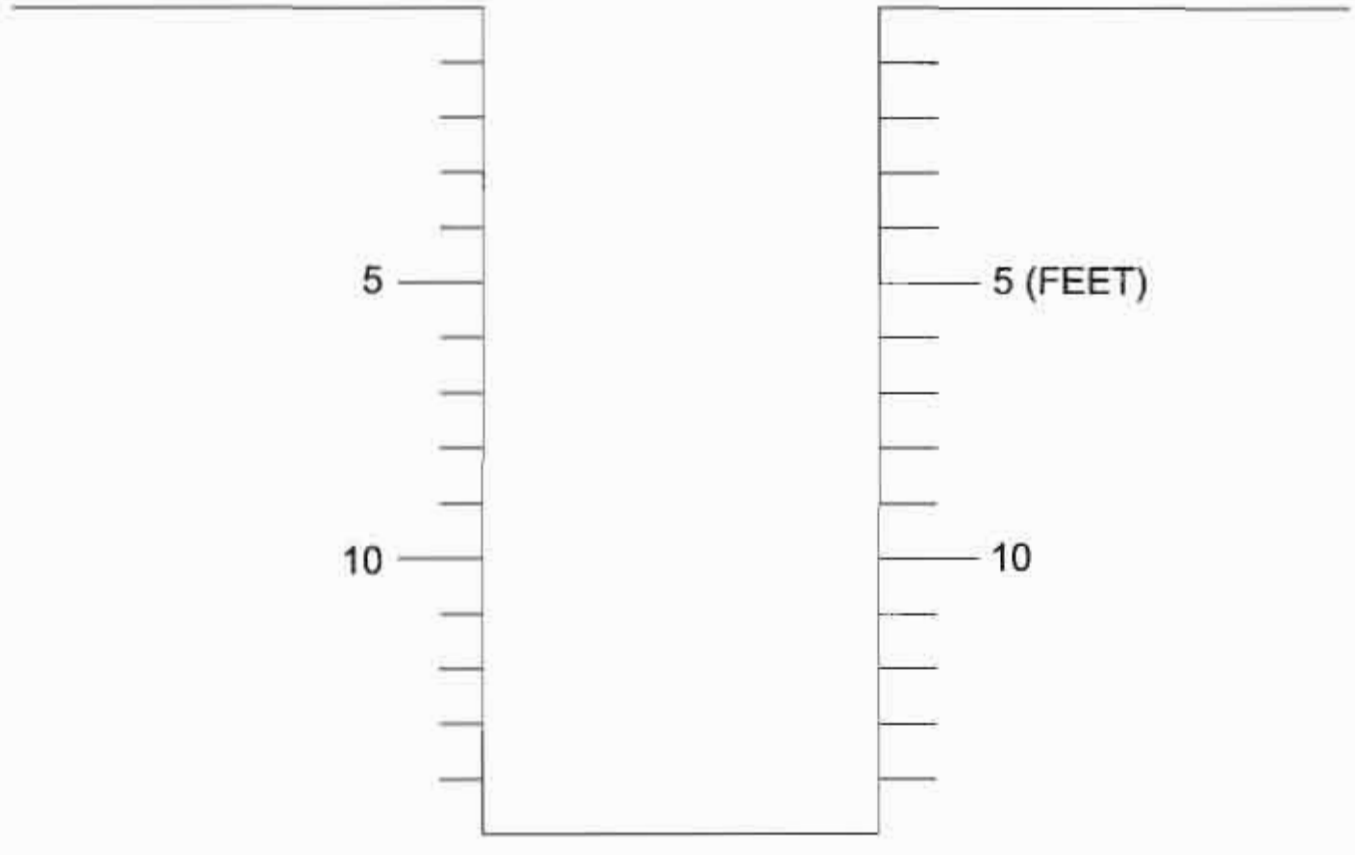
Project: DPW0701	Designed By: JM	Figure No.: 7
CAD Operator: TC/LLG	Approved By: PWG	Date: 02/15/07



PROJECT: _____

LOCATION: _____

LOGGED BY: _____

NOTES: _____

NOT TO SCALE

CANINE KENNEL
TEST PIT LOG
GABRESKI AIRPORT
WEST HAMPTON, NY

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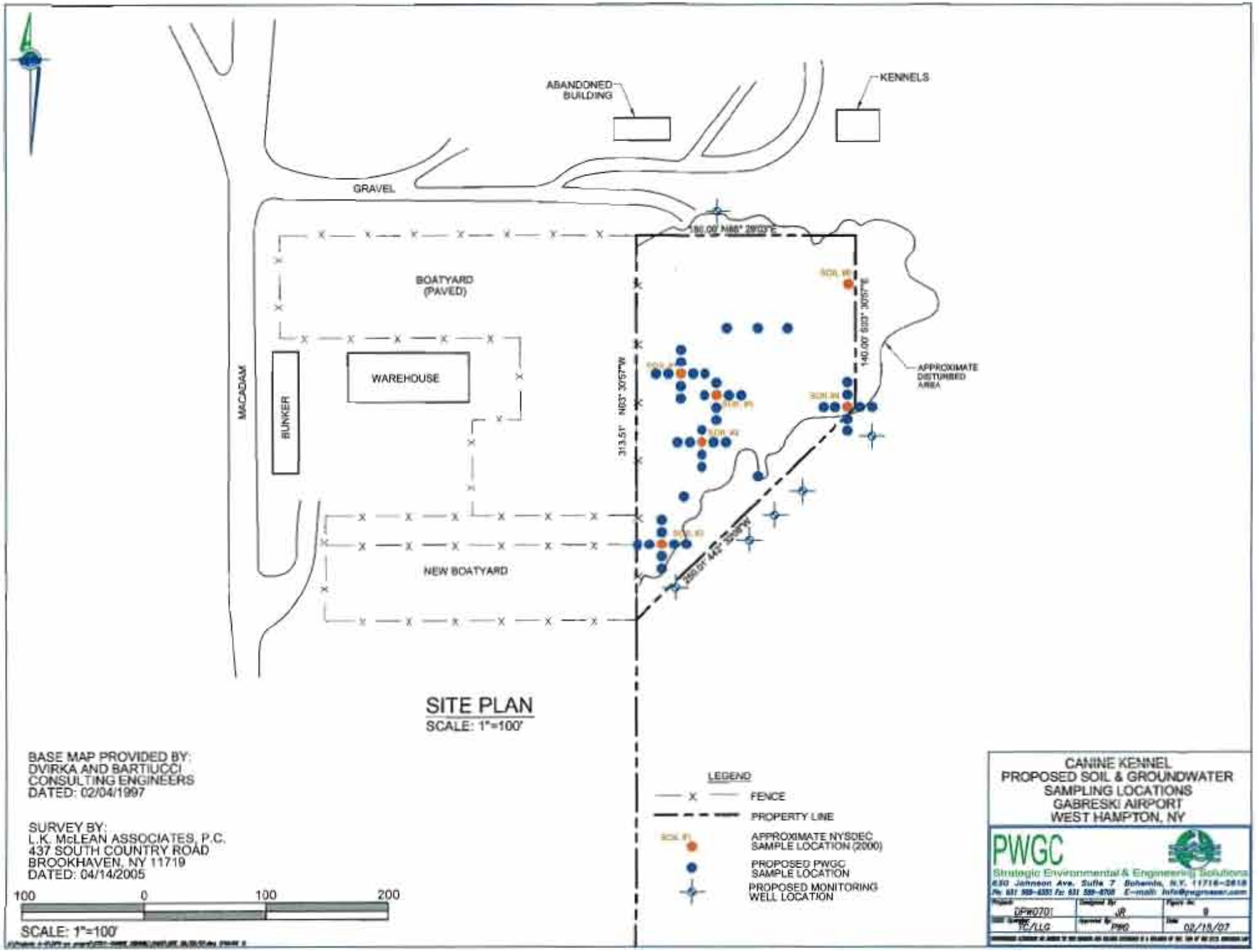
Project	Designed by	Figure No.
DPW0701	AL	8
Field Survey	Approved by	Date
LLG	PWG	2/23/07



SITE PLAN

SCALE: 1"=100'

BASE MAP PROVIDED BY:
DVIRKA AND BARTIUCCI
CONSULTING ENGINEERS
DATED: 02/04/1997

SURVEY BY:
L.K. McLEAN ASSOCIATES, P.C.
437 SOUTH COUNTRY ROAD
BROOKHAVEN, NY 11719
DATED: 04/14/2005

100 0 100 200

SCALE: 1"=100'

CANINE KENNEL
PROPOSED SOIL & GROUNDWATER
SAMPLING LOCATIONS
GABRESKI AIRPORT
WEST HAMPTON, NY

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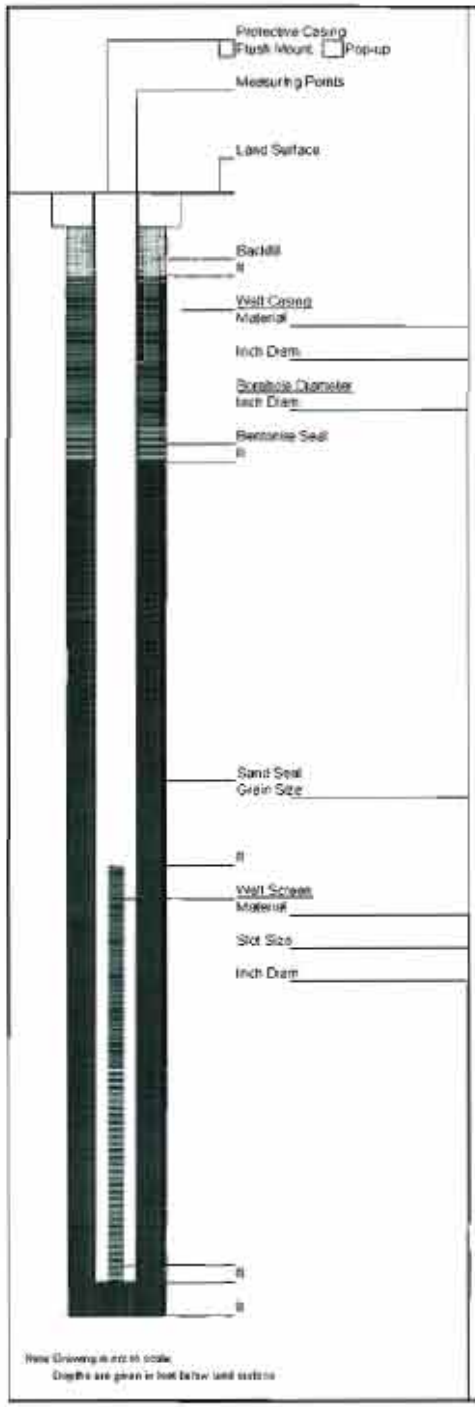
DPW07D1	JR	9
TC/LLG	PWG	02/15/07



Well No

Project

Surveyor

Measuring Point Elevation

Installation Date

Drilling Contractor

Drilling Method

Drilling Fluid

Development Technique (s) and Date (s)

Fluid Loss During Drilling Gallons

Water Removed During Development Gallons

Static Depth to Water/Product

Pumping Depth to Water

Pumping Duration

Well Purpose

Hydrogeologist

Company Name

Notes

CANINE KENNEL
TYPICAL WELL CONSTRUCTION DETAIL
GABRESKI AIRPORT
WEST HAMPTON, NY

PWGC
Strategic Environmental & Engineering Solutions
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Project	Designed By	Figure No.
DPW0701	AL	10
CAD Operator	Approved By	Date
LLG	PWG	2/27/07

P.W. GROSSER CONSULTING, INC.

WELL DEVELOPMENT/SAMPLING LOG

CLIENT/PROJECT No. _____

WELL No./OWNER _____

SAMPLE I.D. _____

SAMPLING POINT _____ SAMPLED BY _____

DATE SAMPLED _____ TIME SAMPLED _____

WELL USE Groundwater Monitoring

STATIC WATER ELEVATION _____ ft FT. BELOW MEASURING POINT _____

WELL DIAMETER _____ Inches

TOTAL WELL DEPTH _____ ft FT. BELOW MEASURING POINT _____

DEVELOPMENT/SAMPLING INFORMATION

PURGE METHOD _____ SAMPLE METHOD _____

PURGE RATE _____ GPM PURGE TIME _____ Min

CASING VOLUMES REMOVED _____ GALLONS _____

SAMPLE APPEARANCE _____ ODORS OBSERVED _____

LABORATORY _____ DATE SHIPPED _____

ANALYSIS _____

DEVELOPMENT/SAMPLING PARAMETERS

	Initial	1 Vol	2 Vol	3 Vol	Units
Conductivity					mS
Temperature					°C
pH					
Turbidity					NTUs

CANINE KENNEL
EXAMPLE WELL DEVELOPMENT LOG
GABRESKI AIRPORT
WEST HAMPTON, NY

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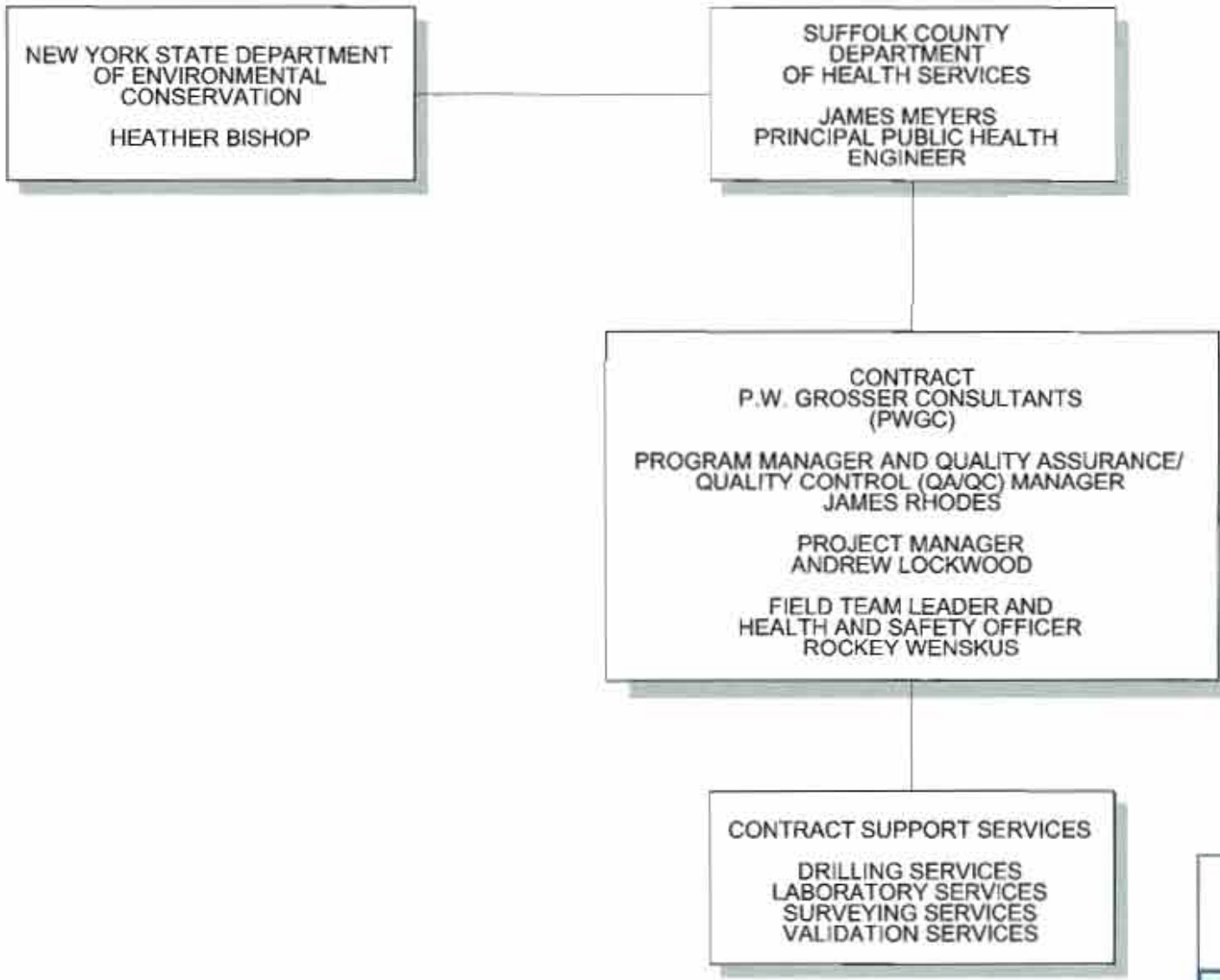
Project	Designed By	Figure No.
DPW0701	AL	11
Field Operator	Approved By	Date
LLG	PWG	2/28/07



CANINE KENNEL
PROJECT MANAGEMENT
ORGANIZATION CHART
GABRESKI AIRPORT
WEST HAMPTON, NY

PWGC
Strategic Environmental & Engineering Solutions
630 Johnson Ave, Suite 7 Bohemia, N.Y. 11716-2618
Ph: 631 589-2323 Fx: 631 589-4709 E-mail: info@pwgrosser.com

Project: DPW0701	Designed By: AL	Figure No: 12
CAD Operator: LLC	Approved By: PWG	Date: 2/23/07

TABLES

TABLE 1
NYSDEC Soil Sampling Data

Site # 152079
Soil Sampling July 13, 2000
PCB/Pesticide Summary - results in ug/Kg

Sample Location	Sample Depth	Sample ID	Dieldrin	4,4'-DDE	Aroclor-1254	Arclor-1260
Soil #1	0-4"	1118-01	1,900,000	2,000,000	150.000,000[1]	ND[2]
Soil #1	3'	1118-02	250,000	270,000	20,000,000	ND
Soil #2	0-3"	1118-07	N/A[3]	N/A	38,000,000	910,000
Soil #2	1'	1118-08	N/A	N/A	930,000	24,000
Soil #3	0-3"	1118-05	N/A	N/A	3,900	470
Soil #3	2.5'	1118-06	N/A	N/A	190	ND
Soil #4	0-3"	1118-09	N/A	N/A	17,000	570
Soil #4	2.5'	1118-10	N/A	N/A	250	ND
Soil #5	0-4"	1118-03	N/A	N/A	1,900,000	ND
Soil #5	3.5'	1118-04	N/A	N/A	120,000	ND
Soil #6	0-4"	1118-11	N/A	N/A	92	ND
Soil #6	3'	1118-12	N/A	N/A	230	ND
Soil inside end of capacitor at Soil #1	Waste sample	1118-13	N/A	N/A	280,000,000	3,800,000

Notes:
[1] Shaded block indicates sample above the regulatory limit of 50ppm
[2] Compoune not detected at method detection limit.
[3] Not analyzed

Table 2
NYSDEC Soil Cleanup Objectives for Pesticides and PCBs

Compounds	Maximum Detected Concentration (1)	NYSDEC Recommended Soil Cleanup Objective (2)	Unrestricted Use (3)	Residential (4)	Restricted Residential (4)	Commercial (4)	Industrial (4)	Protection of Ecological Resources (4)	Protection of Groundwater (4)
Aroclor 1016	NA	1*	0.1	1	1	1	25	1	3.2
Aroclor 1221	NA	1*	0.1	1	1	1	25	1	3.2
Aroclor 1232	NA	1*	0.1	1	1	1	25	1	3.2
Aroclor 1242	NA	1*	0.1	1	1	1	25	1	3.2
Aroclor 1248	NA	1*	0.1	1	1	1	25	1	3.2
Aroclor 1254	150,000	1*	NS	1	1	1	25	1	3.2
Aroclor 1260	910	1*	NS	1	1	1	25	1	3.2
p,p-DDD	NA	3	0.0033 (b)	2.6	13	92	180	0.0033 (e)	14
p,p-DDE	2,000	2	0.0033 (b)	1.8	8.9	62	120	0.0033 (e)	17
p,p-DDT	NA	2	0.0033 (b)	1.7	7.9	47	94	0.0033 (e)	136
Aldrin	NA	0.041	0.005 (c)	0.019	0.097	0.68	1.4	0.14	0.19
a BHC	NA	0.11	0.02	0.097	0.48	3.4	6.8	0.04 (g)	0.02
b BHC	NA	0.2	0.036	0.072	0.36	3	14	0.6	0.09
Chlordane	NA	0.54	0.094	0.91	4.2	24	47	1.3	2.9
Chlorobenzilate	NA	NS	NS	NS	NS	NS	NS	NS	NS
DBCP	NA	NS	NS	NS	NS	NS	NS	NS	NS
d BHC	NA	0.3	0.04	100 (a)	100 (a)	500 (h)	1,000 (i)	0.04 (g)	0.25
Dieldrin	1,900	0.044	0.005 (c)	0.039	0.2	1.4	2.8	0.006	0.1
Endosulfan 1 (f)	NA	0.9	2.4	4.8 (d)	24 (d)	200 (d)	920 (d)	NS	102
Endosulfan 2 (f)	NA	0.9	2.4	4.8 (d)	24 (d)	200 (d)	920 (d)	NS	102
Endosulfan Sulfate (f)	NA	1	2.4	4.8 (d)	24 (d)	200 (d)	920 (d)	NS	1,000 (i)
Endrin	NA	0.1	0.014	2.2	11	89	410	0.014	0.06
Endrin Aldehyde	NA	NS	NS	NS	NS	NS	NS	NS	NS
Endrin ketone	NA	NS	NS	NS	NS	NS	NS	NS	NS
gamma-BHC (Lindane)	NA	0.06	0.1	0.28	1.3	9.2	23	6	0.1
Heptachlor	NA	0.1	0.042	0.42	2.1	15	29	0.14	0.38
Heptachlor Epoxide	NA	0.02	NS	NS	NS	NS	NS	NS	NS
Hexachlorobenzene	NA	NS	NS	NS	NS	NS	NS	NS	NS
Hexachlorocyclopentadine	NA	NS	NS	NS	NS	NS	NS	NS	NS
Methoxychlor	NA	10	NS	NS	NS	NS	NS	NS	NS
Toxaphene	NA	NS	NS	NS	NS	NS	NS	NS	NS

Notes:

All concentrations are in mg/kg

(1) NYSDEC Soil Sampling Data PCB/Pesticide Summary Table 1 Site 152079 from July 13, 2000

(2) NYSDEC Recommended Soil Cleanup Objectives (RSCO), Technical and Administrative Guidance Memorandum (TAGM) #4046, 12/00

(3) NYSDEC 6 NYCRR Environmental Remediation Programs Part 375 Unrestricted Use Soil Cleanup Objectives Table 375-6.8a 12/06

(4) NYSDEC 6 NYCRR Environmental Remediation Programs Part Restriced Use of Soil Cleanup Objective Table 375-6.8b 12/06

SCO - Soil cleanup objective

CRQL - Contract required quantitation limit

TSD - Technical Support Document

(a) The SCOs for residential, restricted-residential and ecological resources use were capped at a maximum value of 100 ppm. See TSD section 9.3.

(b) For constituents where the calculated SCO was lower than the CRQL the CRQL is used as the Track 1 SCO value.

(c) For constituents where the calculated SCO was lower than the rual soil background concentration, as determined by the Department and the Department of Health rural soil survey, the rural soil background concentration is used as the Track 1 CO value fo this use of the site.

(d) SCO is the sum of endosilfan I, endosulfan II and endosulfan sulfate.

(e) For constituents where the calculated SCO was lower than the CRQL, the CRQL is used as the SCO value

(f) Protection of ecological resources SCOs were not developed for contaminants identified in Table 375-6.8b with "NS". Where such contaminants appear in Table 375-6.8a, the applicant may be required by the Department to calculate a protection of ecological resources SCO according to the TSD.

(g) This SCOs is derived from data on mixed isomer of BHC

(h) The SCOs for the commercial use were capped at a maximum value of 500 ppm. See TSD section 9.3.

(i) The SCOs for the industrial use and the protection of groundwater were capped at a maximum value of 1000 ppm. See TSD section 9.3.

NS - No standard

NA - Not Analyzed

*-NYSDEC recommended soil cleanup objectives for PCBs are 1.0 mg/kg for surface soils and 10 mg/kg for subsurface soils.

Table 3
Groundwater Standards for Pesticides and PCBs

Compound	NYSDEC Groundwater Standards**
Pesticides and PCB's by 8081/8082 - ug/L	
Aroclor 1232	.09*
Aroclor 1242	.09*
Aroclor 1248	.09*
Aroclor 1254	.09*
Aroclor 1260	.09*
p,p-DDD	0.3
p,p-DDE	0.2
p,p-DDT	0.2
Aldrin	ND
a BHC	0.01
b BHC	0.04
Chlordane	0.5
Chlorobenzilate	NS
DBCP	NS
d BHC	0.04
Dieldrin	0.004
Endosulfan 1	NS
Endosulfan 2	NS
Endosulfan Sulfate	NS
Endrin	ND
Endrin Aldehyde	5
Endrin ketone	5
gamma-BHC (Lind	NS
Heptachlor	0.04
Heptachlor Epoxid	0.03
Hexachlorobenzer	0.04
Hexachlorocyclope	5
Methoxychlor	35
Toxaphene	0.06

Notes:
** - NYSDEC Ambient Water Quality Standards and Guidance Values 6/1998
* - Guidance Value
NS - No Standard

APPENDIX A
NYSDEC SAMPLING REPORT

Suffolk County Airport - Canine Kennel
Site # 152079
Soil Sampling July 13, 2000

INTRODUCTION

A Preliminary Site Assessment report was completed in April 1998. This investigation was designed to determine if the PCB's previously detected in the surface soils were impacting local groundwater quality. This investigation showed that PCB's are not detectable in the groundwater downgradient of the contaminated soil.

SAMPLING PLAN

Twelve (12) soil samples were planned; 2 each from 6 locations. The first soil sample was planned to be surficial (0-4" in depth) while the second was planned to be deeper (2-4' in depth). As an addition, while in the field, it was decided to obtain a waste sample from the end of one capacitor. This sample was from the capacitor located at Soil #1. All 13 samples were analyzed PCB's by EPA method 8082. In addition at Soil #1, samples 1118-01 and 1118-02 were analyzed for pesticides by EPA method 8081A, for purgeable organics (VOC's) by EPA method 8260B, for priority pollutant base-neutral-acid extractable analytes (SVOC's) by NYSDEC ASP 10/95 method 8270B and for TAL metals analysis.

SAMPLING RESULTS

The soil samples are clearly impacted by PCB's. The results of the PCB analyses are summarized on Table 1 (attached). Based on the soil sampling at Soil #1 it appears VOC's are generally not present, additionally VOC's were not detected in the local groundwater. The SVOC's were generally present as TIC's (tentatively identified compounds). Sample 1118-01 and sample 1118-02 each had 21 TIC's most of which were identified as unknown chlorinated biphenyl isomers. The metals that were detected were below the ranges as compared to the Eastern USA background levels reported in NYSDEC TAGM-4046. In addition, cyanide was undetected.

CONCLUSIONS

Based on the historical soil sampling data and this sampling event, it appears that the on-site soils are significantly impacted by PCB's, while the groundwater remains unimpacted.

APPENDIX B
PHOTOGRAPHS

Looking south towards the bermed area on the northern end of the site

Bermed area

Metal debris

Metal debris and significant re-vegetation of the site

Suspect capacitor

APPENDIX C
LOW-FLOW PURGING AND SAMPLING PROCEDURE

Low Flow Purging and Sampling Procedure

1. Wear appropriate health and safety equipment as outlined in the Health and Safety Plan

2. Inspect each well for any damage or evidence of tampering and note condition in field logbook.

3. Remove the well cap.

4. Lay out plastic sheeting and place the monitoring, purging and sampling equipment on the sheeting. To avoid cross-contamination, do not let any downhole equipment touch the ground.

5. Measure well headspace with a PID or FID and record the reading in the field logbook.

6. Measure and record the depth to water and record the measurement in the field logbook. Do not measure the depth to the bottom of the well at this time (to avoid disturbing any sediment that may have accumulated). Obtain depth to bottom information from installation information in the field logbook or soil boring logs. Calculate volume of the water column.

7. Set the pump at approximately the middle of the screen. Be careful not to place the pump intake less than 2 feet above the bottom of the well as this may cause mobilization of any sediment present in the bottom of the well. Start pumping the well at 0.2 to 0.5 liters per minute.

8. Monitor the water level in the well periodically during pumping, and ideally the pumping rate should equal the well recharge rate with little or no water level drawdown in the well (drawdown shall be 0.3 foot or less). There should be at least 1 foot of water over the pump intake so there is no risk of the pump suction being broken, or entrapment of air in the sample. Record all pumping rate adjustments and depth(s) to water in the logbook. Pumping rates should, if needed, be reduced to the minimum capabilities of the pump (0.1 to 0.2 liters per minute) to avoid purging the well dry. However, if the recharge rate of the well is very low and the well is purged dry, and then wait until the well has recharged to a sufficient level and collect the appropriate volume of sample with the submersible pump.

9. Purge the well at a low-flow rate (from 0.2 to 0.5 liters per minute). During purging, monitor the field parameters (temperature, pH, turbidity, specific conductance, and dissolved oxygen) approximately every 3 to 5 minutes.

10. 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 percent for specific conductance
- ±3 percent Temperature
- ±10 percent for dissolved oxygen
- ±10 percent for 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.

14. Once the field parameters have stabilized, collect the samples directly from the end of the tubing. Volatiles and analyses that degrade by aeration (e.g., hexavalent chromium) must be collected first. The bottles should be preserved and filled according to the procedures specified below and in the QAPP.

15. Fill all sample bottles by allowing the pump discharge to flow gently down the inside of the bottle with minimal turbulence. Cap each bottle as it is filled.

16. Preserve and label the samples, and record them on the chain of custody form. Place immediately into a cooler for shipment and maintain at 4°C.

18. Carefully remove the pump assembly from the well. The Teflon-lined polyethylene tubing will be dedicated to each well. The tubing should be placed in a large plastic garbage bag, sealed, and labeled with the appropriate well identification number.

19. After sampling is complete, measure the total depth of the well.

20. Close and lock the well.

Refer to EPA-ERT SOP #2007 and the USEPA Region II Groundwater Sampling Procedure Low Stress Purging and Sampling for additional information.

APPENDIX D
HEALTH AND SAFETY PLAN

SUFFOLK COUNTY FORMER CANINE KENNEL
GABRESKI AIRPORT, WESTHAMPTON BEACH, NY
SITE: #152079

PWGC Project No. DPW0701

HEALTH AND SAFETYPLAN

March 2007

Submitted to:

New York State Department of Environmental Conservation

Prepared for:

Suffolk County Department of Health Services
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STATEMENT OF COMMITMENT

This Health and Safety Plan (HASP) has been prepared to ensure that workers are not exposed to chemical, biological and physical hazards during the planned Remedial Investigation (RI) activities to be performed at the Former Canine Kennel site, Gabreski Airport, Westhampton Beach, New York. P.W. Grosser Consulting Inc.'s (PWGC's) policy is to minimize the possibility of work-related exposure through awareness and qualified supervision, health and safety training, medical monitoring, use of appropriate personal protective equipment, and the following activity specific safety protocols contained in this HASP. PWGC has established a guidance program to implement this policy in a manner that protects personnel to the maximum reasonable extent.

This HASP, which applies to persons present at the site actually or potentially exposed to safety or health hazards, describes emergency response procedures for actual and potential physical, biological and chemical hazards. This HASP is also intended to inform and guide personnel entering the work area or exclusion zone. Persons are to acknowledge that they understand the potential hazards and the contents of this Health and Safety policy.

1.0 INTRODUCTION

1.1 Purpose

This Health and Safety Plan (HASP) addresses the minimum health and safety practices that will be employed by site workers participating in remedial investigation (RI) activities at the project site located at Former Canine Kennel, Gabreski Airport, Westhampton Beach, New York.

The HASP takes into account the specific hazards inherent to the site and presents the minimum requirements which are to be met by P.W. Grosser Consulting, Inc. (PWGC), its' subcontractors, and other on-site personnel in order to avoid and, if necessary, protect against health and/or safety hazards. PWGC sub-contractors will have the option of adopting this HASP or developing their own site-specific document. If a subcontractor chooses to prepare their own HASP, it must meet the minimum requirements as detailed in this HASP and must be made available to PWGC.
Activities performed under this HASP will comply with applicable parts of Occupational Safety and Health Administration (OSHA) Regulations, primarily 29 CFR Parts 1910 and 1926 and all other applicable federal, state, and local regulations. Modifications to the HASP may be made with the approval of the PWGC Health and Safety Manager (HSM) and/or Project Manager (PM). A copy of this HASP will be maintained on-site during all work activities.

Refusal to comply with the HASP or violation of any safety procedures by field personnel may result in their immediate removal from the site following consultation with the HSM and the Field Team Leader (FTL).

1.2 Scope

This HASP addresses the potential hazards related to the RI activities. The primary RI activities include the following:

- Site Mobilization/Demobilization;
- Geophysical Survey;
- Test Pit Excavation;
- Drilling, and;
- Soil and Groundwater Sampling

The potential hazards associated with this scope are listed below and are discussed in more detail in this HASP after the project organization and responsibilities section.

- Chemical Hazards
- Biological Hazards
- Physical Hazards

1.3 Application

The HASP applies to all personnel involved in the above tasks who wish to gain access to active work areas, including but not limited to:

- PWGC employees and subcontractors;
- Client representatives; and
- Federal, state or local representatives.

2.0 PROJECT ORGANIZATION AND RESPONSIBILITIES

This section specifies the project organization and responsibilities.

2.1 Project Manager

- Participates in major incident investigations;
- Ensures that the HASP has all of the required approvals before site work is conducted; and
- Has the overall project responsibility for project health and safety.

2.2 Field Team Leader (FTL)/ Site Health and Safety Officer (SHSO)

- Ensures that the HASP is implemented in conjunction with the Health and Safety Manager (HSM);
- Ensures that field work is scheduled with adequate equipment to complete the job safely;
- Enforces site health and safety rules;
- Ensures that proper personal protective equipment is utilized;
- Ensures that the HSM is informed of project changes that require modifications to the HASP;
- Ensures that the procedure modifications are implemented;
- Investigates incidents;
- Conducts the site safety briefing;
- Reports to HSM to provide summaries of field operations and progress; and
- Acts as Emergency Coordinator.

2.3 Health and Safety Manager

- Provides for the development of the HASP;
- Serves as the primary contact to review health and safety matters that may arise;
- Approves individuals who are assigned SHSO responsibilities;
- Coordinates revisions of this HASP with field personnel; and
- Assists in the investigation of major accidents.

2.4 Site Personnel

- Report any unsafe or potentially hazardous conditions to the FTL/SHSO;
- Maintain knowledge of the information, instructions and emergency response actions contained in this HASP; and
- Comply with rules, regulations and procedures as set forth in this HASP and any revisions.

3.0 SITE HISTORY AND PROJECT DESCRIPTION

3.1 Project Background

This Health and Safety Plan (HASP) has been prepared by PWGC, on behalf of Suffolk County.

Polychlorinated biphenyls (PCBs) and pesticides have been identified above guidance levels and/or standards in soil at the site.

3.2 Site Location and Description

The area of concern is a section of disturbed ground, irregular in shape; approximately 0.5 acres (**Figure 2**). The site is located in a remote portion of the airport, south of the canine kennel and just east of a boat storage yard near the eastern property line, coordinates 40° 50’ 20.8’’ and 72° 37’ 13.6’’. Currently, the former dog kennel is abandoned and in a state of disrepair.

The Suffolk County Airport has no commercially scheduled service, but does support private planes and presently is the home of the 106th Rescue Wing of the New York Air National Guard (NYANG).

The western portion of the airport consists of a largely developed space with support buildings and hangers. The central portion of the site consists of the airport runways and maintained open space. The eastern area of the site is largely undeveloped.

The airport is located within the Long Island Pine Barrens. The Pine Barrens are characterized by open, sunlit woodlands dominated by pitch pine interspersed with white and scarlet oak. The nearby Quogue Wildlife Refuge is characterized by dwarf pitch pines ranging from 3 to 6 ft tall. The airport itself is characterized by surrounding wooded areas consisting of 25 ft pitch pines and scattered scrub oak.

4.0 POTENTIAL HAZARDS OF THE SITE

This section presents an assessment of the chemical, biological, and physical hazards that may be encountered during the tasks specified under Section 1.0. Additional information can be found in **Appendix A** - Material Safety Data Sheets or in **Appendix B** - Activity Hazard Analyses.

4.1 Chemical Hazards

Review of historical information from the site indicates that the soil at the site is contaminated with pesticides (4,4 DDE and Dieldrin) and PCBs (Aroclor 1254, 1260), which are present at ppm levels in soil. These compounds may present an occupational exposure hazard during site operations.

The chemicals identified above may have an effect on the central nervous system, respiratory system and may cause chronic liver and kidney damage. Acute exposure symptoms may include headache, dizziness, nausea, diarrhea and skin and eye irritation. Specific information on the chemicals identified at the Site can be found in Table 4-1 as well as on the Material Safety Data Sheets found in Appendix A.

Table 4-1

COMPOUND	CAS#	OSHA PEL	ROUTES OF EXPOSURE	SYMPTOMS OF EXPOSURE	TARGET ORGANS	PHYSICAL DATA
Aroclor 1254	11097-69-1	TWA 0.5 mg/m^3	Inhalation Ingestion Skin/Eye	Irritation eyes, chloracne, liver damage, reproductive effects	Skin, liver, reproductive system	VP= 0.00006 mmHg Colorless to yellow liquid w/ distinct odor
Aroclor 1260	11096-82-5	TWA 0.5 mg/m^3	Inhalation Ingestion Skin/Eye	Irritation eyes, chloracne, liver damage, reproductive effects	Skin, liver, reproductive system	VP= 0.00006 mmHg Yellow solid; odor not available
Dieldrin	60-57-1	TWA 0.25 mg/m^3	Inhalation Ingestion Skin/Eye	Convulsions, dizziness, headache, nausea, vomiting, muscle twitching may result from ingestion.	CNS, liver, kidneys, skin	VP= 0.0004 mm Hg Colorless to tan crystal; mild odor
4,4'-DDE	72-55-9	None	Inhalation Ingestion Skin/Eye	Menstrual irregularities, nausea, vomiting, diarrhea, stomach pains, confusion, apprehension, irritability, excitability, dizziness, headache, disorientation, weakness, parenthesis, muscle twitching, tremor, stupor, coma and convulsions	Liver, kidneys	VP= unavailable White crystal, no odor

Abbreviations
C = Ceiling limit, not to be exceeded
CNS = Central Nervous System

PEL=Permissible Exposure Limit

TWA = Time-weighted average (8 hours)

OSHA = Occupational Safety and Health Administration
ppm = parts per million

VP = vapor pressure at approximately 68E F in mm Hg (mercury)

4.2 Biological Hazards

Work will be performed in an undeveloped area of the Long Island Pine Barrens, during the course of the project, there is potential for workers to come into contact with biological hazards such as animals, insects and plants. The Activity Hazard Analyses found in **Appendix B** includes specific hazards and control measures for each task, if applicable.

4.2.1 Animals

The Site is located in a predominantly undeveloped area. It is possible that white tailed deer, raccoon, foxes, possum, dogs, cats, rats and mice may be present. Workers shall use discretion and avoid all contact with animals.

4.2.2 Insects

Insects, such as mosquitoes, ticks, bees and wasps may be present during certain times of the year. Workers will be encouraged to wear repellents and PPE, if deemed necessary, when working in areas where insects are expected to be present.

During the months of April through October, particular caution must be exercised to minimize exposure to deer ticks and the potential for contracting Lyme disease. Specific precautionary work practices that are recommended include the following:

- Cover your body as much as possible. Wear long pants and long sleeved shirts. Light color clothing makes spotting of ticks easier.

- Try to eliminate possible paths by which the Deer Tick may reach unprotected skin. For example, tuck bottoms of pants into socks or boots and sleeves into gloves. (Duct tape may be utilized to help seal cuffs and ankles). If heavy concentrations of ticks or insects are anticipated or encountered, Tyvek coveralls may be utilized for added protection when the potential for heat stress is not a concern.

- Conduct periodic and frequent, (e.g., hourly), surveys of your clothing for the presence of ticks. Remove any tick, save it and report to the clinic with the tick.

- Use insect /tick repellents that contain the chemical DEET (n,n-Diethyltoluamide). Apply repellents in accordance with manufacturers' recommendations. These repellents are readily available and include such brands as Deep Woods OFF and Maximum Strength OFF.

4.2.3 Plants

Poison ivy, sumac and oak may be present on site. The FTL/SHSO should identify the susceptible individuals. Worker shall avoid all contact with these plants.

4.3 Physical Hazards

Most safety hazards are discussed in the Activity Hazard Analyses (AHA) in **Appendix B** for the different phases of the project. In addition to the AHAs, general work rules and other safety procedures are described in Section 10 of this HASP.

4.3.1 Temperature Extremes

Heat Stress
Heat stress is a significant potential hazard, which is greatly exacerbated with the use of PPE in hot environments. The potential hazards of working in hot environments include dehydration, cramps, heat rash, heat exhaustion, and heat stroke.

Cold Stress
At certain times of the year, workers may be exposed to the hazards of working in cold environments. Potential hazards in cold environments include frostbite, trench foot or immersion foot, hypothermia as well as slippery surfaces, brittle equipment, and poor judgment.

PWGC's Heat/Cold Stress Protocols are specified in **Appendix C**.

4.3.2 Steam, Heat and Splashing

Exposure to steam/heat/splashing hazards can occur during steam cleaning activities. Splashing can also occur during well development and sampling activities. Exposure to steam/heat/splashing can result in scalding/burns, eye injury, and puncture wounds.

4.3.3 Noise

Noise is a potential hazard associated with the operation of heavy equipment, drill rigs, pumps and engines. Workers will wear hearing protection while in the work zone when these types of machinery are operating.

4.3.4 Fire and Explosion

When conducting excavation or drilling activities, the opportunity of encountering fire and explosion hazards may exist from encountering underground utilities, from the use of diesel engine equipment, and other potential ignition sources. During dry periods there is an increased chance of forest and

brush fires starting at the job site. If these conditions occur no smoking will be permitted at the site and all operations involving potential ignition sources will be monitored continuously (fire watch).

4.3.5 Manual Lifting/Material Handling

Manual lifting of heavy objects may be required. Failure to follow proper lifting technique can result in back injuries and strains. Back injuries are a serious concern as they are the most common work place injury, often resulting in lost or restricted work time, and long treatment and recovery periods.

4.3.6 Slips, Trips and Falls

Working in and around the site will pose slip, trip and fall hazards due to slippery surfaces that may be oil covered, or from rough terrain, surfaces that are steep inclines, surfaced debris, or surfaces which are wet from rain or ice. Falls may result in twisted ankles, broken bones, head trauma or back injuries.

4.3.7 Heavy Equipment Operation

A backhoe excavator/bobcat will be used to excavate test pits and a Geoprobe will be used to install monitoring wells. Working with or near heavy equipment poses many potential hazards, including electrocution, fire/explosion, being struck by or against, or pinched/caught/crushed by, and can result in serious physical harm.

4.3.8 Electrocution

Encountering underground utilities may pose electrical hazards to workers. Additionally, overhead electrical lines can be a concern during drilling operations. Potential adverse effects of electrical hazards include burns and electrocution, which could result in death.

5.0 ACTIVITY HAZARD ANALYSES

The Activity Hazard Analysis (AHA) is a systematic way of identifying the potential health and safety hazards associated with major phases of work on the project and the methods to avoid, control and mitigate those hazards. The AHAs will be used to train work crews in proper safety procedures during phase preparatory meetings.

AHAs have been developed by PWGC for the following phases of work:

1. Site Mobilization/Demobilization;
2. Test Pit Excavation/Drilling;
3. Soil and Groundwater sampling; and
4. Decontamination

Copies of these AHAs are included in **Appendix B** of this HASP.

6.0 PERSONAL PROTECTIVE EQUIPMENT

The personal protective equipment (PPE) specified in **Table 6-1** represents the hazard analysis and PPE selection required by 29 CFR 1910.132. Specific information on known potential hazards can be found under Section 4.0 and **Appendix B** - Activity Hazard Analyses. For the purposes of PPE selection, the HSM and FTL/SHSO are considered competent persons. The signatures on the approval page of the HASP constitute certification of the hazard assessment. For activities not covered by **Table 6-1**, the FTL/SHSO will conduct the hazard assessment, select the PPE, and document changes in the appropriate field logs. PPE selection will be made in consultation with the HSM.

Modifications for initial PPE selection may also be made by the FTL/SHSO in consultation with the HSM and changes documented accordingly. If major modifications occur, the HSM will notify the PM.

PPE Abbreviations

HEAD PROTECTION
HH = Hard Hat

HEARING PROTECTION
EP = ear plugs
EM = ear muffs

HAND PROTECTION
Cot = cotton
But = Butyl
LWG = Leather Work Gloves
Neo = Neoprene
Nit = Nitrile
Sur = Surgical

EYE/FACE PROTECTION
APR = Full Face Air Purifying Respirator
MFS = Mesh Face shield
PFS =Plastic Face shield
SG = ANSI approved safety glasses with side shields

BODY PROTECTION
WC = work clothes
Cot Cov = Cotton Coveralls
Poly = Polyethylene coated Tyvek® coveralls
Saran = Saranex coated coveralls
Tyvek® = Uncoated Tyvek® coveralls

FOOT PROTECTION
Neo = Neoprene
OB = Overboot
Poly = polyethylene coated boot
Rub = rubber slush boots
STB = Leather work boots with steel toe

RESPIRATORY PROTECTION
APR = Full-face air purifying respirator with organic vapor cartridges
ASR = Full face air supplied respirator with escape bottle
SCBA = Self-contained breathing apparatus

6.1 Hazard Assessment for Selection of Personal Protective Equipment

The initial selection of personal protective equipment for each task was done by performing a hazard assessment taking into consideration the following:

- Potential chemical and physical present;
- Work operations to be performed;
- Potential routes of exposure;

- Concentrations of contaminants present; and
- Characteristics, capabilities and limitations of PPE and any hazard that the PPE presents or magnifies.

A review of the analytical data from previous sampling events indicates that pesticides and PCBs identified in **Table 4-1** are the primary contaminants of concern. The maximum concentration detected for contaminates of concern in soil are as follows:

Aroclor-1254	280,000 ppm
Aroclor-1260	3,800 ppm
Dieldrin	1,900 ppm
4,4'-DDE	2,000 ppm

The exposure routes for these chemicals are inhalation, skin absorption, skin/eye contact and ingestion. Chemical protective gloves will be required for all activities that involve sample handling and the likelihood for skin contact. The proper use of PPE and strict adherence to decontamination and personal hygiene procedures will effectively minimize skin contact and ingestion as potential routes of exposure.

Table 6-1
Personal Protective Equipment Selection

TASK	HEAD	EYE/FACE	FEET	HANDS	BODY	HEARING	RESPIRATOR
Mobilization/ Demobilization	HH	SG	STB	WG	WC	None	None
Excavation, loading and backfilling	HH	SG	STB	WG	WC	EM or EP	None initially APR if action levels exceeded
Drilling Activities	HH	SG	STB	WG	WC	EM or EP	None initially APR if action levels exceeded
Soil/GW sampling	HH	SG	STB	WG, Nit & Sur as needed	WC, Tyvek® as needed	None	None initially APR if action levels exceeded
Decontamination	HH	SG	STB	Nit + Sur	WC, Tyvek® as needed	None	None initially APR if action levels exceeded

6.2 Respirator Cartridge Change-Out Schedule

A respirator cartridge change-out schedule has been developed in order to comply with 29 CFR 1910.134. If the use of respirators is necessary, the respirator cartridge change-out schedule for this project will be as follows:

1. Cartridges shall be removed and disposed of at the end of each shift, when cartridges become wet or wearer experiences breakthrough, whichever occurs first; and
2. If the humidity exceeds 85%, then cartridges shall be removed and disposed of after 4 hours of use.

Respirators shall not be stored at the end of the shift with contaminated cartridges left on. Cartridges shall not be worn on the second day, no matter how short of time period they were used the day before.

The schedule was developed based on the following scientific information and assumptions:

- Analytical data that is available regarding site contaminants;
- Using the Rule of Thumb provided by the AIHA;
- All of the chemicals have boiling points greater than 70EC;
- Total airborne concentration of contaminants is anticipated to be less than 200 ppm;
- The humidity is expected to be less than 85%; and
- Desorption of the contaminants (including those with poor warning properties) after partial use of the chemical cartridge can occur after a short period (hours) without use (eg, overnight) and result in a non-use exposure.

The following is a partial list of factors that may affect the usable cartridge service life and/or the degree of respiratory protection attainable under actual workplace conditions. These factors have been considered when developing the cartridge change-out schedule.

Type of contaminant(s);
- Contaminant concentration;
- Relative humidity;
- Breathing rate; Temperature; Changes in contaminant concentration, humidity, breathing rate and temperature;
- Mixtures of contaminants;
- Accuracy in the determination of the conditions;
- The contaminant concentration in the workplace can vary greatly. Consideration must be given to the quality of the estimate of the workplace concentration;
- Storage conditions between multiple uses of the same respirator cartridges. It is recommended that the chemical cartridges be replaced after each work shift. Contaminants adsorbed on a cartridge can migrate through the carbon bed without airflow;

- Age of the cartridge;
- Condition of the cartridge and respirator;
- Respirator and cartridge selection respirator fit;
- Respirator assembly, operation, and maintenance;
- User training, experience and medical fitness;
- Warning properties of the contaminant; and
- The quality of the warning properties should be considered when establishing the chemical cartridge change schedule. Good warning properties may provide a secondary or back-up indication for cartridge change-out.

7.0 AIR MONITORING

Air monitoring will be performed for protection for on-site workers and the downwind community (i.e., off-site receptors including residences, businesses, and on-site workers not directly involved in the remedial work) from potential airborne contaminant releases resulting from remedial activities at the site. Air monitoring will be used to help to confirm that the remedial work will not spread contamination off-site through the air. The primary concerns for this site are dust particulates and PCBs. Although no VOCs have been reported during previous sampling events at the site monitoring with a photo-ionization detector (PID) will be performed during any invasive activities

Since direct-reading instrumentation for PCBs has not been developed, respirable particulate action levels have been established that will ensure compliance with the respirable particulate OSHA permissible exposure level (PEL) (5.0 mg/m^3 particulates and 0.5 mg/m^3 for PCBs).

Real-time monitoring for dust and VOCs will be conducted both within the work area, and along the site perimeter, during intrusive activities such as excavation and drilling activities.

Airborne concentrations of respirable particulates, that are protective of exposures to PCBs, can be calculated if 1) the concentration of PCBs in site media is known, and 2) the concentration of PCBs in air is also known. For the purposes of determining the respirable particulate action levels, the following assumptions are made:

- The PCB concentration in site media is assumed to be equal to the maximum concentration of PCBs identified in the media at the site; and
- The chemical concentration of PCBs in air is set equal to the maximum allowable exposure of 0.25 mg/m^3 (one-half the OSHA PEL).

The following formula results from these assumptions:

$$\frac{\text{Allowable PCBs concentration in air}}{\text{Maximum PCBs concentration in media}} = \text{Maximum allowable particulate concentration in air}$$

The following illustrates how the action level for PCB exposure for the investigation was established, using half the OSHA PEL as the maximum allowable exposure:

$$\frac{(0.25 \text{ mg PCBs/m}^3 \text{ of air})}{(283{,}800 \text{ mg PCBs}/1{,}000{,}000 \text{ mg soil})} = 0.88 \text{ mg respirable particulates/m}^3 \text{ of air}$$

Level D level of protection will be utilized unless dust monitoring exceeds 0.88 mg/ m^3.

Detailed information on the types, frequency and location of real-time monitoring and community air monitoring requirements are provided in the Community Air Monitoring Plan prepared for this project.

8.0 ZONES, PROTECTION AND COMMUNICATION

8.1 Site Control

Site zones are intended to control the potential spread of contamination throughout the site and to assure that only authorized individuals are permitted into potentially hazardous areas. A three-zone approach will be utilized. It shall include an Exclusion Zone (EZ), Contamination Reduction Zone (CRZ) and a Support Zone (SZ). Specific zones shall be established on the work site when operations begin.

This project is a hazardous waste remediation project, and any person working in an area where the potential for exposure to site contaminants exists, will only be allowed access after providing the FTL/SHSO with proper training and medical documentation.

The zones are based upon current knowledge of proposed site activities. It is possible that the zone configurations may be altered due to work plan revisions. Should this occur, the work zone will be adjusted accordingly, and documented through use of a field-change request form.

The following shall be used for guidance in revising these preliminary zone designations, if necessary.

Support Zone **-** The SZ is an uncontaminated area that will be the field support area for most operations. The SZ provides for field team communications and staging for emergency response. Appropriate safety equipment will be located in this zone. Potentially contaminated personnel/materials are not allowed in this zone. The only exception will be appropriately packaged/decontaminated and labeled samples.

Contamination Reduction Zone **-** The CRZ is established between the EZ and the SZ. The CRZ contains the contamination reduction corridor and provides for an area for decontamination of personnel and portable hand-held equipment, tools and heavy equipment. A personnel decontamination area will be prepared at each exclusion zone. The CRZ will be used for EZ entry and egress in addition to access for heavy equipment and emergency support services.

Exclusion Zone **-** All activities, which may involve exposure to site contaminants, hazardous materials and/or conditions, should be considered an EZ. The FTL/SHSO may establish more than one EZ where different levels of protection may be employed or different hazards exist. The size of the EZ shall be determined by the site HSO allowing adequate space for the activity to be completed, field members and emergency equipment.

8.2 Contamination Control

Decontamination areas will be established for the following activities.

- Drilling Activities

- Test Pit Excavation

8.2.1 Personnel Decontamination Station

All personnel and portable equipment used in the EZ shall be subject to a thorough decontamination process, as deemed necessary by the FTL/SHSO. Sampling equipment shall be decontaminated. As necessary, all boots and gloves will be decontaminated using soap and water solution and scrub brushes or simple removal and disposal. All used respiratory protective equipment will be decontaminated daily and sanitized with appropriate sanitizer solution.

All drums generated as a result of sampling and decontamination activities will be marked and stored at a designated area at the site until the materials can be property disposed of off-site.
All non-expendable sampling equipment will be decontaminated. This usually entails the use of Alconox, solvent and distilled/deionized water rinses to eliminate contaminants.

8.3 Communication

- Each team member will have a Nextel cell phone/radio for communication with the PM, HSO and other team members during field activities.
- Hand Signals - Hand signals shall be used by field teams, along with the buddy system. The entire field team shall know them before operations commence and their use covered during site-specific training. Typical hand signals are the following:

SIGNAL	**MEANING**
Hand gripping throat	Out of air, can't breathe
Grip on a partner's wrist or placement of both hands around a partner's waist.	Leave the area immediately, no debate.
Hands on top of head	Need assistance
Thumbs up	Okay, I'm all right, I understand.
Thumbs down	No, negative.

9.0 MEDICAL SURVEILLANCE PROCEDURES

All contractor and subcontractor personnel performing field work where potential exposure to contaminants exists at the site are required to have passed a complete medical surveillance examination in accordance with 29 CFR 1910.120(f).

9.1 Medical Surveillance Requirements

A physician's medical release for work will be confirmed by the HSM before an employee can work in the exclusion zone. The examination will be taken annually at a minimum and upon termination of hazardous waste site work if the last examination was not taken within the previous six months. Additional medical testing may be required by the HSM in consultation with the Corporate Medical Consultant and the FTL/SHSO if an over-exposure or accident occurs, if an employee exhibits symptoms of exposure, or if other site conditions warrant further medical surveillance.

9.2 Medical Data Sheet

A medical data sheet is provided in **Appendix D**. This medical data sheet is voluntary and should be completed by all on-site personnel and will be maintained at the site. Where possible, this medical data sheet will accompany the personnel needing medical assistance. The medical data sheet will be maintained in a secure location, treated as confidential, and used only on a need-to-know basis.

10.0 SAFETY CONSIDERATIONS

10.1 General Health and Safety Work Practices

A list of general health and safety work practices is included as an included in **Appendix E**. The work rules will be posted in a conspicuous location at the site.

10.2 The Buddy System

At a minimum, employees shall work in groups of two in such a manner that they can observe each other and maintain line-of-sight for each employee within the work group. The purpose of the buddy system is to provide rapid assistance to employees in the event of an emergency.

10.3 Sample Handling

Personnel responsible for the handling of samples should wear the prescribed level of protection. Samples should be identified as to their hazard and packaged as to prevent spillage or breakage. Sample containers shall be decontaminated in the CRZ or EZ before entering a clean Support Zone area. Any unusual sample conditions, odors, or real-time readings should be noted. Laboratory personnel should be advised of sample hazard level and the potential contaminants present. This can be accomplished by a phone call to the lab coordinator and/or including a written statement with the samples reviewing lab safety procedures in handling, in order to assure that the practices are appropriate for the suspected contaminants in the sample.

10.4 Drill Rigs

When conducting drilling activities, the opportunity of encountering fire and explosion hazards exists from underground utilities and gases. The locations of underground utilities will be verified prior to performing any intrusive activities. Additionally, because of the inherently hazardous nature of drilling operations, safety and accident prevention are crucial when drilling operations are performed. Most drilling accidents occur as a direct result of lack of training and supervision, improper handling of equipment, and unsafe work practices. Hazards include: assembling and disassembling rigs, rotary and auger drilling, and grouting. The drilling contractor shall perform drilling in accordance with its own Health & Safety Program for Drill Rig Safety.

10.4.1 Safety During Drilling Operations

- Safety requires the attention and cooperation of every worker and site visitor.

- Do not drive the drill rig from hole to hole with the mast (derrick) in the raised position.

- Before raising the mast (derrick), look up to check for overhead obstructions.

- Maintain a minimum of 15 feet clearance from all overhead electric lines.

- Before raising the mast (derrick), all drill rig personnel (with the exception of the operator) and visitors shall be cleared from the areas immediately to the rear and the sides of the mast. All drill rig personnel and visitors shall be informed that the mast is being raised prior to raising it.

- Before the mast (derrick) of a drill rig is raised and drilling is commenced, the drill rig must first be leveled and stabilized with leveling jacks and/or solid cribbing. Lower the mast (derrick) only when the leveling jacks are down and do not raise the leveling jack pads until the mast (derrick) is lowered completely.

- The operator of a drill rig shall only operate a drill rig from the position of the controls.

- Throwing or dropping tools shall not be permitted. All tools shall be carefully passed by hand between personnel or a hoist line shall be used.

- Do not consume alcoholic beverages or other depressants or chemical stimulants prior to starting work on a drill rig or while on the job.

- All unattended boreholes must be adequately covered or otherwise protected to prevent drill rig personnel, site visitors, or animals form stepping or falling into the hole.

- Terminate drilling operations during an electrical storm and move the entire crew away from the drill rig.

10.5 Excavation

Although only the digging of small test pits is anticipated for the scope of this project, excavations will be conducted in accordance with the requirements contained in 29 CFR 1926, Subpart P-Excavations. It provides for the designation of a "Competent Person" and general requirements for safe excavating practices. The program also incorporates company standards for the monitoring of potentially hazardous atmospheres; protection from water hazards; analyzing and maintaining the stability of adjacent structures; daily competent person inspections; soil classification; sloping and benching; protective systems; and training.

The Competent Person will be the FTL or other designee with appropriate training and experience. The Competent Person will be assisted in his/her duties by other technical personnel such as the HSM, geologists, structural engineers and soils engineers.

No entry into test pit excavations will be allowed for this phase of the project.

11.0 DISPOSAL PROCEDURES

All discarded materials, waste materials or other objects shall be handled in such a way as to preclude the potential for spreading contamination, creating a sanitary hazard or causing litter to be left on site.

All potentially contaminated materials, e.g., clothing, gloves, etc., will be bagged or drummed as necessary, labeled and segregated for disposal. All non-contaminated materials will be collected and bagged for appropriate disposal as non-hazardous solid waste. Additional waste disposal procedures may be developed as applicable.

12.0 EMERGENCY RESPONSE PLAN

This section establishes procedures and provides information for use during a project emergency. Emergencies happen unexpectedly and quickly, and require an immediate response; therefore, contingency planning and advanced training of staff is essential. Specific elements of emergency support procedures which are addressed in the following subsections include communications, local emergency support units, preparation for medical emergencies, first aid for injuries incurred on site, record keeping, and emergency site evacuation procedures.

12.1 Responsibilities

12.1.1 Health and Safety Manager (HSM)

The HSM oversees and approves the Emergency Response/Contingency Plan and performs audits to determine that the plan is in effect and that all pre-emergency requirements are met. The HSM acts as a liaison to applicable regulatory agencies and notifies OSHA of reportable accidents.

12.1.2 Field Team Leader/Site Health and Safety Officer (FOL/HSO)

The FTL/SHSO is responsible for ensuring that all personnel are evacuated safely and that machinery and processes are shut down or stabilized in the event of a stop work order or evacuation. The FTL/SHSO is required to immediately notify the HSM of any fatalities or catastrophes (three or more workers injured and hospitalized) so that the HSM can ensure that OSHA is notified within the required time frame. The HSM will be notified of all OSHA recordable injuries, fires, spills, releases or equipment damage in excess of $500 within 24 hours.

12.1.3 Emergency Coordinator

The Emergency Coordinator for the project is the FTL/SHSO.

The Emergency Coordinator shall make contact with Local Emergency Response personnel prior to beginning work on site. In these contacts the emergency coordinator will inform interested parties about the nature and duration of work expected on the site and the type of contaminants and possible health or safety effects of emergencies involving these contaminants. The emergency coordinator will locate emergency phone numbers and identify hospital routes prior to beginning work on site. The emergency coordinator shall make necessary arrangements to be prepared for any emergencies that could occur.

The Emergency Coordinator will implement the Emergency Response/Contingency Plan whenever conditions at the site warrant such action.

12.1.4 Site Personnel

Site personnel are responsible for knowing the Emergency Response/Contingency Plan and the procedures contained herein. Personnel are expected to notify the Emergency Coordinator of situations that could constitute a site emergency.

12.2 Communication

A variety of communication systems may be utilized during emergency situations. These are discussed in the following sections.

12.2.1 Hand Signals

Downrange field teams will employ hand signals where necessary for communication during emergency situations. Hand signals are found in Section 8.3.

12.2.2 Field Radios and Cell Phones

PWGC field personnel are provided Nextel cellular phones with telephone and two-way radio capabilities for site communication and emergency use.

12.3 Local Emergency Support Units

A route map from the site to the nearest hospital can be found in **Appendix F**. This map will be placed with the above emergency telephone numbers in all on-site vehicles.

12.4 Pre-Emergency Planning

PWGC will communicate directly with administrative personnel from the emergency room at the hospital to determine whether the hospital has the facilities and personnel needed to treat cases of trauma resulting from exposure to any of the contaminants expected to be found on the site. Instructions for finding the hospital will be posted conspicuously in the site office and in each site vehicle.

Before the field activities begin, the local emergency response personnel will be notified of the schedule for field activities and about the materials that are thought to exist on the site so that they will be able to respond quickly and effectively in the event of a fire, explosion, or other emergency. Before fieldwork on the site commences, each person who will be working there or observing the operations will complete a medical data sheet (**Appendix D**). These data sheets will be filled out during site-specific training and will be kept on the site.

In the event of an incident where a team member becomes exposed or suffers from an acute symptom of exposure to site materials and has to be taken to a hospital, a copy of his/her medical data sheet will be presented to the attending physician.

Table 12-1
Emergency Telephone Numbers

Contact	Firm or Agency	Telephone Number
Police		911
Fire		911
Hospital	Central Suffolk	(631) 548-6000
Ambulance		911
Project Manager/Health and Safety Manager	Andrew Lockwood PWGC	(631) 589-6353
Health & Safety Officer	Rocky Wenskus PWGC	(631) 589-6353
NYSDEC Site Contact	Heather Bishop	(518) 402-9625
Poison Control Center		(800) 962-1253
Chemtrec		(800) 424-9300
SCDHS Site Contact	Jim Meyers	(631) 854-2529

12.5 Emergency Medical Treatment

The procedures and rules in this HASP are designed to prevent employee injury. However, should an injury occur, no matter how slight, it will be reported to the FTL/SHSO immediately. First aid equipment will be available on site at the following locations:

First Aid Kit: Support Zone (or designated by FTL/SHSO upon arrival)
Emergency Eye Wash: Support Zone (or designated by FTL/SHSO upon arrival)

During site-specific training, project personnel will be informed of the location of the first aid station(s) that has been set up. Unless they are in immediate danger, severely injured persons will not be moved until paramedics can attend to them. Some injuries, such as severe cuts and lacerations or burns, may require immediate treatment. Any first aid instructions that can be obtained from doctors or paramedics, before an emergency-response squad arrives at the site or before the injured person can be transported to the hospital, will be followed closely.

There will be at least two people with current First Aid and CPR certification on each active work shift. When personnel are transported to the hospital, the FTL/SHSO will provide a copy of the Medical Data Sheet to the paramedics and treating physician.

Only in non-emergency situations will an injured person be transported to the hospital by means other than an ambulance. **A map and directions to the hospital can be found in Appendix F.**

12.6 Emergency Site Evacuation Routes and Procedures

In order to mobilize the manpower resources and equipment necessary to cope with a fire or other emergency, a clear chain of authority will be established. The EC will take charge of all emergency response activities and dictate the procedures that will be followed for the duration of the emergency. The EC will report immediately to the scene of the emergency, assess the seriousness of the situation, and direct whatever efforts are necessary until the emergency response units arrive. At his/her discretion, the EC also may order the closure of the site for an indefinite period.

All project personnel will be instructed on proper emergency response procedures and locations of emergency telephone numbers during the initial site safety meeting. If an emergency occurs, including but not limited to fire, explosion or significant release of toxic gas into the atmosphere, an air horn will be sounded on the site. The horn will sound continuously for one blast, signaling that immediate evacuation of all personnel is necessary due to an immediate or impending danger. All heavy equipment will be shut down and all personnel will evacuate the work areas and assemble at the evacuation meeting point, which will be determined upon arrival at the site by the FTL/SHSO, prior to work beginning. This will then be conveyed to all crew members during the site-specific briefing.

The EC will give directions for implementing whatever actions are necessary. Any project team member may be assigned to be in charge of emergency communications during an emergency. He/she will attend the site telephone specified by the EC from the time the alarm sounds until the emergency has ended.

After sounding the alarm and initiating emergency response procedures, the EC will check and verify that access roads are not obstructed. If traffic control is necessary, as in the event of a fire or explosion, a project team member, who has been trained in these procedures and designated at the site safety meeting, will take over these duties until local police and fire fighters arrive.

The EC will remain at the site to provide any assistance requested by emergency-response squads as they arrive to deal with the situation. A map showing evacuation routes, meeting places and the location of emergency equipment will be posted in all trailers and used during site-specific training.

12.7 Fire Prevention and Protection

In the event of a fire or explosion, procedures will include immediately evacuating the site (air horn will sound for a single continuous blast), and notification of local fire and police departments. No personnel will fight a fire beyond the stage where it can be put out with a portable extinguisher (incipient stage).

12.7.1 Fire Prevention

Adhering to the following precautions will prevent fires:

- Good housekeeping and storage of materials;
- Storage of flammable liquids and gases away from oxidizers;
- No smoking in the exclusion zone or any work area;
- No hot work without a properly executed hot work permit;
- Shutting off engines to refuel;
- Grounding and bonding metal containers during transfer of flammable liquids;
- Use of UL approved flammable storage cans;
- Fire extinguishers rated at least 10 pounds ABC located on all heavy equipment, in all trailers and near all hot work activities; and
- Monthly inspections of all fire extinguishers.

12.8 Overt Chemical Exposure

The following are standard procedures to treat chemical exposures. Other, specific procedures detailed on the Material Safety Data Sheet or recommended by the Corporate Medical Consultant will be followed, when necessary.

SKIN AND EYE CONTACT: Use copious amounts of soap and water. Wash/rinse affected areas thoroughly, and then provide appropriate medical attention. Eyes should be rinsed for 15 minutes upon chemical contamination. Skin should also be rinsed for 15 minutes if contact with caustics, acids or hydrogen peroxide occurs.

INHALATION: Move to fresh air. Decontaminate and transport to hospital or local medical provider.

INGESTION: Decontaminate and transport to emergency medical facility.
PUNCTURE WOUND OR LACERATION: Decontaminate and transport to emergency medical facility.

12.9 Decontamination during Medical Emergencies

If emergency life-saving first aid and/or medical treatment is required, normal decontamination procedures may need to be abbreviated or postponed. The FTL/SHSO or designee will accompany contaminated victims to the medical facility to advise on matters involving decontamination, when necessary. The outer garments can be removed if they do not cause delays, interfere with treatment or aggravate the problem. Respiratory equipment must always be removed. Protective clothing can be cut away. If the outer contaminated garments cannot be safely removed on-site, a plastic barrier placed between the injured individual and clean surfaces should be used to help prevent contamination of the inside of ambulances and/or medical personnel. Outer garments may then be removed at the medical facility. No attempt will be made to wash or rinse the victim if his/her injuries are life threatening, unless it is known that the individual has been contaminated with an extremely toxic or corrosive material which could also cause severe injury or loss of life to emergency response personnel. For minor medical problems or injuries, the normal decontamination procedures will be followed.

12.10 Accident/Incident Reporting

As soon as first aid and/or emergency response needs have been met, the following parties are to be contacted by telephone:

- Health and Safety Manager;
- Project Manager; and
- The employer of any injured worker who is <u>not</u> a PWGC employee.

Written confirmation of verbal reports are to be completed by the FTL/SHSO using the Incident Report Form and submitted within 24 hours. The incident report and investigation form is found in **Appendix G**. If the employee involved is not a PWGC employee, his employer will receive a copy of the report.

12.11 Adverse Weather Conditions

In the event of adverse weather conditions, the FTL/SHSO will determine if work can continue without potentially risking the safety of all field workers. Some of the items to be considered prior to determining if work should continue are:

- Potential for heat stress and heat-related injuries;
- Potential for cold stress and cold-related injuries;
- Treacherous weather-related working conditions (hail, rain, snow, ice, high winds);
- Limited visibility (fog);
- Potential for electrical storms;
- Earthquakes; and
- Other major incidents.

Site activities will be limited to daylight hours, or when suitable artificial light is provided, and acceptable weather conditions prevail. The FTL/SHSO will determine the need to cease field operations or observe daily weather reports and evacuate, if necessary, in case of severe inclement weather conditions.

12.12 Spill Control and Response

All small hazardous spills/environmental releases shall be contained as close to the source as possible. Whenever possible, the MSDS will be consulted to assist in determining the best means of containment and cleanup. For small spills, sorbent materials such as sand, sawdust or commercial sorbents should be placed directly on the substance to contain the spill and aid recovery. Any acid spills should be diluted or neutralized carefully prior to attempting recovery. Berms of earthen or sorbent materials can be used to contain the leading edge of the spills. Drains or drainage areas should be blocked. All spill containment materials will be properly disposed. An exclusion zone of 50 to 100 feet around the spill area should be established depending on the size of the spill. The following seven steps should be taken by the Emergency Coordinator:

- Determine the nature, identity and amounts of major spill components;
- Make sure all unnecessary persons are removed from the spill area;
- Notify appropriate response teams and authorities;
- Use proper PPE in consultation with the FTL/SHSO;
- If a flammable liquid, gas or vapor is involved, remove all ignition sources and use non-sparking and/or explosive proof equipment to contain or clean up the spill (diesel only vehicles, air operated pumps, etc.);
- If possible, try to stop the leak with appropriate material; and,
- Remove all surrounding materials that can react or compound with the spill.

12.13 Emergency Equipment

The following minimum emergency equipment shall be kept and maintained on-site:

- Industrial first aid kit;
- Burn kit and portable eye washes (one per field team);
- Fire extinguishers (one per work area); and
- Absorbent material /spill kit.

13.0 TRAINING

13.1 General Health and Safety Training

In accordance with PWGC corporate policy, and pursuant to 29 CFR 1910.120, hazardous waste site workers shall, at the time of job assignment, have received a minimum of 40 hours of initial health and safety training for hazardous waste site operations unless otherwise noted in the above reference. At a minimum, the training shall have consisted of instruction in the topics outlined in the standard. Personnel who have not met the requirements for initial training shall not be allowed to work in any site activities in which they may be exposed to hazards (chemical or physical).

13.1.1 Three Day Supervised On the Job Training

In addition to the required initial hazardous waste operations training, each employee shall have received three days of directly supervised on-the-job training. This training will address the duties the employees are expected to perform.

13.2 Annual Eight-Hour Refresher Training

Annual eight-hour refresher training will be required of all hazardous waste site field personnel in order to maintain their qualifications for fieldwork. The training will cover a review of 1910.120 requirements and related company programs and procedures.

13.3 Site-Specific Training

Prior to commencement of field activities, all field personnel assigned to the project will have completed training that will specifically address the activities, procedures, monitoring, and equipment used in the site operations. It will include site and facility layout, hazards and emergency services at the site, and will highlight all provisions contained within this HASP. This training will also allow field workers to clarify anything they do not understand and to reinforce their responsibilities regarding safety and operations for their particular activity.

13.4 On-Site Safety Briefings

Project personnel and visitors will be given on-site health and safety briefings daily by the FTL/SHSO to assist site personnel in safely conducting their work activities. A copy of the Daily Briefing Sign-In Sheet is contained in **Appendix H**. The briefings will include information on new operations to be conducted, changes in work practices or changes in the site's environmental conditions, as well as periodic reinforcement of previously discussed topics. The briefings will also provide a forum to facilitate conformance with safety requirements and to identify performance deficiencies related to safety during daily activities or as a result of safety inspections. The meetings will also be an opportunity to periodically update the crews on monitoring results. Prior to starting any new activity, a training session using the Activity Hazard Analysis will be held for crew members involved in the activity.

13.5 First Aid and CPR

The HSM will identify those individuals requiring first aid and CPR training to ensure that emergency medical treatment is available during field activities. It is anticipated that a minimum of one field person on-site at any one time will have first aid and CPR training. The training will be consistent with the requirements of the American Red Cross Association or American Heart Association. If none are available on-site, then the HSM shall be notified.

13.6 Supervisory Training

Supervisors and health and safety personnel shall have completed an additional eight hours of specialized training in accordance with 29 CFR 1910.120.

14.0 LOGS, REPORTS AND RECORDKEEPING

Changes to the HASP will be documented in the Health and Safety log book and as appropriate, the HSM and/or PM will be notified. Daily tailgate meetings will be documented in the H&S log book as well as personnel on-site.

14.1 Medical and Training Records

Copies or verification of training (40-hour, 8-hour, supervisor, site-specific training and documentation of three day OJT) and medical clearance for hazardous waste site work and respirator use will be maintained on-site. Records for all subcontractor employees will also be kept on-site.

14.2 Incident Report and Investigation Form

The incident report and investigation form is to be completed for all accidents and incidents, including near misses. The form can be found in **Appendix G**.

14.3 Health and Safety Logbooks

The FTL/SHSO will maintain a logbook during site work. The daily site conditions, personnel, monitoring results and significant events will be recorded. The original logbooks will become part of the exposure records file.

15.0 FIELD PERSONNEL REVIEW

This form serves as documentation that field personnel have read, or have been informed of, and understand the provisions of the HASP. It is maintained on site by the FTL/SHSO as a project record. Each field team member shall sign this section after site-specific training is completed and before being permitted to work on site.

I have read, or have been informed of, the Health and Safety Plan and understand the information presented. I will comply with the provisions contained therein.

Name (Print and Sign)	***Date***

APPENDIX A

MATERIAL SAFETY DATA SHEETS

MATERIAL SAFETY DATA SHEET

SRM Supplier: **National Institute of Standards and Technology**
Standard Reference Materials Program
100 Bureau Drive, Mail Stop 2321
Gaithersburg, Maryland 20899

SRM Number: 3079
MSDS Number: 3079
SRM Name: Aroclor 1254 in Transformer Oil
Date of Issue: 23 May 2003

MSDS Coordinator: Carmen S. Davis
Phone: (301) 975-6776
ChemTrec: 1-800-424-9300

FAX: (301) 926-4751
E-mail: SRMMSDS@nist.gov

SECTION I. MATERIAL IDENTIFICATION

Material Name: Aroclor 1254 in Transformer Oil

Description: SRM 3079 consists of five 2-mL ampoules, each containing approximately 1.2 mL of a solution of aroclor 1254 in transformer oil.

Other Designations: **Aroclor 1254** (PCB 1254; polychlornated biphenyl (aroclor 1254); chlorodiphenyl (54 %) Cl) in **Transformer Oil** (hydrotreated light napthenic distilltate; hydraulic petroleum oil)

Name	Chemical Formula	CAS Registry Number
Transformer Oil	complex mixture	64742-53-6
Aroclor 1254	complex molecule	11097-69-1

DOT Classification: Not Hazardous under DOT regulations.

Manufacturer/Supplier: Available from a number of suppliers

SECTION II. HAZARDOUS INGREDIENTS

Hazardous Components	Nominal Concentration (%)	Exposure Limits and Toxicity Data
Transformer Oil	99	ACGIH TLV-TWA: 5 mg/m^3 (mineral oil mist)
		Rat, Oral: LD_{50}: greater than 5 g/kg body weight
		Rabbit, Acute Dermal: LD_{50}: greater than 5 g/kg body weight
Aroclor 1254	1	ACGIH TWA: 0.5 mg/m^3 (skin)
		OSHA TWA: 0.5 mg/m^3 (skin)
		Rat, Oral: LD_{50}: 1 010 mg/kg
		Rat, Intravenous: LD_{50}: 358 mg/kg

SECTION III. PHYSICAL/CHEMICAL CHARACTERISTICS

Transformer Oil	Aroclor 1254
Appearance and Odor: a clear liquid with a mild, bland petroleum odor	**Appearance and Odor:** a colorless to yellow liquid with a distinct odor
Relative Molecular Mass: ~ 255	**Relative Molecular Mass:** complex molecule
Specific Gravity: 0.88 g/mL	**Density (water = 1):** 1.50
Boiling Point: ~ 238 °C	**Boiling Point:** 365 °C to 390 °C
Freezing Point: not available	**Freezing Point:** 10 °C
Vapor Pressure (@ 20 °C): < 0.01 mm Hg	**Vapor Pressure:** negligible
Evaporation Rate: not available	**Evaporation Rate (butyl acetate = 1):** not available
Viscosity (@ 40 °C): 12.0 cSt	**Viscosity (@ 20 °C):** 140 to 2500
Water Solubility: insoluble	**Water Solubility:** very slightly soluble
Solvent Solubility: not available	**Solvent Solubility:** soluble in oils, organic solvents

NOTE: The physical and chemical data provided are for the pure components. Physical and chemical data for this transformer oil/aroclor 1254 solution **DO NOT** exist. The actual behavior of the solution may differ from the individual components.

SECTION IV. FIRE AND EXPLOSION HAZARD DATA

Transformer Oil
Flash Point: 146 °C **Method Used:** COC **Autoignition Temperature:** > 204 °C

Flammability Limits in Air (Volume %): **UPPER:** 7
LOWER: 0.9

Aroclor 1254
Flash Point: 222 °C **Method Used:** Closed Cup **Autoignition Temperature:** Not Available

Flammability Limits in Air (Volume %): **UPPER:** Not Available
LOWER: Not Available

Unusual Fire and Explosion Hazards: Transformer oil is a slight fire hazard. Heating this material greatly increases the fire hazard. Thermal oxidative degradation may also yield hazardous gases.

Aroclor 1254 is a slight fire hazard.

Extinguishing Media: Use a dry chemical powder, carbon dioxide, or foam. Use a water spray to cool fire exposed containers only. **DO NOT** use a forced water stream directly into an oil fire as this will only scatter the fire; use a smothering technique for extinguishing the fire of this combustible material.

Special Fire Procedures: Fire fighters should wear a self-contained breathing apparatus (SCBA) with a full face piece in the pressure demand or positive mode and other protective clothing.

SECTION V. REACTIVITY DATA

Stability: **X** **Stable** _____ **Unstable**

Conditions to Avoid: Avoid contact with heat, sparks, flames, or other sources of ignition. Avoid inhalation of vapors or combustion by-products. Avoid contact with the skin. **DO NOT** allow the material to contaminate water sources.

Incompatibility (Materials to Avoid): Transformer oil is a fire and explosion hazard when exposed to strong oxidizing agents.

Aroclor 1254 is incompatible with acid halides, chlorine, oxides of carbon, and halogenated compounds.

See Section IV: *Unusual Fire and Explosion Hazards*

Hazardous Decomposition or Byproducts: Transformer oil will produce fumes, smoke, carbon monoxide, sulfur oxides, and aldehydes along with other decomposition products can be produced with incomplete combustion.

Thermal decomposition products of aroclor 1254 may include acid halides, chlorine, oxides of carbon, and halogenated compounds.

Hazardous Polymerization _____ **Will Occur** **X** **Will Not Occur**

SECTION VI. HEALTH HAZARD DATA

Route of Entry: **X** **Inhalation** **X** **Skin** **X** **Ingestion**

Transformer Oil: The vapor pressure of this material is very low therefore, vapor inhalation under ambient conditions is normally not a problem. However, health studies have shown that many petroleum hydrocarbons and synthetic lubricants pose potential human health risks which may vary from person to person. As a precaution, exposure to liquids, vapors, mists, or fumes should be minimized.

Prolonged or repeated skin contact with this product may remove skin oils possibly leading to irritation and dermatitis; contact with the eyes may cause eye irritation. Repeated application of mildly hydrotreated oils to the skin of mice induced a moderate incidence of skin tumors. This product has a low order of oral toxicity, but minute amounts aspirated into the lungs during ingestion or vomiting may cause mild to severe pulmonary injury and possibly death.

PCB 1254 (Aroclor): PCBs show high levels of bio-accumulation in the fatty tissues with very slow metabolism, especially for pentachloride $(Cl)_{5\ 1q}$ compounds and above. The skin lesions consist of small pimples and, in the initial stages, dark pigmentation of the exposed pores. In the later stages, blackheads and pustules develop. The PCBs are potent liver toxins that can be absorbed through the skin in hazardous amounts without immediately discernible pain or discomfort. This liver toxicity of chlorinated biphenyls appears to be increased if there is exposure to carbon tetrachloride at the same time. Where liver damage is extensive, the patient may become comatose and die. The higher the chlorine content of the diphenyl compound, the more probable it is toxic. Acute and chronic ingestion studies of aroclor 1254, involving rats, produced decreased motor activity, severe body weight loss, and deaths.

Medical Conditions Generally Aggravated by Exposure: Methanol may affect eye disorders, kidney disorders, skin disorders, and allergies. Aroclor 1242 may affect liver disorders, skin disorders, and allergies.

Listed as a Carcinogen/Potential Carcinogen (Transformer Oil):

	Yes	No
In the National Toxicology Program (NTP) Report on Carcinogens		X
In the International Agency for Research on Cancer (IARC) Monographs	X	
By the Occupational Safety and Health Administration (OSHA)		X

Listed as a Carcinogen/Potential Carcinogen (Aroclor 1254):

	Yes	No
In the National Toxicology Program (NTP) Report on Carcinogens	X	
In the International Agency for Research on Cancer (IARC) Monographs	X	
By the Occupational Safety and Health Administration (OSHA)		X

EMERGENCY AND FIRST AID PROCEDURES:

Skin Contact: Remove contaminated shoes and clothing. Rinse affected area with large amounts of water followed by washing the area with soap and water. Watch for chemical irritations and treat them accordingly. Obtain medical assistance if necessary.

Eye Contact: Immediately flush eyes, including under the eyelids, with copious amounts of water for at least 15 minutes. Obtain medical assistance.

Inhalation: If inhaled, move the victim to fresh air. If breathing is difficult, give oxygen; if the victim is not breathing, give artificial respiration. Obtain medical assistance if necessary.

Ingestion: If ingested, wash out mouth with water. Obtain medical assistance immediately.

TARGET ORGAN(S) OF ATTACK: **Transformer Oil:** skin and upper respiratory tract (URT)
Aroclor 1254: liver

SECTION VII. PRECAUTIONS FOR SAFE HANDLING AND USE

Steps to be Taken in Case Material Is Released or Spilled: Notify safety personnel of major spills and/or leaks. Evacuate nonessential personnel. Absorb small spills with sand or other absorbent material and place into containers for disposal. **DO NOT** flush into a sewer. Keep out of watersheds and waterways.

Waste Disposal: Follow all federal, state, and local laws governing disposal.

Handling and Storage: Persons handling this material must wear protective eyewear, clothing, and gloves to prevent contact with this material.

> **NOTE:** Contact lenses pose a special problem; soft lenses may absorb irritants and all lenses concentrate them. **DO NOT** wear contact lenses in the laboratory.

Protect containers from physical damage. Sealed ampoules, as received, should be stored in the dark at temperatures lower than 30 °C. Keep material in a well-ventilated area away from incompatible materials.

SECTION VIII. SOURCE DATA/OTHER COMMENTS

Sources: MDL Information Systems, Inc., MSDS *Transformer Oil*, 16 December 2002.
MDL Information Systems, Inc., MSDS *Aroclor 1254*, 22 March 2001.
Merck Index, 11th Ed., 1989.
The Sigma Aldrich Library of Chemical Safety Data, Ed. II, 1988.

MATERIAL SAFETY DATA SHEET

SRM Supplier: **National Institute of Standards and Technology**
Standard Reference Materials Program
100 Bureau Drive, Mail Stop 2321
Gaithersburg, Maryland 20899

SRM Number: 3080
MSDS Number: 3080
SRM Name: Aroclor 1260 in Transformer Oil
Date of Issue: 23 May 2003

MSDS Coordinator: Carmen S. Davis
Phone: (301) 975-6776
ChemTrec: 1-800-424-9300

FAX: (301) 926-4751
E-mail: SRMMSDS@nist.gov

SECTION I. MATERIAL IDENTIFICATION

Material Name: Aroclor 1260 in Transformer Oil

Description: SRM 3080 consists of five 2-mL ampoules, each containing approximately 1.2 mL of a solution of aroclor 1260 in transformer oil.

Other Designations: **Aroclor 1260** (PCB 1260; polychlornated biphenyl (aroclor 1260); chlorodiphenyl (60 % Cl) in **Transformer Oil** (hydrotreated light napthenic distilltate; hydraulic petroleum oil)

Name	Chemical Formula	CAS Registry Number
Transformer Oil	complex mixture	64742-53-6
Aroclor 1260	complex molecule	11096-82-5

DOT Classification: Not Hazardous under DOT regulations.

Manufacturer/Supplier: Available from a number of suppliers

SECTION II. HAZARDOUS INGREDIENTS

Hazardous Components	Nominal Concentration (%)	Exposure Limits and Toxicity Data
Transformer Oil	99	ACGIH TLV-TWA: 5 mg/m^3 (mineral oil mist)
		Rat, Oral: LD_{50}: greater than 5 g/kg body weight
		Rabbit, Acute Dermal: LD_{50}: greater than 5 g/kg body weight
Aroclor 1260	1	NIOSH TWA: 1 μg/m^3 (10 hours)
		Rat, Oral: LD_{50}: 1315 mg/kg
		Rabbit, Skin: LD_{LO}: 2 g/kg

SECTION III. PHYSICAL/CHEMICAL CHARACTERISTICS

Transformer Oil	Aroclor 1260
Appearance and Odor: a clear liquid with a mild, bland petroleum odor	**Appearance and Odor:** a yellow solid; odor not available
Relative Molecular Mass: ~ 255	**Relative Molecular Mass:** complex molecule
Specific Gravity: 0.88 g/mL	**Density (water = 1):** 1.58
Boiling Point: ~ 238 °C	**Boiling Point:** 385 °C to 420 °C
Freezing Point: not available	**Freezing Point:** not available
Vapor Pressure (@ 20 °C): < 0.01 mm Hg	**Vapor Pressure (@ 20 °C):** negligible
Evaporation Rate: not available	**Evaporation Rate:** not available
Viscosity (@ 40 °C): 12.0 cSt	**Viscosity:** not applicable
Water Solubility: insoluble	**Water Solubility:** very slightly soluble
Solvent Solubility: not available	**Solvent Solubility:** soluble in oils and organic solvents

NOTE: The physical and chemical data provided are for the pure components. Physical and chemical data for this transformer oil/aroclor 1260 solution **DO NOT** exist. The actual behavior of the solution may differ from the individual components.

SECTION IV. FIRE AND EXPLOSION HAZARD DATA

Transformer Oil
Flash Point: 146 °C **Method Used:** COC **Autoignition Temperature:** > 204 °C

Flammability Limits in Air (Volume %): **UPPER:** 7
LOWER: 0.9

Aroclor 1260
Flash Point: >385 °C **Method Used:** Not Available **Autoignition Temperature:** Not Available

Flammability Limits in Air (Volume %): **UPPER:** Not Available
LOWER: Not Available

Unusual Fire and Explosion Hazards: Transformer oil is a slight fire hazard. Heating this material greatly increases the fire hazard. Thermal oxidative degradation may also yield hazardous gases.

Aroclor 1260 is a slight fire hazard.

Extinguishing Media: Use a dry chemical powder, carbon dioxide, or foam. Use a water spray to cool fire exposed containers only. **DO NOT** use a forced water stream directly into an oil fire as this will only scatter the fire; use a smothering technique for extinguishing the fire of this combustible material.

Special Fire Procedures: Fire fighters should wear a self-contained breathing apparatus (SCBA) with a full face piece in the pressure demand or positive mode and other protective clothing.

SECTION V. REACTIVITY DATA

Stability: **X** **Stable** _____ **Unstable**

Conditions to Avoid: Avoid contact with heat, sparks, flames, or other sources of ignition. Avoid inhalation of vapors or combustion by-products. Avoid contact with the skin. **DO NOT** allow the material to contaminate water sources.

Incompatibility (Materials to Avoid): Transformer oil is a fire and explosion hazard when exposed to strong oxidizing agents.

Aroclor 1260 is incompatible with oxidizing materials and combustible materials.

See Section IV**:** *Unusual Fire and Explosion Hazards*

Hazardous Decomposition or Byproducts: Transformer oil will produce fumes, smoke, carbon monoxide, sulfur oxides, and aldehydes along with other decomposition products can be produced with incomplete combustion.

Thermal decomposition products of aroclor 1260 may include acid halides, chlorine, oxides of carbon, and halogenated compounds.

Hazardous Polymerization _____ **Will Occur** **X** **Will Not Occur**

SECTION VI. HEALTH HAZARD DATA

Route of Entry: **X** **Inhalation** **X** **Skin** **X** **Ingestion**

Transformer Oil: The vapor pressure of this material is very low therefore, vapor inhalation under ambient conditions is normally not a problem. However, health studies have shown that many petroleum hydrocarbons and synthetic lubricants pose potential human health risks which may vary from person to person. As a precaution, exposure to liquids, vapors, mists, or fumes should be minimized.

Prolonged or repeated skin contact with this product may remove skin oils possibly leading to irritation and dermatitis; contact with the eyes may cause eye irritation. Repeated application of mildly hydrotreated oils to the skin of mice induced a moderate incidence of skin tumors. This product has a low order of oral toxicity, but minute amounts aspirated into the lungs during ingestion or vomiting may cause mild to severe pulmonary injury and possibly death.

PCB 1260 (Aroclor): PCBs show high levels of bio-accumulation in the fatty tissues with very slow metabolism, especially for pentachloride $(Cl)_5$ compounds and above. The skin lesions consist of small pimples and, in the initial stages, dark pigmentation of the exposed pores. In the later stages, blackheads and pustules develop. The PCBs are potent liver toxins that can be absorbed through the skin in hazardous amounts without immediately discernible pain or discomfort. This liver toxicity of chlorinated biphenyls appears to be increased if there is exposure to carbon tetrachloride at the same time. Where liver damage is extensive, the patient may become comatose and die. The higher the chlorine content of the diphenyl compound, the more probable it is toxic.

Medical Conditions Generally Aggravated by Exposure: Methanol may affect eye disorders, kidney disorders, skin disorders, and allergies. Aroclor 1260 may affect liver disorders, skin disorders, and allergies.

Listed as a Carcinogen/Potential Carcinogen (Transformer Oil):

	Yes	No
In the National Toxicology Program (NTP) Report on Carcinogens		X
In the International Agency for Research on Cancer (IARC) Monographs	X	
By the Occupational Safety and Health Administration (OSHA)		X

Listed as a Carcinogen/Potential Carcinogen (Aroclor 1260):

	Yes	No
In the National Toxicology Program (NTP) Report on Carcinogens	X	
In the International Agency for Research on Cancer (IARC) Monographs	X	
By the Occupational Safety and Health Administration (OSHA)		X

EMERGENCY AND FIRST AID PROCEDURES:

Skin Contact: Remove contaminated shoes and clothing. Rinse affected area with large amounts of water followed by washing the area with soap and water. Watch for chemical irritations and treat them accordingly. Obtain medical assistance if necessary.

Eye Contact: Immediately flush eyes, including under the eyelids, with copious amounts of water for at least 15 minutes. Obtain medical assistance.

Inhalation: If inhaled, move the victim to fresh air. If breathing is difficult, give oxygen; if the victim is not breathing, give artificial respiration. Obtain medical assistance if necessary.

Ingestion: If ingested, wash out mouth with water. Obtain medical assistance immediately.

TARGET ORGAN(S) OF ATTACK: **Transformer Oil:** skin and upper respiratory tract (URT)
Aroclor 1260: liver

SECTION VII. PRECAUTIONS FOR SAFE HANDLING AND USE

Steps to be Taken in Case Material Is Released or Spilled: Notify safety personnel of major spills and/or leaks. Evacuate nonessential personnel. Absorb small spills with sand or other absorbent material and place into containers for disposal. **DO NOT** flush into a sewer. Keep out of watersheds and waterways.

Waste Disposal: Follow all federal, state, and local laws governing disposal.

Handling and Storage: Persons handling this material must wear protective eyewear, clothing, and gloves to prevent contact with this material.

> **NOTE:** Contact lenses pose a special problem; soft lenses may absorb irritants and all lenses concentrate them. **DO NOT** wear contact lenses in the laboratory.

Protect containers from physical damage. Sealed ampoules, as received, should be stored in the dark at temperatures lower than 30 °C. Keep material in a well-ventilated area away from incompatible materials.

SECTION VIII. SOURCE DATA/OTHER COMMENTS

Sources:
MDL Information Systems, Inc., MSDS *Transformer Oil*, 16 December 2002.
MDL Information Systems, Inc., MSDS *Aroclor 1260*, 16 December 2002.
Merck Index, 11th Ed., 1989.
The Sigma Aldrich Library of Chemical Safety Data, Ed. II, 1988.

DIELDRIN

0787
March 1998

CAS No: 60-57-1
RTECS No: IO1750000
UN No: 2761
EC No: 602-049-00-9

1,2,3,4,10,10-Hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-endo-1,4-exo-5,8-dimethanonaphthalene
3,4,5,6,9,9-Hexachloro-1a,2,2a,3,6,6a,7,7a-octahydro-, (1aalpha,2ß,2aalpha,3ß,6ß,6aalpha,7ß,7aalpha)-2,7:3,6-dimethanonaphth(2,3-b)oxirene
HEOD
$C_{12}H_8Cl_6O$
Molecular mass: 380.9

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/SYMPTOMS	PREVENTION	FIRST AID/FIRE FIGHTING
FIRE	Not combustible. Liquid formulations containing organic solvents may be flammable. Gives off irritating or toxic fumes (or gases) in a fire.		In case of fire in the surroundings: all extinguishing agents allowed.
EXPLOSION			
EXPOSURE		**PREVENT DISPERSION OF DUST! STRICT HYGIENE! AVOID EXPOSURE OF ADOLESCENTS AND CHILDREN!**	
Inhalation	(see Ingestion).	Ventilation (not if powder).	Fresh air, rest. Refer for medical attention.
Skin	MAY BE ABSORBED! See Ingestion.	Protective gloves. Protective clothing.	Remove contaminated clothes. Rinse and then wash skin with water and soap. Refer for medical attention.
Eyes		Safety goggles, or face shield.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
Ingestion	Convulsions. Dizziness. Headache. Nausea. Vomiting. Muscle twitching.	Do not eat, drink, or smoke during work. Wash hands before eating.	Give a slurry of activated charcoal in water to drink. Do NOT induce vomiting. Rest. Refer for medical attention.

SPILLAGE DISPOSAL	PACKAGING & LABELLING	
Do NOT wash away into sewer. Sweep spilled substance into sealable containers; if appropriate, moisten first to prevent dusting. Carefully collect remainder, then remove to safe place (extra personal protection: chemical protection suit including self-contained breathing apparatus).	T+ Symbol N Symbol R: 25-27-40-48/25-50/53 S: (1/2-)22-36/37-45-60-61 UN Hazard Class: 6.1 UN Pack Group: II	Do not transport with food and feedstuffs. Severe marine pollutant.

EMERGENCY RESPONSE	STORAGE
Transport Emergency Card: TEC (R)-61G41b.	Provision to contain effluent from fire extinguishing. Separated from food and feedstuffs and incompatible materials: See Chemical Dangers. Well closed. Keep in a well-ventilated room.

IPCS
International Programme on Chemical Safety

Prepared in the context of cooperation between the International Programme on Chemical Safety and the European Commission

SEE IMPORTANT INFORMATION ON THE BACK.

IMPORTANT DATA

Physical State; Appearance
COLOURLESS CRYSTALS

Chemical Dangers
The substance decomposes on heating producing toxic fumes including hydrogen chloride. Reacts with oxidants and acids. Attacks metal due to the slow formation of hydrogen chloride in storage.

Occupational Exposure Limits
TLV (as TWA): 0.25 mg/m^3, A4 (skin) (ACGIH 1997).

Routes of Exposure
The substance can be absorbed into the body through the skin and by ingestion.

Inhalation Risk
Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly on spraying.

Effects of Short-term Exposure
The substance may cause effects on the central nervous system, resulting in convulsions. Medical observation is indicated.

Effects of Long-term or Repeated Exposure
The substance accumulates in the human body. Cumulative effects are possible: see acute hazards/symptoms.

PHYSICAL PROPERTIES

Melting point: 175-176°C
Density: 1.7 g/cm^3
Solubility in water: none
Vapour pressure, Pa at 20°C: 0.0004
Octanol/water partition coefficient as log Pow: 6.2

ENVIRONMENTAL DATA

The substance is very toxic to aquatic organisms. This substance may be hazardous to the environment; special attention should be given to honey bees, birds. In the food chain important to humans, bioaccumulation takes place, specifically in aquatic organisms. It is strongly advised not to let the chemical enter into the environment because it persists in the environment. The substance may cause long-term effects in the aquatic environment. Avoid release to the environment in circumstances different to normal use.

NOTES

Depending on the degree of exposure, periodic medical examination is indicated. If the substance is formulated with solvent(s) also consult the card(s) (ICSC) of the solvent(s). Carrier solvents used in commercial formulations may change physical and toxicological properties. Do NOT take working clothes home. Alvit, Dieldrex, Dieldrite, Illoxol, Octalox, Panoram, and Quintox are trade names. Also consult ICSC #0774, Aldrin.

ADDITIONAL INFORMATION

February 22, 2007

RM Number: 8467 (Renewals)
MSDS Number: 8467
RM Name: 4,4'-DDE
Issued: May, 1992

MATERIAL SAFETY DATA SHEET

National Institute of Standards and Technology
Standard Reference Materials Program
Gaithersburg, Maryland 20899
(301) 975-2019

SECTION I. MATERIAL IDENTIFICATION

Material Name: 4,4'-DDE

Description: This material is a degradation product of DDT found as an impurity in DDT residues. A unit of RM 8467 consists of one vial containing approximately 100 mg of 4,4'-DDE.

Other Designations: *p,p'*-DDE, 1,1'-(dichloroethenyldiene)bis[4-chlorobenzene]; 2,2-bis-(4-chlorophenyl)-1,1-dichloroethene; ethylene, 1,1-dichloro-2,2-bis(*p*-chlorophenyl); 1,1'-(dichloroethenylidene)bis(4-chloro-benzene); dichlorodiphenyldichloroethylene

Chemical Formula: Cl-C_6-H$_3$-C-(C-Cl$_2$)-C_6-H$_3$-Cl

CAS Reg. No.: 72-55-9

DOT Classification: Class 6.1 Poison

Manufacturer/ Supplier: Available from a number of suppliers.

SECTION II. HAZARDOUS INGREDIENTS

Hazardous Components	Nominal Concentration	Limits and Toxicity Data
4,4'-DDE	~ 100%	*No TLV established. Rat, Oral: LD_{50}: 880 mg/kg

Mouse, Oral:

LD_{50}: 700 mg/kg

*The suggested ACGIH-TWA for particulates not otherwise regulated is 10 mg/m³ for total dust.

SECTION III. PHYSICAL/ CHEMICAL CHARACTERISTICS

4,4'-DDE

Appearance and Odor: A white crystalline solid.
Molecular Weight: 318.03
Melting Point (Range): 88 - 90 °C
Solubility in Water: 0.12 ppm
Solubility in Other Compounds: Soluble in ethanol, acetone, dichloromethane, fat and most organic solvents.

SECTION IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point: N/A

(Method Used): N/A

Autoignition Temperature: N/A

Flammability Limits in Air (Volume %): UPPER: N/A
LOWER: N/A

Extinguishing Media: Use dry chemical, water spray of regular foam.

Special Fire Procedures: Fire-fighters should wear self-contained breathing apparatus operated in a pressure-demand or other positive-pressure mode and other protective clothing when fighting fires involving this material.

Unusual Fire and Explosion Hazards: This material is a negligible fire hazard when exposed to heat or flame. This material may burn but does not ignite readily. Containers may explode in the heat of a fire.

This pesticide material with strong oxidizers can present a fire and explosion hazard.

SECTION V. REACTIVITY DATA

Stability: __X__ **Stable** ____ **Unstable**

Conditions to Avoid: Avoid incompatible materials.

Incompatibility (Materials to Avoid): Keep this material from strong oxidizing materials.

See Section IV: Fire and Explosion Hazard Data.

Hazardous Decomposition or Byproducts: Thermal decomposition may include toxic and corrosive fumes of chlorides and toxic oxides of carbon.

Hazardous Polymerization: ____ **Will Occur** __X__ **Will Not Occur**

SECTION VI. HEALTH HAZARD DATA

Route of Entry: __X__ **Inhalation** __X__ **Skin** __X__ **Ingestion**

Health Hazards (Acute and Chronic): Effects for **organochlorine pesticides** (i.e. DDT) may occur for exposures of 4,4'-DDE. Ingestion can occur through oral administration or may occur if sufficient amounts are absorbed from the lungs. A study of occupational exposure to DDT reported a higher frequency of white blood cells with chromosomal abnormalities among workers with high DDT blood levels. Menstrual irregularities are the most frequent complaint among migrant farm workers were observed in another study. Signs of liver and kidney damage can develop. Liver *necrosis* (localized death of living tissue) has been reported in experimental animals. Death may be due to respiratory failure or ventricular fibrillation. Symptoms of poisoning may not occur until several hours after ingestion.

This material may cross the placenta and be excreted in breast milk. It may also impair fertility. Stimulants such as epinephrine or ephedrine may induce *ventricular fibrillation* (a muscular twitching involving individual muscle fibers, acting without coordination, of the chamber of the heart which receives blood from a corresponding atrium and from which blood is forced into the arteries).

Signs and Symptoms of Exposure: Ingestion of organochlorine pesticides may cause gastrointestinal effects of nausea, vomiting, diarrhea, and stomach pains. Confusion, apprehension, irritability, excitability, dizziness, headache, disorientation, weakness, paresthesias, muscle twitching, tremor, stupor, coma and convulsions may also be experienced.

Medical Conditions Generally Aggravated by Exposure: N/A

Listed as a Carcinogen/Potential Carcinogen:

	Yes	No
In the National Toxicology Program (NTP) Report on Carcinogens	____	_X_
In the International Agency for Research (IARC) Monographs	____	_X_
By the Occupational Safety and Health Administration (OSHA)	____	_X_

Note: A high incidence of liver-cell tumors was observed in mice administered DDE orally (IARC).

The carcinogenicity of this material is still undetermined.

EMERGENCY AND FIRST AID PROCEDURES:

Skin Contact: Remove contaminated shoes and clothing. Rinse affected area with large amounts of water followed by washing the area with soap and water. Contact medical assistance if necessary.

Eye Contact: Immediately flush eyes, including under the eyelids, with copious amounts of water for at least 15

minutes. Contact medical assistance if necessary.

Inhalation: If inhaled, remove the victim to fresh air. If breathing is difficult, give oxygen; if victim is not breathing, give artificial respiration. Contact medical assistance if necessary.

Ingestion: If ingested, wash out mouth with water. If the person is conscious and not convulsing, induce vomiting by administering syrup of ipecac (when vomiting occurs, keep the head above below the hips to prevent aspiration). Medical personal can administer activated charcoal followed by gastric lavage. Follow with a saline cathartic. **DO NOT** give fats or oils. Intestinal lavage with 20% mannitol (200 mL) by stomach tube is also useful. Give artificial respiration with oxygen if respiration is depressed. Treat symptomatically and supportively.

TARGET ORGAN(S) OF ATTACK: The blood, liver and kidneys.

SECTION VII. PRECAUTIONS FOR SAFE HANDLING AND USE

Steps to be taken in Case Material is Released or Spilled: Notify safety personnel of major spills and/or leaks. Evacuate all nonessential personnel. Ventilate closed area before entering. Stop the leak if you can do so without risk. Use water spray to reduce vapors. Small spills can be absorbed with sand or other absorbent material and place in containers for later disposal. Small dry spills can be recovered with a clean shovel and placed in covered containers. For larger spills, dike far ahead of the spill for later disposal.

Note: Reportable Quantity (RQ): 1 Pound (4.536 Grams)

The Superfund Amendments and Reauthorization Act (SARA) section 304 requires that a release equal to or greater than the reportable quantity for this substance be immediately reported to the local Emergency Planning Committee and the State Emergency Response Commission (40 CFR 355.40). If the release of this substance is reportable under Cercla Section 103, The National Response Center must be notified immediately.

Waste Disposal: Disposal must be in accordance with 40 CFR 165 recommended procedures for the disposal and storage of pesticides and pesticide containers. Follow all Federal, state and local regulations.

Handling and Storage: Employees handling this material must wear protective clothing and gloves to prevent skin contact and splash-proof or dust-resistant safety goggles to prevent eye contact with this substance. Any chemical cartridge respirator with an organic vapor cartridge in combination with a dust and mist filter must be worn to prevent inhalation. The specific respirator selected must be based on contamination levels found in the work place, must be based on the specific operation, must not exceed the working limits of the respirator and must be jointly approved by the National Institute for Occupational Safety and Health (NIOSH) and the Mine Safety and Health Administration (MSHA).

Note: Contact lenses pose a special problem; soft lenses may absorb irritants and all lenses concentrate them. **DO NOT** wear contact lenses in the lab.

Provide local exhaust ventilation. Ventilation equipment must be explosion proof. Store material in accordance with 40 CFR 165 recommended procedures for the disposal and storage of pesticides and pesticide containers. Vials, as received, should be kept tightly sealed, protected from light, and stored in a refrigerator or freezer. Emergency eye wash station must be available.

SECTION VIII. SOURCE DATA/ OTHER COMMENTS

Sources: Occupational Health Services, MSDS *2,2-Bis-(4-Chlorophenyl)-1,1-Dichloroethene*, February 21, 1991.
Hawley's Condensed Chemical Dictionary, 11th ed., 1987.
Webster's Ninth New Colligiate Dictionary, 1990.

Carmelita S. Davis (301) 975-6439
National Institute of Standards and Technology
Standard Reference Materials Program
Gaithersburg, Maryland 20899

Note: Physical and chemical data contained in this MSDS are provided for use in assessing the hazardous nature of the material. The MSDS was prepared carefully, using current references, however NIST does not certify the data on the MSDS. The certified values for this material are given only on the NIST Certificate of Analysis.

APPENDIX B

ACTIVITY HAZARD ANALYSES

Project Identification Former Canine Kennel, Gabreski Airport	**Location** Westhampton Beach, NY	**Estimated Dates** TBD
Phase of Work Mobilization/ Demobilization	**Page 1 of 1**	**Analysis Approved by** Andrew Lockwood, PM
TASKS	**HAZARDS**	**CONTROL MEASURES**
1. Mobilization and demobilization of equipment site tools, personnel	Slips/trips/falls	• Maintain alertness to slip/trip/fall hazards; • Maintain good housekeeping; • Walk, do not run; • Wear footwear with soles that grip; • Unloading areas should be on even terrain; and • Mark and repair if possible tripping hazards.
	Manual lifting and material handling	• Instruct personnel on proper lifting techniques; • Use proper lifting techniques; and • Team lifting will be used for heavy loads or use mechanical lifting devices.
	Temperature extremes	• Drink plenty of fluids: • Train personnel of signs/symptoms of heat/cold stress; • Monitor air temperatures when extreme weather conditions are present; and • Stay in visual and verbal contact with your buddy.
	Vehicular traffic	• Spotters will be used when backing up trucks and heavy equipment and when moving equipment.
	Overhead hazards	• Personnel will be required to wear hard hats that meet ANSI Standard Z89.1; • All ground personnel will stay clear of suspended loads; • All equipment will be provided with guards, canopies or grills to protect the operator from falling or flying objects; and • All overhead hazards will be identified prior to commencing work operations.
	Noise	• Ear plugs or ear muffs shall be worn for operations that exceed 85 decibels.
	Electrocution	• Equipment will be equipped with GFCI; • A licensed electrician will conduct all electrical work; • All equipment will stay a minimum of 15 feet from overhead-energized electrical lines (50 kV). This distance will increase .4 inches for each 1 kV above 50 kV.
	Biological hazards	• Be alert to the presence of biological hazards; • Wear insect repellent; • Follow procedures in Section 4.2.2 for tick bites; • FTL/SHSO should be aware of on-site personnel with allergic reactions in insect bites and stings.

Project Identification Former Canine Kennel, Gabreski Airport	**Location** Westhampton Beach, NY	**Estimated Dates** TBD
Phase of Work Excavation/Drilling	**Page 1 of 2**	**Analysis Approved by** Andrew Lockwood, PM
TASKS	**HAZARDS**	**CONTROL MEASURES**
1. Excavate soils. 2. Backfill excavations. 3. Drill to required depths and install wells.	Chemical hazards	• Wear appropriate PPE per Table 6-1; • Perform air monitoring per Community Air Monitoring Plan; • Practice contamination avoidance; • Follow proper decontamination procedures; and • Wash hands/face before eating, drinking or smoking.
	Hand and power tool usage	• Equip all electrical equipment with GFCI's; • Inspect all electrical equipment and tools prior to use; • Daily inspections will be performed; • Remove broken or damaged tools from service; • Use the tool for its intended purpose; • Use in accordance with manufacturer instructions; and • Tag and remove defective equipment.
	Temperature extremes	• Drink plenty of fluids: • Train personnel of signs/symptoms of heat/cold stress; • Monitor air temperatures when extreme weather conditions are present; and, • Stay in visual and verbal contact with your buddy.
	Manual lifting and material handling	• Instruct personnel on proper lifting techniques; • Use proper lifting techniques; and • Team lifting will be used for heavy loads or use mechanical lifting devices.
	Fire/Explosion	• ABC type fire extinguishers shall be readily available; • No smoking in work area.
	Biological hazards	• Be alert to the presence of biological hazards; • Wear insect repellent; • Follow procedures in Section 4.2.2 for tick bites; • FTL/SHSO should be aware of on-site personnel with allergic reactions in insect bites and stings.
	Heavy equipment	• Ground personnel will stay clear of all suspended loads; • Ground personnel will stay out of the swing radius; • Eye contact with operators will be made before approaching equipment; • Equipment will not be approached on blind sides; • All equipment will be equipped with backup alarms or spotters shall be used.
	Slips/Trips/Falls	• Maintain alertness to slip/trip/fall hazards; • Maintain good housekeeping; • Walk, do not run; • Wear footwear with soles that grip; • Unloading areas should be on even terrain; and • Mark and repair if possible tripping hazards.

Project Identification Former Canine Kennel, Gabreski Airport	**Location** Westhampton Beach, NY	**Estimated Dates** TBD
Phase of Work Excavation/Drilling	**Page 2 of 2**	**Analysis Approved by** Andrew Lockwood, PM
TASKS	**HAZARDS**	**CONTROL MEASURES**
	Noise	• Hearing protection mandatory at or above 85 dBA. • Instruct personnel how to properly wear heating protective devices. •Disposable ear plugs or other hearing protection required when working near noisy equipment..
	Steam/Heat/Splashing	• Use face shield and safety glasses or goggles; • Stay out of the splash/steam radius; • Do not direct steam at anyone; • Do not hold objects with your foot and steam area near it; • Ensure that the direction of spray minimizes spread of constituents of concern; and • Use shielding as necessary.
	Excavation hazards	• Follow 29 CFR 1926 Subpart P.
	Overhead hazards	• Personnel will be required to wear hard hats that meet ANSI Standard Z89.1; • All ground personnel will stay clear of suspended loads; • All equipment will be provided with guards, canopies or grills to protect the operator from falling or flying objects; and • All overhead hazards will be identified prior to commencing work operations.

Project Identification Former Canine Kennel, Gabreski Airport	**Location** Westhampton Beach, NY	**Estimated Dates** TBD
Phase of Work Soil/Groundwater Sampling	**Page 1 of 1**	**Analysis Approved by** Andrew Lockwood PM
TASKS	**HAZARDS**	**CONTROL MEASURES**
1.Collect soil/groundwater samples.	Chemical hazards	• Wear appropriate PPE per Table 6-1; • Practice contamination avoidance; • Follow proper decontamination procedures; and • Wash hands/face before eating, drinking or smoking.
	Temperature extremes	• Drink plenty of fluids: • Train personnel of signs/symptoms of heat/cold stress; • Monitor air temperatures when extreme weather conditions are present; and • Stay in visual and verbal contact with your buddy.
	Manual lifting and material handling	• Site personnel will be instructed on proper lifting techniques; mechanical devices should be used to reduce manual handling of materials; team lifting should be utilized if mechanical devices are not available.
	Slips/Trips/Falls	• Maintain alertness to slip/trip/fall hazards; • Maintain good housekeeping; • Walk, do not run; • Wear footwear with soles that grip; • Unloading areas should be on even terrain; and • Mark and repair if possible tripping hazards.

Project Identification Former Canine Kennel, Gabreski Airport	**Location** Westhampton Beach, NY	**Estimated Dates** TBD
Phase of Work Decontamination	**Page 1 of 1**	**Analysis Approved by** Andrew Lockwood PM
TASKS	**HAZARDS**	**CONTROL MEASURES**
1.Decontaminate equipment	Chemical hazards	• Wear appropriate PPE per Table 6-1; • Practice contamination avoidance; • Follow proper decontamination procedures; and • Wash hands/face before eating, drinking or smoking.
	Temperature extremes	• Drink plenty of fluids: • Train personnel of signs/symptoms of heat/cold stress; • Monitor air temperatures when extreme weather conditions are present; and • Stay in visual and verbal contact with your buddy.
	Manual lifting and material handling	• Site personnel will be instructed on proper lifting techniques; mechanical devices should be used to reduce manual handling of materials; team lifting should be utilized if mechanical devices are not available.
	Slips/Trips/Falls	• Maintain alertness to slip/trip/fall hazards; • Maintain good housekeeping; • Walk, do not run; • Wear footwear with soles that grip; • Unloading areas should be on even terrain; and • Mark and repair if possible tripping hazards.

APPENDIX C

HEAT/COLD STRESS PROTOCOLS

HEAT STRESS

Heat Stress (Hyperthermia)

Heat stress is the body's inability to regulate the core temperature. A worker's susceptibility to heat stress can vary according to his/her physical fitness, degree of acclimation to heat, humidity, age and diet.

1. Prior to site activity, the field team leader may make arrangements for heat stress monitoring (i.e., monitoring heart rate, body temperature, and body water loss) during actual site work if conditions warrant. In addition, the FTL is to ensure that each team member has been acclimatized to the prevailing environmental conditions, that personnel are aware of the signs and symptoms of heat sickness, that they have been adequately trained in first aid procedures, and that there are enough personnel on-site to rotate work assignments and schedule work during hours of reduced temperatures. Personnel should not consume alcoholic or caffeinated beverages but rather drink moderate levels of an electrolyte solution and eat well prior to commencing site work.

2. Although there is no specific test given during a baseline physical that would identify a person's intolerance to heat, some indicators are tobacco or medication use, dietary habits, body weight, and chronic conditions such as high blood pressure or diabetes.

3. *Heat cramps*, caused by profuse perspiration with inadequate fluid intake and salt replacement, most often afflict people in good physical condition who work in high temperature and humidity. Heat cramps usually come on suddenly during vigorous activity. Untreated, heat cramps may progress rapidly to heat exhaustion or heat stroke. First aid treatment: remove victim to a cool place and replace lost fluids with water.

4. Thirst is not an adequate indicator of heat exposure. Drinking fluid by itself does not indicate sufficient water replacement during heat exposure. A general rule, the amount of water administered should replace the amount of water lost, and it should be administered at regular intervals throughout the day. For every half pound of water lost, 8 ounces of water should be ingested. Water should be replaced by drinking 2 – 4 ounce servings during every rest period. A recommended alternative to water is an electrolyte drink split 50/50 with water.

5. *Heat exhaustion* results from salt and water loss along with peripheral pooling of blood. Like heat cramps, heat exhaustion tends to occur in persons in good physical health who are working in high temperatures and humidity. Heat exhaustion may come on suddenly as dizziness and collapse. Untreated, heat exhaustion may progress to heat stroke.

6. *Treatment for heat exhaustion*: Move the victim to a cool environment (e.g. air-conditioned room/car), lay victim down and fan him/her. If the air-conditioning is not available, remove the victim to a shaded area, remove shirt, and fan. If symptoms do not subside within an hour, notify 911 to transport to hospital.

7. *Heat stroke* results from the body's inability to dissipate excess heat. A true medical emergency that requires immediate care, it usually occurs when one ignores the signs of heat exhaustion and continues strenuous activities. Working when the relative humidity exceeds 60% is a particular problem. Workers in the early phase of heat stress may not be coherent of they will be confused, delirious or comatose. Changes in behavior, irritability and combativeness are useful early signs of heat stroke.

8. *Treatment of heat stroke*: Move the victim to a cool, air-conditioned environment. Place victim in a semi-reclined position with head elevated and strip to underclothing. Cool victim as rapidly as possible, applying ice packs to the arms and legs and massaging the neck and torso. Spray victim with tepid water and constantly fan to promote evaporation. Notify 911 to transport to hospital as soon as possible.

TABLE 1

SYMPTOMS OF HEAT STRESS

Heat cramps are caused by heavy sweating with inadequate fluid intake. Symptoms include;

- Muscle cramps
- Cramps in the hands, legs, feet and abdomen

Heat exhaustion occurs when body organs attempt to keep the body cool. Symptoms include;

- Pale, cool moist skin
- Core temperature elevated 1-2°
- Thirst
- Anxiety
- Rapid heart rate
- Heavy sweating
- Dizziness
- Nausea

Heat stroke is the most serious form of heat stress. Immediate action must be taken to cool the body before serious injury and death occur. Symptoms are;

- Red, hot, dry skin
- Lack of perspiration
- Seizures
- Dizziness and confusion
- Strong, rapid pulse
- Core temperature of 104° or above
- Coma

TABLE 2

HEAT STRESS INDICATORS

Heat stress indicator	When to measure	If Exceeds...	Action
Heart rate (pulse)	Beginning of rest period	110 beats per minute	Shorten next work period by 33%
Oral temperature	Beginning of rest period	99°F (after thermometer is under tongue for 3 minutes) 100.6°F	Shorten next work period by 33% Prohibit work in impermeable clothing
Body weight	1. Before workday begins (a.m.) 2. After workday ends (p.m.)		Increase fluid intake

COLD STRESS

Cold stress (Hypothermia)

In hypothermia the core body temperature drops below 95°F. Hypothermia can be attributed to a decrease in heat production, increased heat loss or both.

Prevention

Institute the following steps to prevent overexposure of workers to cold:

1. Maintain body core temperature at 98.6°F or above by encouraging workers to drink warm liquids during breaks (preferably not coffee) and wear several layers of clothing that can keep the body warm even when the clothing is wet.
2. Avoid frostbite by adequately covering hands, feet and other extremities. Clothing such as insulated gloves or mittens, earmuffs and hat liners should be worn. To prevent contact frostbite (from touching metal and cold surfaces below 20°F), workers should wear gloves. Tool handles should be covered with insulating material.
3. Adjust work schedules to provide adequate rest periods. When feasible, rotate personnel and perform work during the warmer hours of the day.
4. Provide heated shelter. Workers should remove their outer layer(s) of clothing while in the shelter to allow sweat to evaporate.
5. In the event that wind barriers are constructed around an intrusive operation (such as drilling), the enclosure must be properly vented to prevent the buildup of toxic or explosive gases or vapors. Care must be taken to keep a heat source away from flammable substances.
6. Using a wind chill chart such as the one in Table 3, obtain the equivalent chill temperature (ECT) based on actual wind speed and temperature. Refer to the ECT when setting up work warm-up schedules, planning appropriate clothing, etc. Workers should use warming shelters at regular intervals at or below an ECT of 20°F. For exposed skin, continuous exposure should not be permitted at or below an ECT of -25°F.

Frostbite

Personnel should be aware of symptoms of frostbite/hypothermia. If the following symptoms are noticed in any worker, he/she should immediately go to a warm shelter.

Condition	Skin Surface	Tissue Under Skin	Skin Color
Frostnip	Soft	Soft	Initially red, then white
Frostbite	Hard	Soft	White and waxy
Freezing	Hard	Hard	Blotchy, white to yellow-gray to gray

1. *Frostnip* is the incipient stage of frostbite, brought about by direct contact with a cold object or exposure of a body part to cool/cold air. Wind chill or cold water also can be major factors. This condition is not serious. Tissue damage is minor and the response to care is good. The tip of the nose, tips of ears, upper cheeks and fingers (all areas generally exposed) are most susceptible to frostnip.

2. *Treatment of frostnip*: Care for frostnip by warming affected areas. Usually the worker can apply warmth from his/her bare hands, blow warm air on the site, or, if the fingers are involved, hold them in the armpits. During recovery, the worker may complain of tingling or burning sensation, which is normal. If the condition does not respond to this simple care, begin treatment for frostbite.

3. *Frostbite*: The skin and subcutaneous layers become involved. If frostnip goes untreated, it becomes superficial frostbite. This condition is serious. Tissue damage may be serious. The worker must be transported to a medical facility for evaluation. The tip of the nose, tips of ears, upper cheeks and fingers (all areas generally exposed) are most susceptible to frostbite. The affected area will feel frozen, but only on the surface. The tissue below the surface must still be soft and have normal response to touch. *DO NOT* squeeze or poke the tissue. The condition of the deeper tissues can be determined by gently palpating the affected area. The skin will turn mottled or blotchy. It may also be white and then turn grayish-yellow.

4. *Treatment of frostbite*: When practical, transport victim as soon as possible. Get the worker inside and keep him/her warm. Do not allow any smoking or alcohol consumption. Thaw frozen parts by immersion, re-warming in a 100°F to 106°F water bath. Water temperature will drop rapidly, requiring additional warm water throughout the process. Cover the thawed part with a dry sterile dressing. Do not puncture or drain any blisters.

   NOTE: Never listen to myths and folk tales about the care of frostbite. *Never* rub a frostbitten or frozen area. *Never* rub snow on a frostbitten or frozen area. Rubbing the area may cause

serious damage to already injured tissues. Do not attempt to thaw a frozen area if there is any chance it will be re-frozen.

5. *General cooling/Hypothermia*: General cooling of the body is known as systemic hypothermia. This condition is not a common problem unless workers are exposed to cold for prolonged periods of time without any shelter.

Body Temperature	°C	Symptoms
99-96	37-35.5	Intense, uncontrollable shivering
95-91	35.5-32.7	Violent shivering persists. If victim is conscious, he has difficulty speaking.
90-86	32-30	Shivering decreases and is replaced by strong muscular rigidity. Muscle coordination is affected. Erratic or jerkey movements are produced. Thinking is less clear. General comprehension is dulled. There may be total amnesia. The worker is generally still able to maintain the appearance of psychological contact with his surroundings.
85-81	29.4-27.2	Victim becomes irrational, loses contact with his environment, and drifts into a stuporous state. Muscular rigidity continues. Pulse and respirations are slow and the worker may develop cardiac arrhythmias.
80-78	26.6-18.5	Victim becomes unconscious. He does not respond to the spoken word. Most reflexes cease to function. Heartbeat becomes erratic
Below 78	25.5	Cardiac and respiratory centers of the brain fail. Ventricular fibrillation occurs; probably edema and hemorrhage in the lungs; death.

6. *Treatment of hypothermia*: Keep worker dry. Remove any wet clothing and replace with dry clothes, or wrap person in dry blankets. Keep person at rest. Do not allow him/her to move around. Transport the victim to a medical facility as soon as possible.

TABLE 3[(1)]
COOLING POWER OF WIND ON EXPOSED FLESH EXPRESSED AS AN EQUIVALENT TEMPERATURE (UNDER CALM CONDITIONS)

Estimated wind Speed (in mph)	Actual Temperature Reading (°F)P											
	50	40	30	20	10	0	10	20	30	40	50	60
	Equivalent Chill Temperature (°F)											
Calm	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60
5	48	37	27	16	6	-5	-15	-26	-36	-47	-57	-68
10	40	28	15	4	-9	-24	-33	-46	-58	-70	-83	-95
15	36	22	9	-5	-18	-32	-45	-58	-72	-85	-99	-112
20	32	18	4	-10	-25	-39	-53	-67	-82	-96	-110	-121
25	30	16	0	-15	-29	-44	-59	-74	-88	-104	-118	-133
30	28	13	-2	-18	-33	-48	-63	-79	-94	-109	-125	-140
35	27	11	-4	-20	-35	-51	-67	-82	-98	-113	-129	-145
40	26	10	-6	-21	-37	-53	-69	-85	-100	-116	-132	-146
(Wind speeds greater than 40 mph have little additional effect.)	LITTLE DANGER in < hr with dry skin. Maximum danger of false sense of security.				INCREASING DANGER Danger from freezing of exposed flesh within one minute			GREAT DANGER may freeze within 30 seconds.				Flesh
	Trench foot and imersion foot may occur at any point on this chart											

Developed by U.S. Army Research Institute of Environmental Medicine, Natick, MA.

(1) Reproduced from American Conference of Governmental Industrial Hygienists, Threshold Limit Values and Biological Exposure Indices for 1985-1986, p.01.

APPENDIX D

MEDICAL DATA SHEET

MEDICAL DATA SHEET

The brief medical data sheet shall be completed by on-site personnel and will be kept in the Support Zone by the HSO as a project record during the conduct of site operations. It accompanies any personnel when medical assistance is needed or if transport to a hospital is required.

Project:
Name: Home Telephone: _____
Address: _____
Age: _____ Height: _____ Weight: _____ Blood Type: _____

Name and Telephone Number of Emergency Contact: _____

Drug or Other Allergies: _____

Particular Sensitivities: _____

Do You Wear Contacts? _____

Provide A Check List Of Previous Illnesses: _____

What Medications Are You Presently Using?_____

Do You Have Any Medical Restrictions? _____

Name, Address, And Phone Number Of Personal Physician:

APPENDIX E

GENERAL HEALTH AND SAFETY WORK PRACTICES

GENERAL HEALTH AND SAFETY WORK PRACTICES

1. All site personnel must attend each day's Daily Briefing and sign the attendance sheet.

2. Any individual taking prescribed drugs shall inform the FTL/SHSO of the type of medication. The FTL/SHSO will review the matter with the HSM and the Corporate Medical Consultant (CMC), who will decide if the employee can safely work on-site while taking the medication.

3. The personal protective equipment specified by the FTL/SHSO and/or associated procedures shall be worn by all site personnel. This includes hard hats and safety glasses which must be worn at all times in active work areas.

4. Facial hair (beards, long sideburns or mustaches) which may interfere with a satisfactory fit of a respirator mask is not allowed on any person who may be required to wear a respirator.

5. Personnel must follow proper decontamination procedures and shower as soon as possible upon completion of work shift.

6. Eating, drinking, chewing tobacco or gum, smoking and any other practice that may increase the possibility of hand-to-mouth contact is prohibited in the exclusion zone or the contamination reduction zone. (Exceptions may be permitted by the HSM to allow fluid intake during heat stress conditions).

7. All lighters, matches, cigarettes and other forms of tobacco are prohibited in the Exclusion Zone.

8. All signs and demarcations shall be followed. Such signs and demarcation shall not be removed, except as authorized by the FTL/SHSO.

9. No one shall enter a permit-required confined space without a permit and appropriate training. Confined space entry permits shall be implemented as issued.

10. All personnel must follow Hot Work Permits as issued.

11. All personnel must use the Buddy System in the Exclusion Zone.

12. All personnel must follow the work-rest regimens and other practices required by the heat stress program.

13. All personnel must follow lockout/tagout procedures when working on equipment involving moving parts or hazardous energy sources.

14. No person shall operate equipment unless trained and authorized.

15. No one may enter an excavation greater than four feet deep unless authorized by the Competent Person. Excavations must be sloped or shored properly. Safe means of access and egress from excavations must be maintained.

16. Ladders and scaffolds shall be solidly constructed, in good working condition, and inspected prior to use. No one may use defective ladders or scaffolds.

17. Fall protection or fall arrest systems must be in place when working at elevations greater than six feet for temporary working surfaces and four feet for fixed platforms.

18. Safety belts, harnesses and lanyards must be selected by the Supervisor. The user must inspect the equipment prior to use. No defective personal fall protection equipment shall be used. Personal fall protection that has been shock loaded must be discarded.

19. Hand and portable power tools must be inspected prior to use. Defective tools and equipment shall not be used.

20. Ground fault interrupters shall be used for cord and plug equipment used outdoors or in damp locations. Electrical cords shall be kept out walkways and puddles unless protected and rated for the service.

21. Improper use, mishandling, or tampering with health and safety equipment and samples is prohibited.

22. Horseplay of any kind is prohibited.

23. Possession or use of alcoholic beverages, controlled substances, or firearms on any site is forbidden.

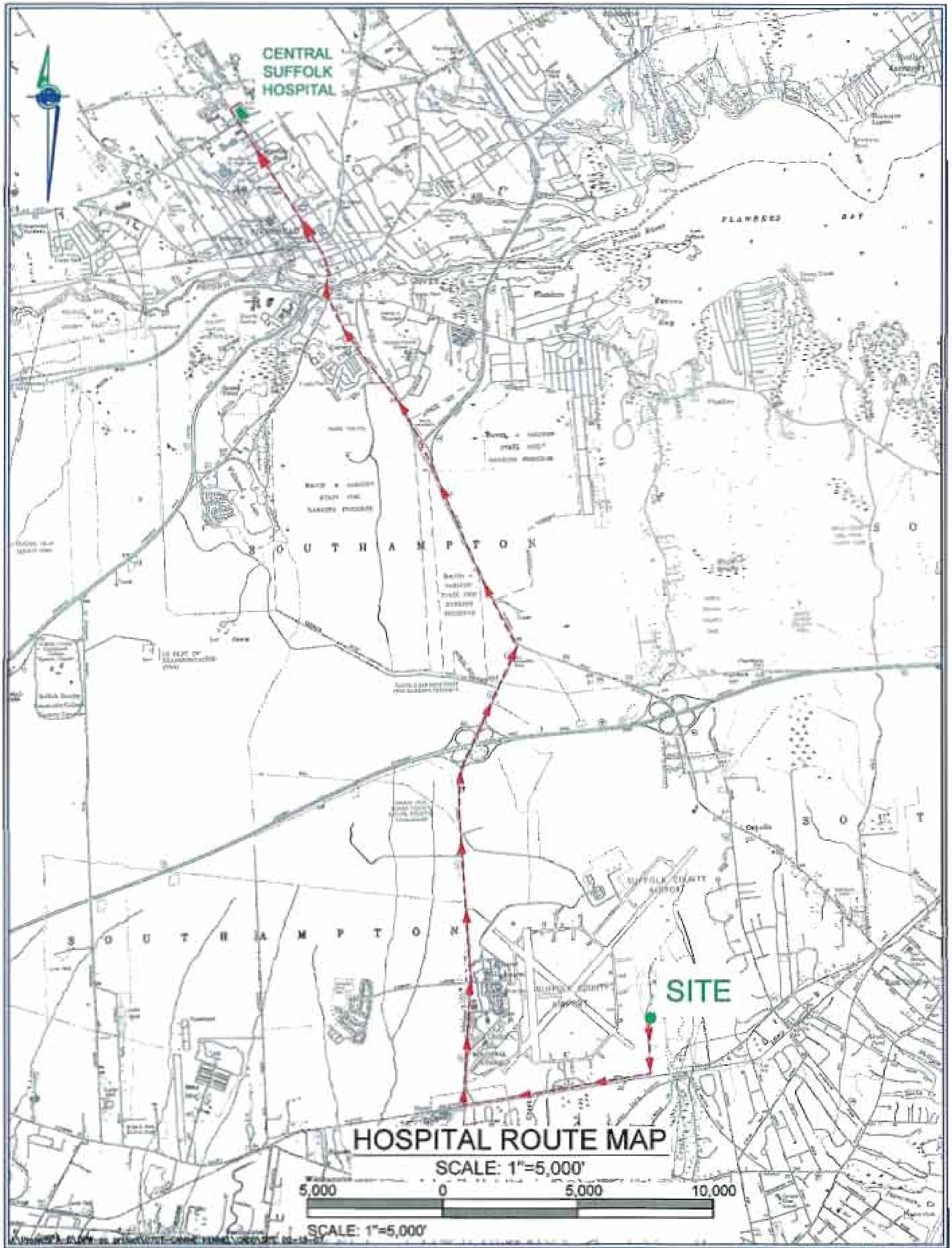
24. All incidents, no matter how minor, must be reported immediately to the Supervisor.

25. All personnel shall be familiar with the Site Emergency Response Plan, which is contained in Section 12 of the HASP.

The above Health and Safety Rules are not all inclusive and it is your responsibility to comply with all regulations set forth by OSHA, the client, PWGC Supervisors, and the FTL/SHSO.

APPENDIX F

HOSPITAL ROUTE MAP



PWGC
Strategic Environmental & Engineering Solutions

CANINE KENNEL SITE
GABRESKI AIRPORT
WEST HAMPTON, NY

DPW0701	7
JR	
PWG	
TC	2/15/07

APPENDIX G

INCIDENT REPORT FORM / INVESTIGATION FORM

INCIDENT / NEAR MISS REPORT AND INVESTIGATION - PAGE 1 OF 2			
TYPE OF INCIDENT - CHECK ALL THAT APPLY			
□ INJURY/ILLNESS	□ VEHICLE DAMAGE	□ PROPERTY DAMAGE	□ FIRE
□ SPILL/RELEASE	□ PERMIT EXCEEDENCE	□ NEAR MISS	□ OTHER
GENERAL INFORMATION			
PROJECT NAME:	DATE OF REPORT:	REPORT NO.:	
DATE OF INCIDENT:	TIME:	DAY OF WEEK:	
LOCATION OF INCIDENT:			
WEATHER CONDITIONS:	ADEQUATE LIGHTING AT SCENE? □ YES □ NO □ N/A		
DESCRIBE WHAT HAPPENED (STEP BY STEP - USE ADDITIONAL PAGES IF NECESSARY)			
AFFECTED EMPLOYEE INFORMATION			
NAME:	EMPLOYEE: □ YES □ NO		
HOME ADDRESS:			
SOCIAL SECURITY NO.:	HOME PHONE NO.:		
JOB CLASSIFICATION:	YEARS IN JOB CLASSIFICATION:		
HOURS WORKED ON SHIFT PRIOR TO INCIDENT:	AGE:		
DID INCIDENT RELATE TO ROUTINE TASK FOR JOB CLASSIFICATION? □ YES □ NO			
INJURY/ILLNESS INFORMATION			
NATURE OF INJURY OR ILLNESS:			
OBJECT/EQUIPMENT/SUBSTANCE CAUSING HARM:			
FIRST AID PROVIDED? □ YES □ NO			
IF YES, WHERE WAS IT GIVEN: □ ON-SITE □ OFF-SITE			
IF YES, WHO PROVIDED FIRST AID:			
WILL THE INJURY/ILLNESS RESULT IN: □ RESTRICTED DUTY □ LOST TIME □ UNKNOWN			

INCIDENT / NEAR MISS REPORT AND INVESTIGATION - PAGE 2 OF 2 REPORT NO.
MEDICAL TREATMENT INFORMATION
WAS MEDICAL TREATMENT PROVIDED? □ YES □ NO
IF YES, WAS MEDICAL TREATMENT PROVIDED: □ ON-SITE □ DR.'S OFFICE □ HOSPITAL
NAME OF PERSON(S) PROVIDING TREATMENT:
ADDRESS WHERE TREATMENT WAS PROVIDED:
TYPE OF TREATMENT:
VEHICLE AND PROPERTY DAMAGE INFORMATION
VEHICLE/PROPERTY DAMAGED:
DESCRIPTION OF DAMAGE:
SPILL AND AIR EMISSIONS INFORMATION:
SUBSTANCE SPILLED OR RELEASED: FROM WHERE: TO WHERE:
ESTIMATED QUANTITY/DURATION:
CERCLA HAZARDOUS SUBSTANCE? □ YES □ NO
REPORTABLE TO AGENCY? □ YES □ NO SPECIFY:
WRITTEN REPORT: □ YES □ NO TIME FRAME:
RESPONSE ACTION TAKEN:
PERMIT EXCEEDENCE
TYPE OF PERMIT: PERMIT #:
DATE OF EXCEEDENCE: DATE FIRST KNOWLEDGE OF EXCEEDENCE:
PERMITTED LEVEL OR CRITERIA:
EXCEEDENCE LEVEL OR CRITERIA:
REPORTABLE TO AGENCY? □ YES □ NO SPECIFY:
WRITTEN REPORT: □ YES □ NO TIME FRAME:
RESPONSE ACTION TAKEN:
NOTIFICATIONS
NAMES OF PERSONNEL NOTIFIED: DATE/TIME:
CLIENT NOTIFIED: DATE/TIME:
AGENCY NOTIFIED: DATE/TIME:
CONTACT NAME:
PERSONS PREPARING REPORT
EMPLOYEE'S NAME:(PRINT) SIGN:
SUPERVISOR'S NAME:(PRINT) SIGN:

INVESTIGATIVE REPORT

DATE OF INCIDENT: DATE OF REPORT: REPORT NUMBER:

INCIDENT COST: ESTIMATED: $_____ ACTUAL: $_____

OSHA RECORDABLE(S): □ YES □ NO # RESTRICTED DAYS ____ # DAYS AWAY FROM WORK ____

CAUSE ANALYSIS

IMMEDIATE CAUSES - WHAT ACTIONS AND CONDITIONS CONTRIBUTED TO THIS EVENT?

BASIC CAUSES - WHAT SPECIFIC PERSONAL OR JOB FACTORS CONTRIBUTED TO THIS EVENT?

ACTION PLAN

REMEDIAL ACTIONS - WHAT HAS AND OR SHOULD BE DONE TO CONTROL EACH OF THE CAUSES LISTED?

ACTION	PERSON RESPONSIBLE	TARGET DATE	COMPLETION DATE

PERSONS PERFORMING INVESTIGATION

INVESTIGATOR'S NAME: (PRINT) SIGN: DATE:

INVESTIGATOR'S NAME: (PRINT) SIGN: DATE:

INVESTIGATOR'S NAME: (PRINT) SIGN: DATE:

MANAGEMENT REVIEW

PROJECT MANAGER: (PRINT) SIGN: DATE:

COMMENTS:

H&S MANAGER: (PRINT) SIGN: DATE:

COMMENTS:

Examples of Immediate Causes

Substandard Actions

1. Operating equipment without authority
2. Failure to warn
3. Failure to secure
4. Operating at improper speed
5. Making safety devices inoperable
6. Removing safety devices
7. Using defective equipment
8. Failure to use PPE properly
9. Improper loading
10. Improper placement
11. Improper lifting
12. Improper position for task
13. Servicing equipment in operation
14. Under influence of alcohol/drugs
15. Horseplay

Substandard Conditions

1. Guards or barriers
2. Protective equipment
3. Tools, equipment, or materials
4. Congestion
5. Warning system
6. Fire and explosion hazards
7. Poor housekeeping
8. Noise exposure
9. Exposure to hazardous materials
10. Extreme temperature exposure
11. Illumination
12. Ventilation
13. Visibility

Examples of Basic Causes

Personal Factors

1. Capability
2. Knowledge
3. Skill
4. Stress
5. Motivation

Job Factors

1. Supervision
2. Engineering
3. Purchasing
4. Maintenance
5. Tools/equipment
6. Work Standards
7. Wear and tear
8. Abuse or misuse

Management Programs for Control of Incidents

1. Leadership and administration
2. Management training
3. Planned inspections
4. Task analysis and procedures
5. Task observation
6. Emergency preparedness
7. Organizational rules
8. Accident/incident analysis
9. Personal protective equipment
10. Health control
11. Program audits
12. Engineering controls
13. Personal communications
14. Group meetings
15. General promotion
16. Hiring and placement
17. Purchasing controls

APPENDIX H

DAILY BRIEFING SIGN-IN SHEET

DAILY BRIEFING SIGN-IN SHEET

Date: _____ Project Name/Location: _____

Person Conducting Briefing:_____

1. AWARENESS (topics discussed, special safety concerns, recent incidents, etc.)

_____
_____
_____

2. OTHER ISSUES (HASP changes, attendee comments, etc.)

_____
_____
_____

3. ATTENDEES (Print Name):

1.	21.
2.	22.
3.	23.
4.	24.
5.	25.
6.	26.
7.	27.
8.	28.
9.	29.
10.	30.
11.	31.
12.	32.
13.	33.
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15.	35.
16.	36.
17.	37.
18.	38.
19.	39.
20.	40.

APPENDIX E
COMMUNITY AIR MONITORING PLAN

SUFFOLK COUNTY FORMER CANINE KENNEL
GABRESKI AIRPORT, WESTHAMPTON BEACH, NY
SITE: #152079

PWGC Project No. DPW0701

COMMUNITY AIR MONITORING PLAN

March 2007

Submitted to:

New York State Department of Environmental Conservation

Prepared for:

Suffolk County Department of Health Services
Office of Pollution Control
15 Horseblock Place
Farmingville, NY 11738

Prepared by:

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COMMUNITY AIR MONITORING PLAN
TABLE OF CONTENTS

1.0 INTRODUCTION

The Community Air Monitoring Plan (CAMP) provides measures for protection for on-site workers and the downwind community (i.e., off-site receptors including residences, businesses, and on-site workers not directly involved in the remedial investigation) from potential airborne contaminant releases resulting from a drilling and test pit excavation activities at the Former Canine Kennel site, Westhampton Beach, New York.

The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that the remedial work did not spread contamination off-site through the air.

The primary concerns for this site are PCBs (represented by particulate dust), VOCs and dust particulates.

1.1 Regulatory Requirements

This CAMP was established in accordance with the following requirements:

- 29 CFR 1910.120(h): This regulation specifies that air shall be monitored to identify and quantify levels of airborne hazardous substances and health hazards, and to determine the appropriate level of protection for workers.

- New York State Department of Health's (NYSDOH) Generic Community Air Monitoring Plan: This guidance specifies that a community air-monitoring program shall be implemented to protect the surrounding community and to confirm that the work does not spread contamination off-site through the air.

- New York State Department of Environmental Conservation (NYSDEC) Technical and Guidance Memorandum (TAGM) #4031 - Fugitive Dust Suppression and Particulate Monitoring Program at Inactive Hazardous Waste Sites: This guidance provides a basis for developing and implementing a fugitive dust suppression and particulate monitoring program as an element of a hazardous waste site's health and safety program.

2.0 AIR MONITORING

The following sections contain information describing the types, frequency and location of real-time monitoring.

2.1 Real-Time Monitoring

This section addresses the real-time monitoring that will be conducted within the work area, and along the site perimeter, during intrusive activities such as excavation, product recovery, manipulation of soil piles, extraction of sheet piling, etc.

2.1.1 Work Area

The following instruments will be used for work area monitoring:

- PhotoionizationDetector (PID)
- Dust Monitor

Table 1-1 presents a breakdown of each main activity and provides the instrumentation, frequency and location of the real-time monitoring for the site. Table 1-2 lists the Real-Time Air Monitoring Action Levels to be used in all work areas.

2.1.2 Community Air Monitoring Requirements

To establish ambient air background concentrations, air will be monitored at several locations around the site perimeter before investigation activities begin. These points will be monitored periodically in series during the site work.

Fugitive respirable dust will be monitored using a MiniRam Model PDM-3 aerosol monitor or equivalent. Air will be monitored for VOCs with a portable Photovac MicroTip photoionization detector (PID), or equivalent. Table 1-1 presents a breakdown of each main activity and provides the instrumentation, frequency and location of the real-time monitoring for the site. Table 1-2 lists the Real-Time Air Monitoring Action Levels to be used in all work areas. All air monitoring data is documented in a site log book by the designated site safety officer. PWGC's site safety officer or delegate must ensure that air monitoring instruments are calibrated and maintained in accordance with manufacturer's specifications. All instruments will be zeroed daily and checked for accuracy. A daily log will be kept. If additional monitoring is required, the protocols will be developed and appended to this plan.

Table 1-1
Frequency and Location of Air Monitoring

ACTIVITY	AIR MONITORING INSTRUMENT	FREQUENCY AND LOCATION
Drilling, Test Pit Excavation	PID, Dust Monitor	Continuous in Breathing Zone (BZ) during intrusive activities or if odors become apparent, screening in the BZ every 30 minutes during non-intrusive activities

Table 1-2
Real-Time Air Monitoring Action Levels

AIR MONITORING INSTRUMENT	MONITORING LOCATION	ACTION LEVEL	SITE ACTION	REASON
PID	Breathing Zone	0-25 ppm, non-transient	None	Exposure below established exposure limits
PID	Breathing Zone	25-100 ppm, non-transient	Don APR	Based on potential exposure to VOCs
PID	Breathing Zone	>100 ppm, non-transient	Don ASR or SCBA, Institute vapor/odor suppression measures, Notify HSM.	Increased exposure to site contaminants, potential for vapor release to public areas.
PID	Work Area Perimeter	< 5 ppm	None	Exposure below established exposure limits.
PID	Work Area Perimeter	> 5 ppm	Stop work and implement vapor release response plan until readings return to acceptable levels, Notify HSM.	Increased exposure to site contaminants, potential for vapor release to public areas
Aerosol Monitor	Work Area Perimeter	>100 but < 150 $\mu g/m^3$ for 15 minutes	Institute dust suppression measures, Notify HSM.	Work to continue if particulate concentrations remain below 150 $\mu g/m^3$
Aerosol Monitor	Work Area Perimeter	>150 $\mu g/m^3$	Don ASR or SCBA, Institute dust suppression measures, Notify HSM.	Stop work and implement dust suppression techniques until readings return to acceptable levels, Notify HSM.

3.0 VAPOR EMISSION RESPONSE PLAN

This section is excerpted from the NYSDOH guidance for Community Air Monitoring Plan - Ground Intrusive Activities.

If the ambient air concentration of organic vapors exceeds 5 ppm above background at the perimeter of the work area, activities will be halted and monitoring continued. Vapor suppression measures can also be taken at this time. If the organic vapor level decreases below 5 ppm above background, work activities can resume. If the organic vapor levels are greater than 5 ppm over background but less than 25 ppm over background at the perimeter of the work area, activities can resume provided:

- the organic vapor level 200 feet downwind of the work area or half the distance to the nearest residential or commercial structure, whichever is less, is below 5 ppm over background.

If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shut down. When work shutdown occurs, downwind air monitoring as directed by the Site Health & Safety Officer (SHSO) will be implemented to ensure that vapor emission does not impact the nearest residential or commercial structure at levels exceeding those specified in the Major Vapor Emission Response Plan Section.

4.0 MAJOR VAPOR EMISSION RESPONSE PLAN

If any organic levels greater than 5 ppm over background are identified 200 feet downwind from the work area or half the distance to the nearest residential or commercial property, whichever is less, all work activities must be halted.

If, following the cessation of the work activities, or as the result of an emergency, organic levels persist above 5 ppm above background 200 feet downwind or half the distance to the nearest residential or commercial property from the work area, then the air quality must be monitored within 20 feet of the perimeter of the nearest residential or commercial structure (20 Foot Zone).

If efforts to abate the emission source (see **Section 5.0**) are unsuccessful and if organic vapor levels are approaching 5 ppm above background for more than 30 minutes in the 20 Foot Zone, then the Major Vapor Emission Response Plan shall automatically be placed into effect.

However, the Major Vapor Emission Response Plan shall be immediately placed in effect if organic vapor levels are greater than 10 ppm above background.

Upon activation, the following activities will be undertaken:

1. All emergency Response Contacts as listed in the Health & Safety Plan will go into effect.

2. The local police authorities will immediately be contacted by the Health & Safety Officer and advised of the situation.

3. Frequent air monitoring will be conducted at 30-minute intervals within the 20 Foot Zone. If two successive readings below action levels are measured, air monitoring may be halted or modified by the Health & Safety Officer.

5.0 VAPOR SUPPRESSION TECHNIQUES

Vapor suppression techniques must be employed when action levels warrant the use of these techniques.

The techniques to be implemented for control of VOCs from stockpiled soil or from the open excavation will include one or more of the following:

- cover with plastic
- cover with "clean soil"
- application of hydro-mulch material*
- limit working hours to favorable wind and temperature conditions

*This material is a seedless version of the hydro-seed product commonly used by commercial landscaping contractors to provide stabilization and rapid grow-in of grasses or wild flowers along highways, embankments and other large areas. Hydro-mulch can be sprayed over open excavation areas, temporary stockpile areas and loaded trucks, as necessary. This is a highly effective method for controlling odors, because the release of odors is sealed immediately at the source.

6.0 DUST SUPPRESSION TECHNIQUES

Reasonable dust-suppression techniques must be employed during all work that may generate dust, such as excavation, grading, and placement of clean fill. The following techniques were shown to be effective for controlling the generation and migration of dust during remedial activities:

- Wetting equipment and excavation faces;
- Spraying water on buckets during excavation and dumping;
- Hauling materials in properly covered containers; and,
- Restricting vehicle speeds to 10 mph.

Using atomizing sprays will prevent overly wet conditions, conserve water, and offer an effective means of suppressing fugitive dust. It is imperative that utilizing water for suppressing dust will not create surface runoff.

7.0 DATA QUALITY ASSURANCE

7.1 Calibration

Instrument calibration shall be documented in the designated field logbook. All instruments shall be calibrated before each shift. Calibration checks may be used during the day to confirm instrument accuracy. Duplicate readings may be taken to confirm individual instrument response.

7.2 Operations

All instruments shall be operated in accordance with the manufacturer's specifications. Manufacturers' literature, including an operations manual for each piece of monitoring equipment will be maintained on-site by the FOL/HSO for reference.

7.3 Data Review

The Field Team Leader FOL/SHSO will interpret all monitoring data based on Table 1-2 and his/her professional judgment. The FOL/HSO shall review the data with the HSM to evaluate the potential for worker exposure, upgrades/downgrades in level of protection, comparison to direct reading instrumentation and changes in the integrated monitoring strategy.

Monitoring and sampling data, along with all sample documentation will be periodically reviewed by the HSM.

8.0 RECORDS AND REPORTING

All readings must be recorded and available for review by personnel from NYSDEC and NYSDOH. Should any of the action levels be exceeded, the NYSDEC Division of Air Resources must be notified in writing within five (5) working days.

The notification shall include a description of the control measures implemented to prevent further exceedances.