APPENDIX A

QUALITY ASSURANCE PROJECT PLAN

Hartsdale Village Square, Aristocrat Cleaners
212 East Hartsdale Avenue
Hartsdale, New York 10530

BCA Site #C360111

EnviroTrac
Environmental Services

TABLE OF CONTENTS

1.0 PURPOSE AND OBJECTIVES 1
1.1 Purpose 1
1.2 Definitions 2
1.3 Data Quality Objectives 5
1.3.1 Overall Data Quality Objectives 5
1.3.2 Field Investigation Data Quality Objectives 5
1.3.3 Laboratory Data Quality Objectives 7
2.0 QUALITY ASSURANCE/QUALITY CONTROL PROVISIONS 8
2.1 Equipment Decontamination 8
2.2 Field Calibration and Maintenance of Equipment 8
2.3 Sample Preparation, Transportation and Holding 9
2.4 Record Keeping 10
2.5 Analytical Procedures 12
2.5.1 Soil Vapor and Air Samples 12
2.5.2 Aqueous Samples 12
2.5.3 Laboratory Deliverables 13
3.0 MANAGEMENT OF INVESTIGATION DERIVED WASTE 14
3.1 Drill Cutting and Spoil Disposal From On-site Locations 14
3.2 Drill Cutting and Spoil Disposal From Off-site Locations Not Known to be Contaminated 15
3.3 Drill Cutting and Soil Disposal From Known Contaminated Locations. 16
3.4 Investigation Generated Water/fluid Handling and Disposal. 16
4.0 QA/QC REQUIREMENTS FOR FIELD SAMPLES 18
5.0 DATA MANAGEMENT AND REPORTING PLAN 22
5.1 Data Use and Management Objectives 22
5.2 Reporting 23
5.2.1 Data Validation 24
5.2.2 Electronic Deliverables 24
5.3 Data Presentation Formats 25
6.0 PERFORMANCE AUDITS 27
6.1 Field Audits 27
6.2 Laboratory Audits 27
7.0 CORRECTIVE ACTIONS 28
8.0 PROJECT ORGANIZATION 29

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TABLE OF CONTENTS (Continued)

TABLES

Table 1-1 Sampling Locations and Required Analyses
Table 4-2 Analytical Methods/Quality Assurance Summary Table

ATTACHMENTS

Attachment 1 Laboratory Reporting Limits
Attachment 2 Standard QC Limits
Attachment 3 Resumes of Key Project Personnel

1.0 PURPOSE AND OBJECTIVES

1.1 Purpose

This Quality Assurance Project Plan (QAPP) has been prepared for site characterization activities at the Aristocrat Cleaners Site located within a strip mall at 212-218 Hartsdale Avenue in Hartsdale, New York. This QAPP applies to the activities set forth in the Amended Remedial Investigation Work Plan for the Site prepared by EnviroTrac Ltd. (EnviroTrac), which includes a summary of background information of the Site. The QAPP is intended to set Chemical Quality Assurance (CQA) guidelines of reliable data obtained by measurement activities, such that data generated are scientifically valid, defensible, comparable, and of known precision and accuracy.

This QAPP contains a detailed discussion of the chemical quality assurance protocols to be used by field and laboratory personnel, as well as project organization and responsibilities. Analysis of the soil vapor/air samples will be conducted by York Analytical Laboratories, Inc, (York) Stratford, CT. York is accredited by the National Environmental Laboratory Accreditation Program (NELAP) and is certified by the New York State Department of Health to conduct the analysis of air samples.

Analysis of the soil and groundwater samples will be conducted by Alpha Analytical (Alpha), Westborough MA. Alpha is certified in New York State to conduct work under the Environmental Laboratory Approval and Analytical Services Programs (ELAP/ASP) producing Category B deliverables.

This QAPP contains a detailed discussion of the quality assurance and quality control (QA/QC) protocols to be utilized by EnviroTrac and laboratory personnel. The sampling program that will be conducted during the Amended RI is summarized in Table 1-1.

Table 1-1: Sampling Locations and Required Analyses

Phase 1 Scope of Work	Location	Sample Designation/(depth, ft bls)	Matrix	Analysis
Soil Sampling	Outdoors at Dry Cleaners	SS-1 (1-3)	Soil	Full TCL/TAL
	Dry Cleaner Basement	SSV-2 (0.5-2.5)	Soil	Full TCL/TAL
Groundwater Sampling	Dry Cleaner Basement	MW-2	Aqueous	Full TCL/TAL
	Dry Cleaner Basement	MW-3	Aqueous	Full TCL/TAL
	Dry Cleaner Basement	MW-7	Aqueous	Full TCL/TAL

Phase 2 Scope of Work	Location	Sample Designation/(depth, ft bls)	Matrix	Analysis
Soil Sampling	Outdoors - South of Dry Cleaner	MW-2D (depth based on PID)	Soil	Full TCL/TAL
	Outdoors - South of Dry Cleaner	MW-2D (depth based on PID)	Soil	Full TCL/TAL
Groundwater Sampling	Outdoors - to be determined	MW-11	Aqueous	Full TCL/TAL
	Outdoors - South of Dry Cleaner	MW-2D	Aqueous	Full TCL/TAL

Soil Vapor Assessment (1)	Location	Sample Designation	Matrix	Analysis
	Dry Cleaner Basement	SSV-2	Air	TO-15 + Helium
	NY Sports Club Basement	SSV-3	Air	TO-15 + Helium
	Dry Cleaner Basement	IA-1	Air	TO-15
	NY Sports Club Basement	IA-2	Air	TO-15
	Outdoor Location - to be determined	OA-1	Air	TO-15

Notes:
(1) - Testing to be conducted during the November 15 through March 31 heating season

1.2 Definitions

The parameters that will be used to specify data quality objectives, and to evaluate the analytical system performance for all analytical samples are precision, accuracy, representativeness, completeness, and comparability (PARCC). Definitions of these and other key terms used in this QAPP are provided below

- ***Accuracy*** - the degree of agreement of a measurement with an accepted reference value. Accuracy is generally reported as a percent recovery, and calculated as: Accuracy = Measured Value/Accepted Value x 100
- ***Analyte*** - the chemical or property for which a sample is analyzed.
- ***Comparability*** - the expression of information in units and terms consistent with reporting conventions; the collection of data by equivalent means; or the generation of data by the same analytical method. Aqueous samples will be

reported as ug/l, solid samples will be reported in units of mg/kg, dry weight.

- ***Completeness*** - the percentage of valid data obtained relative to that which would be expected under normal conditions. Data are judged valid if they meet the stated precision and accuracy goals.
- ***Duplicate*** - two separate samples taken from the same source by the same person at essentially the same time and under the same conditions that are placed into separate containers for independent analysis. Duplicate samples are intended to assess the effectiveness of equipment decontamination, the precision of sampling efforts, the impacts of ambient environmental conditions on sensitive analyses (e.g., volatile organics analysis (VOA), and the potential for contaminants attributable to reagents or decontamination fluids. Identifying such potential sources of error is essential to the success of the sampling program and the validity of the environmental data. Each QC sample is described below. As a minimum, each set of ten or fewer field samples will include a trip blank, a duplicate, and one sample collected in a sufficient volume to allow the laboratory to perform a matrix spike.
- ***Field Blanks*** - field blanks (sometimes referred to as "equipment blanks" or "sampler blanks") are the final analyte-free water rinse from equipment decontamination in the field and are collected at least one during a sampling episode. If analytes pertinent to the project are found in the field blank, the results from the blanks will be used to qualify the levels of analytes in the samples. This qualification is made during data validation. The field blank is analyzed for the same analytes as the sample that has been collected with that equipment.
- ***Precision*** - a measure of the agreement among individual measurements of the sample property under prescribed similar conditions. Precision is generally reported as Relative Standard Deviation (RSD) or Relative Percent Difference (RPD).

Relative standard deviation is used when three or more measurements are available and is calculated as:

RSD = Standard Deviation/Arithmetic Mean x 100.

Relative percent difference is used for duplicate measurements, calculated as:

RPD = ((Value 1-Value 2)/Arithmetic Mean) x 100.

- ***Quality Assurance (QA)*** - all means taken in the field and inside the laboratory to make certain that all procedures and protocols use the same calibration and standardization procedures for reporting results; also, a program which integrates the quality planning, quality assessment, and quality improvements activities within an organization.
- ***Quality Control (QC)*** - all the means taken by an analyst to ensure that the total measurement system is calibrated correctly. It is achieved by using reference standards, duplicates, replicates, and sample spikes. In addition, the routine application of procedures designed to ensure that the data produced achieve known limits of precision and accuracy.
- ***Replicate*** - two aliquots taken from the same sample container and analyzed separately. Where replicates are impossible, as with volatile organics, duplicates must be taken.
- ***Representativeness*** - degree to which data represent a characteristic of a set of samples. The representativeness of the data is a function of the procedures and caution utilized in collecting and analyzing the samples. The representativeness can be documented by the relative percent difference between separately collected, but otherwise identical sample volumes.
- ***Trip Blanks*** - trip blanks are samples that originate from analyte-free water taken from the laboratory to the Site and returned to the laboratory with the volatile organic samples. One trip blank should accompany each cooler containing volatile organics; it will be stored at the laboratory with the samples, and analyzed with the sample set. Trip blanks are only analyzed for VOCs.

1.3 Data Quality Objectives

1.3.1 Overall Data Quality Objectives

Data Quality Objectives (DQO) are quantitative and qualitative statements specifying the quality of the environmental data necessary to support the decision-making process to guide the site characterization activities and any subsequent actions. DQO define the total uncertainty in the data that is acceptable for each specific activity conducted. This uncertainty includes both sampling error and analytical error. Ideally, the prospect of zero uncertainty is the objective; however, the very processes by which data are collected in the field and analyzed in the laboratory contribute to the uncertainty of the data. It is the overall objective to keep the total uncertainty to a minimal level such that it will not hinder the intended use of the data.

To achieve the project DQO, specific data quality parameters such as detection limits, criteria for accuracy and precision, sample representativeness, data comparability and data completeness must be specified. The overall objectives are established such that there is a high degree of confidence in the measurements.

The parameters that will be used to specify data quality objectives and to evaluate the analytical system performance for rinsate and soil samples are PARCC: precision, accuracy, representativeness, completeness, and comparability.

1.3.2 Field Investigation Data Quality Objectives

To permit calculation of precision and accuracy for the samples, blind field duplicate, field blanks, trip blanks, and matrix spike/matrix spike duplicate (MS/MSD) samples will be collected, analyzed, and evaluated. Through the submission of field QC samples, the distinction can be made between laboratory problems, sampling technique considerations, sample matrix effects, and laboratory artifacts. To assure sample representativeness, all sample collection will be performed in strict accordance with the procedures set forth in this QAPP.

Precision will be calculated as RPD if there are only two analytical points and percent relative standard deviation (% RSD) if there are more than two analytical points. Blind field duplicate and MS/MSD sample analyses will provide the means to assess precision. The submission of field and trip blanks will provide a check with respect to accuracy and will monitor chemicals that may be introduced during sampling, preservation, handling, shipping, and/or the analytical process. In the event that the blanks are contaminated and/or poor precision is obtained, the associated data will be appropriately qualified.

Representativeness will be assured through the implementation of the Remedial Investigation Work Plan of which this QAPP is a part. This plan has been designed so that the appropriate numbers of samples of each matrix and of each location of interest are obtained for analysis.

Ideally, 100% completeness is the goal. However, it must be recognized that unforeseen issues may result in the generation of some data that may not be acceptable for use. Therefore, a completeness target of 90%, as determined by the total number of usable data points versus the total number of data points measured, will be the realistic goal of this program.

Comparability is defined as the extent to which data from one data set can be compared to similar data sets. Comparability between data sets is often questionable due to issues such as different analytical methods used or inter-laboratory differences. In order that the data generated as part of this project remain comparable to any previously generated data or data to be generated in the future, currently published analytical methods have been identified for the analysis of the collected samples. These methods will be performed by an analytical laboratory with a demonstrated proficiency in the analysis of similar samples by the referenced methods. In addition, samples will be collected using documented procedures to ensure consistency of effort and reproducibility if necessary.

1.3.3 Laboratory Data Quality Objectives

The analytical laboratory will demonstrate analytical precision and accuracy by the analysis of various QC samples (i.e., laboratory duplicates, spike samples, matrix spike duplicates and laboratory control samples). Relevant precision and accuracy criteria for the analytical parameters related to this Remedial Investigation Work Plan are provided in Attachment 1-Laboratory Reporting Limits, and Attachment 2-Standard QC Limits. Precision, as well as instrument stability, will also be demonstrated by comparison of calibration response factors from the initial calibration to that of the continuing calibrations. Laboratory accuracy will be evaluated by the addition of surrogate and matrix spike compounds, and will be presented as percent recovery (%R). Precision will be presented as RPD, % RSD, or percent difference (%D), whichever is appropriate for the number and type of QC samples analyzed. Lab blanks are also used to demonstrate accuracy of analyses and possible effects from laboratory artifact contamination.

2.0 QUALITY ASSURANCE/QUALITY CONTROL PROVISIONS

2.1 Equipment Decontamination

To minimize the possible occurrence of cross-contamination, dedicated disposable equipment will be used to collect samples at the Site whenever possible. All non-disposable sampling Equipment will be cleaned before each use by washing with solutions in the following order:

1. Phosphate-free detergent wash;
2. Tap water rinse;
3. Air dry; and
4. Wrap in aluminum foil until use.

The tap water may be obtained from any municipal supply system. Sampling equipment will be decontaminated in an area covered by plastic near the sampling location. All spent liquids developed during the decontamination process will be collected for proper disposal in accordance with procedures provided in Section 3.0.

2.2 Field Calibration and Maintenance of Equipment

A maintenance, calibration, and operation program will be implemented to ensure that routine calibration and maintenance is performed on all field instruments. Team members are familiar with the field calibration, operation, and maintenance of the equipment, and will perform the prescribed field operating procedures outlined in the Operation and Field Manuals accompanying the respective instruments. They will keep records of all field instrument calibrations and field checks in the field log books.

If on-site monitoring equipment should fail, the Project Manager will be contacted immediately. The Project Manager will either provide replacement equipment or have the malfunction repaired immediately.

Field equipment will be maintained through the use of a tracking system. Each piece of equipment will carry a tag which identifies the date of the most recent maintenance, and/or battery charge, and the condition. When equipment is damaged or in need of repair it will be immediately and appropriately flagged for the required maintenance to be performed. This process ensures that only operable and maintained equipment enters the field. Routine daily maintenance procedures conducted in the field will include:

- Removal of surface dirt and debris from exposed surfaces of the sampling equipment and measurement systems;
- Protection of equipment from adverse weather conditions;
- Daily inspections of sampling equipment and measurement systems for possible problems such as cracked or clogged lines or tubing or weak batteries;
- Daily checks of instrument calibration; and
- Charge battery packs for equipment that is not in use.

2.3 Sample Preparation, Transportation and Holding

Sample bottles will be labeled with the sample location, identification number, and date and time of sampling prior to being filled with sample. Once filled the sample containers will be immediately capped and placed into an iced cooler for transport to the laboratory.

Field Chain-of Custody records completed at the time of sample collection will accompany the samples inside the cooler for shipment to the laboratory. These record forms will be sealed in a ziplock plastic bag to protect them against moisture. Each cooler will contain sufficient ice packs to insure that a 4^{0}C temperature is maintained, and will be packed in a manner to prevent damage to sample containers. Temperature blanks will accompany the coolers from the laboratory to the site and back to the laboratory. Sample coolers will be sealed with nylon strapping tape and the Field Team Leader (FTL) will sign and date a custody seal and place it on the cooler in such a way that any tampering during shipment will be detected.

All coolers will either be driven to or shipped by an overnight courier according to current US DOT regulations. Upon receiving the samples, the Sample Custodian at the laboratory will inspect the condition of the samples, compare the information on the sample labels against the field Chain-of-Custody record, assign a laboratory control number, and log the control number into the computer sample inventory system. The Sample Custodian will then store the sample in a secure sample storage cooler maintained at 4°C and maintain custody until the sample is assigned to an analyst for analysis. Custody will be maintained until disposal of the analyzed samples.

The Sample Custodian at the laboratory will note any damaged sample vials, void space within the vials, or discrepancies between the sample label and information on the field Chain-of-Custody record when logging the sample. This information will also be communicated to the FTL or field personnel so proper action can be taken. The Chain-of-Custody form will be signed by both the relinquishing and receiving parties and the reason for transfer indicated each time the sample changes hands.

An internal Chain-of-Custody form will be used by the laboratory to document sample possession from laboratory Sample Custodian to Analysts and final disposition. All Chain-of-Custody information will be supplied with the data packages for inclusion in the document control file.

2.4 Record Keeping

One or more bound books will be maintained for the site; each book will be consecutively numbered. All sample collection, handling and shipping information will be recorded in the field notebook. Accurate and detailed field notes will be maintained. Decontamination procedures will also be documented in the field notebook. The book(s) will remain with the site evidence file. Copies will be made for the Project Manager and for the person who made the entries if requested. All entries in the Logbook will be made in ink. Logbook entries will include but not be limited to the following:

First Page:

- Site Name and number;

- Date and time started; and
- Personnel on site.

Subsequent Pages:

- Detailed description of investigative activities including lithology, physical characteristics, sampling, on-site meetings and any problems encountered along with the duration of these activities;
- Documentation of all personnel monitoring results (e.g. PID readings);
- List of all samples obtained and sample appearance (referenced to field logs if necessary);
- List of personal protection used and documentation procedure; and
- All other pertinent daily activities.

Each New Day Will Contain:

- Date and time started;
- Weather;
- Personnel on-site;
- Activity information; and
- Initials of note keeper.

*Note: When a mistake is made in the log, it will be crossed out with a single ink line and will be initialed and dated.

Special care will be taken in the description and documentation of sampling procedures. Sampling information to be documented in the field notebook and/or associated forms are as follows:

- Sample #;
- Date and Time Sample collected;
- Source of Sample;
- Location of Sample - document with a site sketch and/or written description of the sampling location so that accurate re-sampling can be conducted if necessary;

- Sampling equipment;
- Analysis and QA/QC required;
- Field instrument calibration including date of calibration, standards used; and their source, results of calibration and any corrective actions taken;
- Field data;
- Field observations - all significant observations will be documented;
- Sample condition;
- Site conditions (stressed vegetation, exposure of buried wastes, erosion problems, etc.);
- Sample shipping procedure, date, time, destination and if legal seals were attached to transport container(s); and
- Comments - Any observation or event that occurred that would be relevant to the site; for example: weather changes and effect on sampling, conversations with the client, public official or private citizen; and instrument calibration, equipment problems, and field changes.

2.5 Analytical Procedures

2.5.1 Soil Vapor and Air Samples

Analysis of the soil vapor/air samples will be conducted by a laboratory accredited by the National Environmental Laboratory Accreditation Program (NELAP) and certified by the New York State Department of Health. Soil vapor/air samples will be analyzed for the EPA Full Compendium TO-15 List. A tracer (helium) will be utilized when samples are collected from sub-slab locations.

2.5.2 Aqueous Samples

Analysis of the soil and groundwater samples will be conducted by a laboratory certified in New York State to conduct work under the Environmental Laboratory Approval and Analytical Services Programs (ELAP/ASP). Soil and groundwater samples will be analyzed for the full TCL/TAL list of constituents including TCL VOCs +10, TCL SVOCs

+20, PCBs, TCL Organochlorine Pesticides and TAL Metals

2.5.3 Laboratory Deliverables

Laboratory deliverables packages will follow the NYS ASP Category B format.

3.0 MANAGEMENT OF INVESTIGATION DERIVED WASTE

Investigation derived waste (IDW) generated during the implementation of the RI will include cuttings from soil sampling, soil boring and monitoring well installations, and purge water generated during well development and groundwater sampling activities.

The following procedures will be used to manage IDW.

3.1 Drill Cutting and Spoil Disposal From On-site Locations

Drill cuttings and other soil generated on-site during the investigation from the installation of soil borings or monitoring wells will be presumed to be contaminated.

Such cuttings and spoil:

i. will be stored on protective sheeting and covered with protective sheeting if cuttings remain on ground at the end of the day;

ii. will be disposed at the site within the borehole that generated them to within 12 inches of the surface unless:
   (1) free product, NAPL or grossly contaminated soil, are present in the cuttings;
   (2) the borehole will be used for the installation of a monitoring well (cuttings may only be used to backfill boreholes installed for soil sampling);
   (3) the borehole has:
      (A) penetrated an aquitard, aquiclude or other confining layer; or
      (B) extended into bedrock;
   (4) backfilling the borehole with cuttings will create a significant path for vertical movement of contaminants. Soil additives (bentonite) may be added to the cuttings to reduce permeability; and
   (5) the soil cannot fit into the borehole.

iii. cuttings meeting any of the conditions set forth in subparagraph i above, which cannot be disposed in the borehole will be containerized and handled as set forth in Section 3.3; and

iv. the borehole area will be restored, after backfill:

(1) in unpaved areas, by placing 12 inches of cohesive, compacted soil over the area of the borehole; or

(2) for paved areas, by placing clean cohesive, compacted soil in the borehole to sufficient depth to allow restoration of the paved surface; and

v. if the work is conducted in publicly accessible areas, the off-site provisions Section 3.2 will be applied to samples collected in those areas.

3.2 Drill Cutting and Spoil Disposal From Off-site Locations Not Known to be Contaminated

Cuttings and spoils generated from off-site locations during the investigation are to be managed as follows:

i. cuttings, may initially be placed on plastic as generated,, but will be containerized as drilling progresses. Overnight storage outside of a container will not be allowed. The cuttings may be transported from the point of generation to a temporary on-site storage area without a 6 NYCRR Part 364 permit;

ii. cuttings from off-site boring locations will be considered non contaminated until testing indicates otherwise, unless field screening results of the soil are positive for the presence of contamination; and

iii. the borehole will be filled with soil or a soil bentonite mixture and restored as set forth in Section 3.1, clauses .iv. (1) or (2).

3.3 Drill Cutting and Soil Disposal From Known Contaminated Locations.

Representative samples of drill cuttings will be characterized for disposal. Such samples will be analyzed to ensure proper classification, treatment and disposal and where determined to be:

i. hazardous waste or a solid waste, will be properly managed and disposed at a properly permitted treatment, storage or disposal facility. Such waste will:
   (1) be transported by a hauler permitted in accordance with 6 NYCRR Part 364;
   (2) if such cuttings and soil are determined to be a hazardous waste, the waste shipment shall be accompanied by a manifest in accordance with 6 NYCRR Part 372; and
   (3) any IDW soil identified as either a solid or hazardous waste, may be stored on the site in a secure area awaiting disposal, in accordance with applicable DEC waste management regulations or other provisions approved by DER.

3.4 Investigation Generated Water/fluid Handling and Disposal.

All water/fluid resulting from well development and/or well purging before sampling will be collected, handled and discharged/disposed of pursuant to applicable guidance and regulations.

Water/fluid generated during the RI:

i. will be containerized upon production and will be subject to the following handling/disposal guidelines:
   (1) 6 NYCRR Part 364 will not apply to the transport of the containers from the point of generation to a temporary on-site storage area;
   (2) the containers will be securely staged, pending appropriate disposal as set forth in subparagraph ii below;
   (3) NAPL shall never be released to the ground;
   (4) where containers include water mixed with NAPL, the water can be decanted

from the NAPL (or vice versa) as long as a measurable layer of water remains with the NAPL, and the decanted water is NAPL- and/or sheen-free;

(5) groundwater from several monitoring wells may be combined; and

(6) NAPL may be collected from several containers and combined;

ii. may be stored on-site in labeled containers in an area with secondary containment awaiting treatment and/or disposal, in accordance with applicable DEC waste management regulations (e.g., 6 NYCRR Parts 360, 364 and the 370 series) or other provisions approved by DER. The contents of the containers will be:

(1) properly treated or disposed of, when any of the following are observed:

(A) visual evidence of contamination, consisting of discoloration, sheens, free product or NAPL;

(B) olfactory evidence of contamination; or

(C) concentrations of contaminants above groundwater standards at levels of concern are known to be present in the monitoring wells, based on previous sampling of the groundwater; or

(2) if none of the conditions described in clause ii.(1) apply, the containerized water may be:

(A) recharged to unpaved ground into the same groundwater unit, within or directly adjacent to a source area in a manner which does not result in surface water runoff, with DER approval; and

(3) treatment of contaminated water/fluids will be at:

(A) a permitted off-site facility;

iii. sediment that settles out during monitoring well development or well purging, provided there is no NAPL or free product present, will be handled and disposed in accordance with paragraphs 1 to 3 above, as appropriate for the location of the well.

4.0 QA/QC REQUIREMENTS FOR FIELD SAMPLES

In accordance with sampling and analysis requirements provided in DER-10, Chapter 2 Sampling, Analysis and Quality Assurance, testing for laboratory characterization of site media will include provisions to serve as a check on the accuracy and integrity of results. This will entail the collection and analysis of various blanks, duplicates and spiked samples as described below.

<u>Trip Blanks</u>

The trip blank will be used to determine if any cross-contamination occurs between aqueous samples during shipment. The analytical laboratory will supply trip blanks as aliquots of distilled, deionized water that will be sealed in a sample bottle prior to initiation of each day of fieldwork. Glass vials (40 ml) with Teflon lined lids will be used for trip blanks. The sealed trip blank bottles will be placed in a cooler with the empty sample bottles and will be shipped to the Site by the laboratory personnel. If multiple coolers are necessary to store and transport aqueous VOC samples, then each cooler must contain an individual trip blank. Trip blanks are analyzed for VOCs only.

<u>Field Blanks</u>

Field blanks will be collected to evaluate the cleanliness of soil and aqueous sampling equipment, sample bottles and the potential for cross-contamination of samples due to handling of equipment, sample bottles and contaminants present in the air. Field blanks will collected at a frequency of one per decontamination event for each type of sampling equipment, and each media being sampled (e.g., a groundwater bailer for groundwater, and a hand auger for soil sampling), at a minimum of one per equipment type and/ or media per day.

Field blanks will be collected prior to the occurrence of any analytical field-sampling event by pouring deionized or potable water over a particular piece of sampling equipment and into a sample container. The analytical laboratory will provide field blank water and sample jars with preservatives for the collection of all field blanks. Glass jars will be used for organic blanks. The field blanks as well as the trip blanks will accompany field personnel to the sampling location. The field blanks will be analyzed for the same analytes as the environmental samples being collected that day and will be shipped with the samples taken.

Field blanks will be taken in accordance with the procedure described below:

- Decontaminate sampler using the procedures specified in the QAPP;
- Pour distilled/deionized water over the sampling equipment and collect the rinsate water in the appropriate sample bottles;
- The sample will be immediately placed in a sample cooler and maintained at a temperature of 4°C until receipt by the laboratory; and
- Fill out sample log, labels, and COC forms, and record in field notebook.

<u>Temperature Blanks</u>

The temperature blank will be used to determine the temperature of the samples within the cooler upon arrival at the analytical laboratory. A laboratory-supplied temperature blank will be an aliquot of distilled, deionized water that will be sealed in a sample bottle. The sealed temperature blank bottles will be placed in a cooler with the empty sample bottles and will be shipped to the Site by the laboratory personnel. If multiple coolers are necessary to store and transport samples, then each cooler must contain an individual temperature blank.

<u>Blind Field Duplicate Samples</u>

Blind field duplicate samples will be collected and analyzed to check laboratory reproducibility of analytical data. Blind field duplicate samples will be collected at a frequency of at least 5% (one out of every 20 samples) of the total number of samples collected to evaluate the precision and reproducibility of the analytical methods. All blind field duplicate samples will be submitted to the analytical laboratory as a normal sample, however will have a fictitious sample identification and fictitious time of sample collection. Each blind field duplicate will be cross-referenced to document which actual sample it is a blind field duplicate of in the field notes and on the master sample log.

Split Samples

Split samples are not anticipated for work conducted at the Site; however, if split samples are required, then the following procedures will be conducted:

One of the aspects for generating sound quality analytical data is to collect quality assurance (QA) split samples that will be submitted to a third party analytical laboratory selected by the NYSDEC for analysis. The results from the QA split samples will then be compared to the analytical results from the primary analytical laboratory.

Matrix Spike/Matrix Spike Duplicate

Additional environmental sample volume will be collected for use as MS/MSD samples at a frequency of at least 5% (one out of every 20 samples) of the total number of samples collected per matrix to evaluate the precision and reproducibility of the analytical methods.

The field sampling quality assurance-sampling program is summarized in the following table.

Table 4-2: Analytical Methods/Quality Assurance Summary Table

		Soil					Air
Analytical Parameter		TCL VOA +10	TCL SemiVOC +20	PCBs	TCL Organochlorine Pesticides	TAL Metals	VOA + Helium (5)
Number of Samples		4	4	4	4	4	5
Number of Duplicate Samples (1)		1	1	1	1	1	1
Number of Field Blanks (2)		3	3	3	3	3	NA
Number of Trip Blanks (3)		NA	NA	NA	NA	NA	NA
Number of MS/MSD Pairs (4)		1	1	1	1	1	NA
Analytical Method	(5)	SW-846 8260B	SW-846 8270C	SW-846 8082	SW-846 8081A	SW-846 6010B/7471	Modified TO-15 Hi/Lo
Sample Container		4 oz. amber jar w/ septum top	8 oz. amber jar w/Teflon lined cap	8 oz. amber jar w/Teflon lined cap	8 oz. amber jar w/Teflon lined cap	8 oz. amber jar w/Teflon lined cap	6 L Summa Canister - collected via flow controller for 8 hours
Sample Preservation		Cool, 4°C	Cool, 4°C	Cool, 4°C	Cool, 4°C	Cool, 4°C	NA
Sample Holding Time		14 days	14 days to extraction/40 days to analysis	14 days to extraction/40 days to analysis	14 days to extraction/40 days to analysis	Hg 28 days, all others180 days	30 days

		Aqueous				
Analytical Parameter		TCL VOA +10	TCL SemiVOC +20	PCBs	TCL Organochlorine Pesticides	TAL Metals
Number of Samples		7	7	7	7	7
Number of Duplicate Samples (1)		1	1	1	1	1
Number of Field Blanks (2)		3	3	3	3	3
Number of Trip Blanks (3)		2	NA	NA	NA	NA
Number of MS/MSD Pairs (4)		1	1	1	1	1
Analytical Method	(6)	SW-846 8260B	SW-846 8270C	SW-846 8082	SW-846 8081A	SW-846 6010B/7470
Sample Container		40 ml septum top amber	2-one liter amber	2-one liter amber	2-one liter amber	500 ml plastic
Sample Preservation		Cool, 4°C, HCl to pH<2	Cool, 4°C	Cool, 4°C	Cool, 4°C	Cool, 4°C, HNO3 to pH<2
Sample Holding Time		14 days	7 days to extraction/40 days to analysis	7 days to extraction/40 days to analysis	7 days to extraction/40 days to analysis	Hg 28 days, all others180 days

Notes:

NA - Not Applicable.

MS/MSD - Matrix Spike, Matrix Spike Duplicate.

(1) Duplicates will be collected at a frequency of five percent (1 per 20 field samples).

(2) Field Blanks will be collected at a frequency of one per day, where applicable.

(3) Trip Blanks will be collected at the rate of one per aqueous sample shipment when VOCs are collected.

(4) MS/MSD pairs will be collected at a frequency of five percent (1 per 20 field samples), where applicable.

(5) Helium testing to be conducted for sub-slab soil vapor samples.

(6) As specified by York Analytical Laboratories, Stratford, CT (air samples), and Alpha Analytical, Westborough, MA (soil and aqueous samples).

EnviroTrac
Environmental Services

5.0 DATA MANAGEMENT AND REPORTING PLAN

5.1 Data Use and Management Objectives

Data Use Objectives

The typical data use objectives for this project are:

- Ascertaining if there is a threat to public health or the environment;
- Locating and identifying potential sources of impacts to soil or groundwater;
- Delineation of horizontal and vertical constituent concentrations, identifying clean areas, estimating the extent and/or volume of impacted soil and groundwater;
- Determining treatment and disposal options;
- Characterizing soil for on-site or off-site treatment; and
- Formulating remediation strategies, and estimating remediation costs.

Data Management Objectives

The primary objective of proper data management is to ensure and document that all necessary work is conducted in accordance with the project goals and QAPP in an efficient and high quality manner thereby maximizing the confidence in the data in terms of precision, accuracy, representativeness, completeness, and comparability (PARCC). Data management procedures not only include field and laboratory documentation, but also include how the information is handled after the conclusion of field investigation and laboratory analyses area completed. - Data handling procedures include project file management, reporting, usability analysis and use of consistent formats for the presentation of the data.

Project File Specifications

The EnviroTrac Project Manager in EnviroTrac's Yaphank, New York office location will keep all project information in a central Project File maintained. The Project File will be assigned a unique project number that will be clearly displayed on all project file folders (including electronic files). Electronic files will be maintained in a similarly organized Project File located on the EnviroTrac central network system that is backed regularly to both on-site and off-site locations. Both hard copy and electronic Project Files will contain, at a minimum copies or originals of the following key project information:

- All correspondence including letters, transmittals, telephone logs, memoranda, and emails;
- Meeting notes;
- Technical information such as analytical data; field survey results, field notes, field logbooks and field management forms;
- Project calculations;
- Subcontractor agreements/contracts, and insurance certificates;
- Project-specific health and safety information/records;
- Access agreements;
- Project document output review/approval documentation; and
- Reports: Monthly Progress, Interim Technical, and Draft/Final Technical.

5.2 Reporting

<u>Field Data</u>

Field data will be recorded and reported by field personnel using appropriate field data documentation materials such as the field logbook, field management forms, and COC forms.

Good field management procedures include following proper chain of custody procedures to track a sample from collection through analysis, noting when and how samples are split (if necessary), making regular and complete entries in the field logbook, and the consistent use and completion of field management forms. Proper completion of these forms and the field logbook are necessary to support the consequent actions that may result from the sample analysis. This documentation will support that the samples were collected and handled properly making the resultant data complete, comparable, and defensible.

5.2.1 Data Validation

Field data generated in accordance with the project-specific scope of work will primarily consist of data associated with soil boring/soil vapor probe advancement and screening, soil classification information and groundwater sampling field parameters. This data will be assessed by review of the project documentation to check that the scope of work specified in the Work Plan and this QAPP have been correctly implemented and that documentation exists for the specified field instrument calibrations. This documentation will be considered sufficient to provide that proper procedures have been followed during the field investigation.

DUSRs will be prepared to provide a thorough evaluation of analytical data with the primary objective to determine whether or not the data, as presented, meets the site/project specific criteria for data quality and data use. These reports will be prepared by a qualified party independent of the laboratory performing the analysis and independent from any direct involvement with the project for all samples when Category B data deliverables are provided. All of the laboratory testing that will be conducted during the implementation of the proposed Amended RIWP will include Category B deliverables.

5.2.2 Electronic Deliverables

In accordance with DER-10 Section 1.15 electronic deliverables will be utilized to the greatest degree appropriate. The NYSDEC has implemented an Environmental Information Management System (EIMS). The EIMS uses the database software application EQuIS from EarthSoft® Inc. to manage environmental data. Pursuant to 6 NYCRR 375-1.11(a) all data submitted to the DER will be in the DEC-approved Electronic Data Deliverable (EDD) and new data will be submitted on a continuous basis immediately after data validation occurs but not to exceed 90 days after the data has been obtained.

5.3 Data Presentation Formats

Project data will be presented in consistent formats for all letters, Progress Reports, Interim Technical Reports, and Draft/Final Technical Reports. Specific formats will be tailored to best fit the needs of the data being presented but general specifications are described below.

<u>Data Records</u>

The data record will generally include one or more of the following:

- Unique sample or field measurement code;
- Sampling or field measurement location and sample or measurement type;
- Sampling or field measurement raw data;
- Laboratory analysis ID number;
- Property or component measured; and
- Result of analysis (e.g., concentration).

<u>Tabular Displays</u>

The following data will generally be presented in tabular displays:

- Unsorted (raw) data;
- Results for each medium or for each constituent monitored;
- Data reduction for statistical analysis;
- Sorting of data by potential stratification factors (e.g., location, soil Layer/depth, topography, etc.); and
- Summary data.

Graphical Displays

The following data will be presented in graphical formats (e.g., bar graphs, line graphs, area or plan maps, isopleth plots, cross-sectional plots or transects, three dimensional graphs, etc.):

- Sample locations and sampling grid;
- Boundaries of sampling area;
- Areas where additional data are necessary;
- Constituent concentrations at each sample location;
- Geographical extent of impacts;
- Constituent concentration levels, averages, minima and maxima;
- Changes in concentration in relation to distance from the source, time,
- depth or other parameters;
- Features affecting intramedia transport; and
- Potential receptors.

6.0 PERFORMANCE AUDITS

6.1 Field Audits

During field activities, the EnviroTrac QAO or designee may accompany sampling personnel into the field to verify that the sampling program is being properly implemented and to detect and define problems so that corrective action can be taken. All findings will be documented and provided to the EnviroTrac Project Manager and Field Task Manager.

6.2 Laboratory Audits

The NYSDOH ELAP CLP certified laboratories that have satisfactorily completed performance audits and performance evaluation samples will be used for all sample analysis. The results of the most recent performance audits and performance evaluations will be made available upon request. EnviroTrac may perform a laboratory audit if warranted.

7.0 CORRECTIVE ACTIONS

The laboratory utilized for this project will meet the specifications for corrective action protocols typical for performing contract laboratory services. Laboratory corrective action may include instrumentation maintenance, methods modification, cross contamination/carry over issues, sample tracking practices, laboratory information management (LIMs), etc.

Prior to mobilization for the field investigation, a meeting may be scheduled among representatives of EnviroTrac and the laboratory to discuss general corrective action approach and establish procedures to ensure good and timely communications among all parties during the investigation. New procedures will be put into effect as appropriate.

8.0 PROJECT ORGANIZATION

The EnviroTrac personnel involved in the project have extensive experience in conducting environmental investigations and remedial actions. The project organization is provided below and resumes for key personnel are presented in Attachment 3.

Mr. Peter C. Breen, CPG will serve as the project manager and have responsibility for the overall coordination and implementation of the project. Mr. Breen has 27 years of diverse experience in conducting site cleanups under a wide variety of environmental settings and regulatory programs.

Mr. Patrick Criscuola will serve as the field team leader and will have responsibility for overseeing and directing field activities and assisting the project manager to implement the project requirements. Mr. Criscuola has 5 years of experience in conducting environmental site assessment and remediation work.

Ms. Donna Eschrich will assist the project team with quality assurance and data management issues. As necessary, Ms. Eschrich will interface with laboratory, data validation and field personnel regarding quality issues that might arise during the project and will bring any quality assurance/quality control concerns to the attention of EnviroTrac's project manager.

Mr. Michael Clark, CHMM has over 20 years experience in the environmental, health and safety field and is the corporate director of EnviroTrac's Health and Safety program. He will be available to evaluate and resolve issues that may arise during the project on an as-needed basis and to assist the project manager in the overall implementation.

ATTACHMENTS

EnviroTrac
Environmental Services

ATTACHMENT 1

LABORATORY REPORTING LIMITS

EnviroTrac
Environmental Services

Laboratory Reporting Limits for Air Samples
Aristocrat Dry Cleaners - Hartsdale, New York

VOCs by TO-15	Reporting Limit (ug/m3) (1)
Vinyl Chloride	0.25
Vinyl bromide	1
Vinyl acetate	1
Trichloroethylene	0.25
trans-1,3-Dichloropropylene	1
trans-1,2-Dichloroethylene	1
Toluene	1
Tetrahydrofuran	1
Tetrachloroethylene	1
Styrene	1
Propylene	1
p-Ethyltoluene	1
p-&m- Xylenes	1
o-Xylene	1
n-Hexane	1
n-Heptane	1
Methylene chloride	1
Methyl tert-butyl ether (MTBE)	1
4-Methyl-2-pentanone	1
Isopropanol	1
Hexachlorobutadiene	1
Ethyl Benzene	1
Ethyl acetate	1
Cyclohexane	1
cis-1,3-Dichloropropylene	1
cis-1,2-Dichloroethylene	1
Chloromethane	1
Chloroform	1
Chloroethane	1
Carbon tetrachloride	0.25
Carbon disulfide	1
Bromomethane	1
Bromoform	1
Bromodichloromethane	1
Benzyl chloride	1
Benzene	1
Acetone	1
3-Chloropropene	1

Laboratory Reporting Limits for Air Samples
Aristocrat Dry Cleaners - Hartsdale, New York

VOCs by TO-15 (continued)	Reporting Limit (ug/m3) (1)
2-Hexanone	1
2-Butanone	1
2,2,4-Trimethylpentane	1
1,4-Dioxane	1
1,4-Dichlorobenzene	1
1,3-Dichlorobenzene	1
1,3-Butadiene	1
1,3,5-Trimethylbenzene	1
1,2-Dichlorotetrafluoroethane	1
1,2-Dichloropropane	1
1,2-Dichloroethane	1
1,2-Dichlorobenzene	1
1,2,4-Trimethylbenzene	1
1,2,4-Trichlorobenzene	1
1,1-Dichloroethylene	1
1,1-Dichloroethane	1
Trichlorofluoromethane (Freon 11)	1
1,1,2-Trichloroethane	1
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	1
1,1,2,2-Tetrachloroethane	1
1,1,1-Trichloroethane	1
Dichlorodifluoromethane	1
Chlorobenzene	1

Notes:
As specified by York Analytical Laboratories, Inc.
(1) - RL will be equal or less than the indicated concentration.

Laboratory Reporting Limits for Soil Samples
Aristocrat Dry Cleaners - Hartsdale, New York

VOCs by GC/MS	CAS#	Reporting Limit (mg/kg)
Methylene chloride	75-09-2	0.034
1,1-Dichloroethane	75-34-3	0.0052
Chloroform	67-66-3	0.0052
Carbon tetrachloride	56-23-5	0.0034
1,2-Dichloropropane	78-87-5	0.012
Dibromochloromethane	124-48-1	0.0034
1,1,2-Trichloroethane	79-00-5	0.0052
Tetrachloroethene	127-18-4	0.0034
Chlorobenzene	108-90-7	0.0034
Trichlorofluoromethane	75-69-4	0.018
1,2-Dichloroethane	107-06-2	0.0034
1,1,1-Trichloroethane	71-55-6	0.0034
Bromodichloromethane	75-27-4	0.0034
trans-1,3-Dichloropropene	10061-02-6	0.0034
cis-1,3-Dichloropropene	10061-01-5	0.0034
1,1-Dichloropropene	563-58-6	0.018
Bromoform	75-25-2	0.014
1,1,2,2-Tetrachloroethane	79-34-5	0.0034
Benzene	71-43-2	0.0034
Toluene	108-88-3	0.0052
Ethylbenzene	100-41-4	0.0034
Chloromethane	74-87-3	0.018
Bromomethane	74-83-9	0.0069
Vinyl chloride	75-01-4	0.0069
Chloroethane	75-00-3	0.0069
1,1-Dichloroethene	75-35-4	0.0034
trans-1,2-Dichloroethene	156-60-5	0.0052
Trichloroethene	79-01-6	0.0034
1,2-Dichlorobenzene	95-50-1	0.018
1,3-Dichlorobenzene	541-73-1	0.018
1,4-Dichlorobenzene	106-46-7	0.018
Methyl tert butyl ether	1634-04-4	0.0069
p/m-Xylene	106-42-3/108-38-3	0.0069
o-Xylene	95-47-6	0.0069
cis-1,2-Dichloroethene	156-59-2	0.0034
Dibromomethane	74-95-3	0.034
Styrene	100-42-5	0.0069
Dichlorodifluoromethane	75-71-8	0.034

Laboratory Reporting Limits for Soil Samples
Aristocrat Dry Cleaners - Hartsdale, New York

VOCs by GC/MS (continued)	CAS#	Reporting Limit (mg/kg)
Acetone	67-64-1	0.212
Carbon disulfide	75-15-0	0.034
2-Butanone	78-93-3	0.046
Vinyl acetate	108-05-4	0.034
4-Methyl-2-pentanone	108-10-1	0.034
1,2,3-Trichloropropane	96-18-4	0.034
2-Hexanone	591-78-6	0.034
Bromochloromethane	74-97-5	0.018
2,2-Dichloropropane	594-20-7	0.018
1,2-Dibromoethane	106-93-4	0.014
1,3-Dichloropropane	142-28-9	0.018
1,1,1,2-Tetrachloroethane	630-20-6	0.0034
Bromobenzene	108-86-1	0.018
n-Butylbenzene	104-51-8	0.0034
sec-Butylbenzene	135-98-8	0.0034
tert-Butylbenzene	98-06-6	0.018
o-Chlorotoluene	95-49-8	0.018
p-Chlorotoluene	106-43-4	0.018
1,2-Dibromo-3-chloropropane	96-12-8	0.018
Hexachlorobutadiene	87-68-3	0.018
Isopropylbenzene	98-82-8	0.0034
p-Isopropyltoluene	99-87-6	0.0034
Naphthalene	91-20-3	0.018
Acrylonitrile	107-13-1	0.034
n-Propylbenzene	103-65-1	0.0034
1,2,3-Trichlorobenzene	87-61-6	0.018
1,2,4-Trichlorobenzene	120-82-1	0.018
1,3,5-Trimethylbenzene	108-67-8	0.018
1,2,4-Trimethylbenzene	95-63-6	0.018
1,4-Diethylbenzene	105-05-5	0.014
4-Ethyltoluene	622-96-8	0.014
1,2,4,5-Tetramethylbenzene	95-93-2	0.014
Ethyl ether	60-29-7	0.018
trans-1,4-Dichloro-2-butene	110-57-6	0.018

Laboratory Reporting Limits for Soil Samples
Aristocrat Dry Cleaners - Hartsdale, New York

Organochlorine pesticides by GC	CAS#	Reporting Limit (mg/kg)
Delta-BHC	319-86-8	0.0131
Lindane	58-89-9	0.00434
Alpha-BHC	319-84-6	0.00434
Beta-BHC	319-85-7	0.0131
Heptachlor	76-44-8	0.00521
Aldrin	309-00-2	0.0131
Heptachlor epoxide	1024-57-3	0.0195
Endrin	72-20-8	0.00434
Endrin ketone	53494-70-5	0.0131
Dieldrin	60-57-1	0.00651
4,4'-DDE	72-55-9	0.0195
4,4'-DDD	72-54-8	0.0131
4,4'-DDT	50-29-3	0.0195
Endosulfan I	959-98-8	0.0131
Endosulfan II	33213-65-9	0.0195
Endosulfan sulfate	1031-07-8	0.00434
Methoxychlor	72-43-5	0.0195
trans-Chlordane	5103-74-2	0.0131
Chlordane	57-74-9	0.0846

PCBs by GC	CAS#	Reporting Limit (mg/kg)
Aroclor 1016	12674-11-2	0.0427
Aroclor 1221	11104-28-2	0.0427
Aroclor 1232	11141-16-5	0.0427
Aroclor 1242	53469-21-9	0.0427
Aroclor 1248	12672-29-6	0.0427
Aroclor 1254	11097-69-1	0.0427
Aroclor 1260	11096-82-5	0.0427

Laboratory Reporting Limits for Soil Samples
Aristocrat Dry Cleaners - Hartsdale, New York

SVOCs by GC/MS	CAS#	Reporting Limit (mg/kg)
1,2,4-Trichlorobenzene	120-82-1	0.42
Bis(2-chloroethyl)ether	111-44-4	0.42
1,2-Dichlorobenzene	95-50-1	0.42
1,3-Dichlorobenzene	541-73-1	0.42
1,4-Dichlorobenzene	106-46-7	0.42
3,3'-Dichlorobenzidine	91-94-1	0.84
2,4-Dinitrotoluene	121-14-2	0.42
2,6-Dinitrotoluene	606-20-2	0.42
4-Chlorophenyl phenyl ether	7005-72-3	0.42
4-Bromophenyl phenyl ether	101-55-3	0.42
Bis(2-chloroisopropyl)ether	108-60-1	0.42
Bis(2-chloroethoxy)methane	111-91-1	0.42
Hexachlorocyclopentadiene	77-47-4	0.84
Isophorone	78-59-1	0.42
Nitrobenzene	98-95-3	0.42
NitrosoDiPhenylAmine(NDPA)/DP	86-30-6	1.3
n-Nitrosodi-n-propylamine	621-64-7	0.42
Bis(2-Ethylhexyl)phthalate	117-81-7	0.84
Butyl benzyl phthalate	85-68-7	0.42
Di-n-butylphthalate	84-74-2	0.42
Di-n-octylphthalate	117-84-0	0.42
Diethyl phthalate	84-66-2	0.42
Dimethyl phthalate	131-11-3	0.42
Biphenyl	92-52-4	0.42
4-Chloroaniline	106-47-8	0.42
2-Nitroaniline	88-74-4	0.42
3-Nitroaniline	99-09-2	0.42
4-Nitroaniline	100-01-6	0.59
Dibenzofuran	132-64-9	0.42
1,2,4,5-Tetrachlorobenzene	95-94-3	1.6
Acetophenone	98-86-2	1.6
2,4,6-Trichlorophenol	88-06-2	0.42
P-Chloro-M-Cresol	59-50-7	0.42
2-Chlorophenol	95-57-8	0.51
2,4-Dichlorophenol	120-83-2	0.84
2,4-Dimethylphenol	105-67-9	0.42
2-Nitrophenol	88-75-5	1.6
4-Nitrophenol	100-02-7	0.84

Laboratory Reporting Limits for Soil Samples
Aristocrat Dry Cleaners - Hartsdale, New York

SVOCs by GC/MS (continued)	CAS#	Reporting Limit (mg/kg)
2,4-Dinitrophenol	51-28-5	1.6
4,6-Dinitro-o-cresol	534-52-1	1.6
Phenol	108-95-2	0.6
2-Methylphenol	95-48-7	0.51
3-Methylphenol/4-Methylphenol	108-39-4	0.51
2,4,5-Trichlorophenol	95-95-4	0.42
Benzoic Acid	65-85-0	4.2
Benzyl Alcohol	100-51-6	0.84
Carbazole	86-74-8	0.42

SVOCs by GC/MS SIM	CAS#	Reporting Limit (mg/kg)
Acenaphthene	83-32-9	0.016
2-Chloronaphthalene	91-58-7	0.016
Fluoranthene	206-44-0	0.016
Hexachlorobutadiene	87-68-3	0.042
Naphthalene	91-20-3	0.016
Benzo(a)anthracene	56-55-3	0.016
Benzo(a)pyrene	50-32-8	0.016
Benzo(b)fluoranthene	205-99-2	0.016
Benzo(k)fluoranthene	207-08-9	0.016
Chrysene	218-01-9	0.016
Acenaphthylene	208-96-8	0.016
Anthracene	120-12-7	0.016
Benzo(ghi)perylene	191-24-2	0.016
Fluorene	86-73-7	0.016
Phenanthrene	85-01-8	0.016
Dibenzo(a,h)anthracene	53-70-3	0.016
Indeno(1,2,3-cd)Pyrene	193-39-5	0.016
Pyrene	129-00-0	0.016
2-Methylnaphthalene	91-57-6	0.016
Pentachlorophenol	87-86-5	0.067
Hexachlorobenzene	118-74-1	0.067
Hexachloroethane	67-72-1	0.067

Laboratory Reporting Limits for Soil Samples
Aristocrat Dry Cleaners - Hartsdale, New York

Total Metals	CAS#	Reporting Limit (mg/kg)
Aluminum, Total	7429-90-5	4.0
Antimony, Total	7440-36-0	2.0
Arsenic, Total	7440-38-2	0.4
Barium, Total	7440-39-3	0.4
Beryllium, Total	7440-41-7	0.2
Cadmium, Total	7440-43-9	0.4
Calcium, Total	7440-70-2	4.0
Chromium, Total	7440-47-3	0.4
Cobalt, Total	7440-48-4	0.8
Copper, Total	7440-50-8	0.4
Iron, Total	7439-89-6	2.0
Lead, Total	7439-92-1	2.0
Magnesium, Total	7439-95-4	4.0
Manganese, Total	7439-96-5	0.4
Mercury, Total	7439-97-6	0.08
Nickel, Total	7440-02-0	1.0
Potassium, Total	7440-09-7	100
Selenium, Total	7782-49-2	2.0
Silver, Total	7440-22-4	0.4
Sodium, Total	7440-23-5	80
Thallium, Total	7440-28-0	2.0
Vanadium, Total	7440-62-2	0.4
Zinc, Total	7440-66-6	2.0

General Chemistry	CAS#	Reporting Limit (mg/kg)
Cyanide, Total	57-12-5	1.0

Notes:
As specified by Alpha Analytical.

Laboratory Reporting Limits for Aqueous Samples
Aristocrat Dry Cleaners - Hartsdale, New York

VOCs by GC/MS	CAS#	Reporting Limit (ug/l)
Methylene chloride	75-09-2	5
1,1-Dichloroethane	75-34-3	0.75
Chloroform	67-66-3	0.75
Carbon tetrachloride	56-23-5	0.5
1,2-Dichloropropane	78-87-5	1.8
Dibromochloromethane	124-48-1	0.5
1,1,2-Trichloroethane	79-00-5	0.75
Tetrachloroethene	127-18-4	0.5
Chlorobenzene	108-90-7	0.5
Trichlorofluoromethane	75-69-4	2.5
1,2-Dichloroethane	107-06-2	0.5
1,1,1-Trichloroethane	71-55-6	0.5
Bromodichloromethane	75-27-4	0.5
trans-1,3-Dichloropropene	10061-02-6	0.5
cis-1,3-Dichloropropene	10061-01-5	0.5
1,1-Dichloropropene	563-58-6	2.5
Bromoform	75-25-2	2
1,1,2,2-Tetrachloroethane	79-34-5	0.5
Benzene	71-43-2	0.5
Toluene	108-88-3	0.75
Ethylbenzene	100-41-4	0.5
Chloromethane	74-87-3	2.5
Bromomethane	74-83-9	1
Vinyl chloride	75-01-4	1
Chloroethane	75-00-3	1
1,1-Dichloroethene	75-35-4	0.5
trans-1,2-Dichloroethene	156-60-5	0.75
Trichloroethene	79-01-6	0.5
1,2-Dichlorobenzene	95-50-1	2.5
1,3-Dichlorobenzene	541-73-1	2.5
1,4-Dichlorobenzene	106-46-7	2.5
Methyl tert butyl ether	1634-04-4	1
p/m-Xylene	106-42-3/108-38-3	1
o-Xylene	95-47-6	1
cis-1,2-Dichloroethene	156-59-2	0.5
Dibromomethane	74-95-3	5
1,2,3-Trichloropropane	96-18-4	5
Acrylonitrile	107-13-1	5
Styrene	100-42-5	1

Laboratory Reporting Limits for Aqueous Samples
Aristocrat Dry Cleaners - Hartsdale, New York

VOCs by GC/MS (continued)	CAS#	Reporting Limit (ug/l)
Dichlorodifluoromethane	75-71-8	5
Acetone	67-64-1	5
Carbon disulfide	75-15-0	5
2-Butanone	78-93-3	5
Vinyl acetate	108-05-4	5
4-Methyl-2-pentanone	108-10-1	5
2-Hexanone	591-78-6	5
Bromochloromethane	74-97-5	2.5
2,2-Dichloropropane	594-20-7	2.5
1,2-Dibromoethane	106-93-4	2
1,3-Dichloropropane	142-28-9	2.5
1,1,1,2-Tetrachloroethane	630-20-6	0.5
Bromobenzene	108-86-1	2.5
n-Butylbenzene	104-51-8	0.5
sec-Butylbenzene	135-98-8	0.5
tert-Butylbenzene	98-06-6	2.5
o-Chlorotoluene	95-49-8	2.5
p-Chlorotoluene	106-43-4	2.5
1,2-Dibromo-3-chloropropane	96-12-8	2.5
Hexachlorobutadiene	87-68-3	0.6
Isopropylbenzene	98-82-8	0.5
p-Isopropyltoluene	99-87-6	0.5
Naphthalene	91-20-3	2.5
n-Propylbenzene	103-65-1	0.5
1,2,3-Trichlorobenzene	87-61-6	2.5
1,2,4-Trichlorobenzene	120-82-1	2.5
1,3,5-Trimethylbenzene	108-67-8	2.5
1,2,4-Trimethylbenzene	95-63-6	2.5
1,4-Diethylbenzene	105-05-5	2
4-Ethyltoluene	622-96-8	2
1,2,4,5-Tetramethylbenzene	95-93-2	2
Ethyl ether	60-29-7	2.5
trans-1,4-Dichloro-2-butene	110-57-6	2.5

Laboratory Reporting Limits for Aqueous Samples
Aristocrat Dry Cleaners - Hartsdale, New York

Organochlorine pesticides by GC	CAS#	Reporting Limit (ug/l)
Delta-BHC	319-86-8	0.02
Lindane	58-89-9	0.02
Alpha-BHC	319-84-6	0.02
Beta-BHC	319-85-7	0.02
Heptachlor	76-44-8	0.02
Aldrin	309-00-2	0.02
Heptachlor epoxide	1024-57-3	0.02
Endrin	72-20-8	0.04
Endrin ketone	53494-70-5	0.04
Dieldrin	60-57-1	0.04
4,4'-DDE	72-55-9	0.04
4,4'-DDD	72-54-8	0.04
4,4'-DDT	50-29-3	0.04
Endosulfan I	959-98-8	0.02
Endosulfan II	33213-65-9	0.04
Endosulfan sulfate	1031-07-8	0.04
Methoxychlor	72-43-5	0.2
Toxaphene	8001-35-2	0.2
trans-Chlordane	5103-74-2	0.02
Chlordane	57-74-9	0.2

PCBs by GC	CAS#	Reporting Limit (ug/l)
Aroclor 1016	12674-11-2	0.083
Aroclor 1221	11104-28-2	0.083
Aroclor 1232	11141-16-5	0.083
Aroclor 1242	53469-21-9	0.083
Aroclor 1248	12672-29-6	0.083
Aroclor 1254	11097-69-1	0.083
Aroclor 1260	11096-82-5	0.083

Laboratory Reporting Limits for Aqueous Samples
Aristocrat Dry Cleaners - Hartsdale, New York

SVOCs by GC/MS	CAS#	Reporting Limit (ug/l)
1,2,4-Trichlorobenzene	120-82-1	5
Bis(2-chloroethyl)ether	111-44-4	5
1,2-Dichlorobenzene	95-50-1	5
1,3-Dichlorobenzene	541-73-1	5
1,4-Dichlorobenzene	106-46-7	5
3,3'-Dichlorobenzidine	91-94-1	50
2,4-Dinitrotoluene	121-14-2	6
2,6-Dinitrotoluene	606-20-2	5
4-Chlorophenyl phenyl ether	7005-72-3	5
4-Bromophenyl phenyl ether	101-55-3	5
Bis(2-chloroisopropyl)ether	108-60-1	5
Bis(2-chloroethoxy)methane	111-91-1	5
Hexachlorocyclopentadiene	77-47-4	30
Isophorone	78-59-1	5
Nitrobenzene	98-95-3	5
NitrosoDiPhenylAmine(NDPA)/DP	86-30-6	15
n-Nitrosodi-n-propylamine	621-64-7	5
Bis(2-Ethylhexyl)phthalate	117-81-7	5
Butyl benzyl phthalate	85-68-7	5
Di-n-butylphthalate	84-74-2	5
Di-n-octylphthalate	117-84-0	5
Diethyl phthalate	84-66-2	5
Dimethyl phthalate	131-11-3	5
Biphenyl	92-52-4	5
4-Chloroaniline	106-47-8	5
2-Nitroaniline	88-74-4	5
3-Nitroaniline	99-09-2	5
4-Nitroaniline	100-01-6	7
Dibenzofuran	132-64-9	5
1,2,4,5-Tetrachlorobenzene	95-94-3	20
Acetophenone	98-86-2	20
2,4,6-Trichlorophenol	88-06-2	5
P-Chloro-M-Cresol	59-50-7	5
2-Chlorophenol	95-57-8	6
2,4-Dichlorophenol	120-83-2	10
2,4-Dimethylphenol	105-67-9	10
2-Nitrophenol	88-75-5	20
4-Nitrophenol	100-02-7	10
2,4-Dinitrophenol	51-28-5	30

Laboratory Reporting Limits for Aqueous Samples
Aristocrat Dry Cleaners - Hartsdale, New York

SVOCs by GC/MS (continued)	CAS#	Reporting Limit (ug/l)
4,6-Dinitro-o-cresol	534-52-1	20
Phenol	108-95-2	7
2-Methylphenol	95-48-7	6
3-Methylphenol/4-Methylphenol	108-39-4	6
2,4,5-Trichlorophenol	95-95-4	5
Benzoic Acid	65-85-0	50
Benzyl Alcohol	100-51-6	10
Carbazole	86-74-8	5

SVOCs by GC/MS SIM	CAS#	Reporting Limit (ug/l)
Acenaphthene	83-32-9	0.2
2-Chloronaphthalene	91-58-7	0.2
Fluoranthene	206-44-0	0.2
Hexachlorobutadiene	87-68-3	0.5
Naphthalene	91-20-3	0.31
Benzo(a)anthracene	56-55-3	0.2
Benzo(a)pyrene	50-32-8	0.2
Benzo(b)fluoranthene	205-99-2	0.2
Benzo(k)fluoranthene	207-08-9	0.2
Chrysene	218-01-9	0.2
Acenaphthylene	208-96-8	0.2
Anthracene	120-12-7	0.2
Benzo(ghi)perylene	191-24-2	0.2
Fluorene	86-73-7	0.2
Phenanthrene	85-01-8	0.2
Dibenzo(a,h)anthracene	53-70-3	0.2
Indeno(1,2,3-cd)Pyrene	193-39-5	0.2
Pyrene	129-00-0	0.2
2-Methylnaphthalene	91-57-6	0.2
Pentachlorophenol	87-86-5	0.8
Hexachlorobenzene	118-74-1	0.8
Hexachloroethane	67-72-1	0.8

Laboratory Reporting Limits for Aqueous Samples
Aristocrat Dry Cleaners - Hartsdale, New York

Total Metals	CAS#	Reporting Limit (ug/l)
Aluminum, Total	7429-90-5	100
Antimony, Total	7440-36-0	0.5
Arsenic, Total	7440-38-2	5
Barium, Total	7440-39-3	10
Beryllium, Total	7440-41-7	0.5
Cadmium, Total	7440-43-9	5
Calcium, Total	7440-70-2	100
Chromium, Total	7440-47-3	10
Cobalt, Total	7440-48-4	20
Copper, Total	7440-50-8	10
Iron, Total	7439-89-6	50
Lead, Total	7439-92-1	10
Magnesium, Total	7439-95-4	100
Manganese, Total	7439-96-5	10
Mercury, Total	7439-97-6	0.2
Nickel, Total	7440-02-0	25
Potassium, Total	7440-09-7	2500
Selenium, Total	7782-49-2	10
Silver, Total	7440-22-4	7
Sodium, Total	7440-23-5	2000
Thallium, Total	7440-28-0	0.5
Vanadium, Total	7440-62-2	10
Zinc, Total	7440-66-6	50

General Chemistry	CAS#	Reporting Limit (ug/l)
Cyanide, Total	57-12-5	5

Notes:
As specified by Alpha Analytical.

ATTACHMENT 2

STANDARD QC LIMITS

Standard QC Limits for Soil Samples
Aristocrat Dry Cleaners - Hartsdale, New York

		Reporting Limit			RPD Limits		Recovery Limits	
VOCs by GC/MS	**CAS#**	**(mg/kg)**	**UCL**	**LCL**	**MS/MSD**	**Duplicates**	**MS/MSD**	**Blank Spike**
Methylene chloride	75-09-2	0.034	70	130	30	30	70-130	70-130
1,1-Dichloroethane	75-34-3	0.0052	70	130	30	30	70-130	70-130
Chloroform	67-66-3	0.0052	70	130	30	30	70-130	70-130
Carbon tetrachloride	56-23-5	0.0034	70	130	30	30	70-130	70-130
1,2-Dichloropropane	78-87-5	0.012	70	130	30	30	70-130	70-130
Dibromochloromethane	124-48-1	0.0034	70	130	30	30	70-130	70-130
1,1,2-Trichloroethane	79-00-5	0.0052	70	130	30	30	70-130	70-130
Tetrachloroethene	127-18-4	0.0034	70	130	30	30	70-130	70-130
Chlorobenzene	108-90-7	0.0034	60	133	30	30	60-133	60-133
Trichlorofluoromethane	75-69-4	0.018	70	130	30	30	70-130	70-130
1,2-Dichloroethane	107-06-2	0.0034	70	130	30	30	70-130	70-130
1,1,1-Trichloroethane	71-55-6	0.0034	70	130	30	30	70-130	70-130
Bromodichloromethane	75-27-4	0.0034	70	130	30	30	70-130	70-130
trans-1,3-Dichloropropene	10061-02-6	0.0034	70	130	30	30	70-130	70-130
cis-1,3-Dichloropropene	10061-01-5	0.0034	70	130	30	30	70-130	70-130
1,1-Dichloropropene	563-58-6	0.018	70	130	30	30	70-130	70-130
Bromoform	75-25-2	0.014	70	130	30	30	70-130	70-130
1,1,2,2-Tetrachloroethane	79-34-5	0.0034	70	130	30	30	70-130	70-130
Benzene	71-43-2	0.0034	66	143	30	30	66-143	66-143
Toluene	108-88-3	0.0052	59	139	30	30	59-139	59-139
Ethylbenzene	100-41-4	0.0034	70	130	30	30	70-130	70-130
Chloromethane	74-87-3	0.018	70	130	30	30	70-130	70-130
Bromomethane	74-83-9	0.0069	70	130	30	30	70-130	70-130
Vinyl chloride	75-01-4	0.0069	70	130	30	30	70-130	70-130
Chloroethane	75-00-3	0.0069	70	130	30	30	70-130	70-130
1,1-Dichloroethene	75-35-4	0.0034	59	172	30	30	59-172	59-172
trans-1,2-Dichloroethene	156-60-5	0.0052	70	130	30	30	70-130	70-130
Trichloroethene	79-01-6	0.0034	62	137	30	30	62-137	62-137
1,2-Dichlorobenzene	95-50-1	0.018	70	130	30	30	70-130	70-130
1,3-Dichlorobenzene	541-73-1	0.018	70	130	30	30	70-130	70-130
1,4-Dichlorobenzene	106-46-7	0.018	70	130	30	30	70-130	70-130
Methyl tert butyl ether	1634-04-4	0.0069	70	130	30	30	70-130	70-130
p/m-Xylene	106-42-3/108-38-3	0.0069	70	130	30	30	70-130	70-130
o-Xylene	95-47-6	0.0069	70	130	30	30	70-130	70-130

Standard QC Limits for Soil Samples
Aristocrat Dry Cleaners - Hartsdale, New York

		Reporting Limit			RPD Limits		Recovery Limits	
VOCs by GC/MS (continued)	**CAS#**	**(mg/kg)**	**UCL**	**LCL**	**MS/MSD**	**Duplicates**	**MS/MSD**	**Blank Spike**
cis-1,2-Dichloroethene	156-59-2	0.0034	70	130	30	30	70-130	70-130
Dibromomethane	74-95-3	0.034	70	130	30	30	70-130	70-130
Styrene	100-42-5	0.0069	70	130	30	30	70-130	70-130
Dichlorodifluoromethane	75-71-8	0.034	70	130	30	30	70-130	70-130
Acetone	67-64-1	0.212	70	130	30	30	70-130	70-130
Carbon disulfide	75-15-0	0.034	70	130	30	30	70-130	70-130
2-Butanone	78-93-3	0.046	70	130	30	30	70-130	70-130
Vinyl acetate	108-05-4	0.034	70	130	30	30	70-130	70-130
4-Methyl-2-pentanone	108-10-1	0.034	70	130	30	30	70-130	70-130
1,2,3-Trichloropropane	96-18-4	0.034	70	130	30	30	70-130	70-130
2-Hexanone	591-78-6	0.034	70	130	30	30	70-130	70-130
Bromochloromethane	74-97-5	0.018	70	130	30	30	70-130	70-130
2,2-Dichloropropane	594-20-7	0.018	70	130	30	30	70-130	70-130
1,2-Dibromoethane	106-93-4	0.014	70	130	30	30	70-130	70-130
1,3-Dichloropropane	142-28-9	0.018	70	130	30	30	70-130	70-130
1,1,1,2-Tetrachloroethane	630-20-6	0.0034	70	130	30	30	70-130	70-130
Bromobenzene	108-86-1	0.018	70	130	30	30	70-130	70-130
n-Butylbenzene	104-51-8	0.0034	70	130	30	30	70-130	70-130
sec-Butylbenzene	135-98-8	0.0034	70	130	30	30	70-130	70-130
tert-Butylbenzene	98-06-6	0.018	70	130	30	30	70-130	70-130
o-Chlorotoluene	95-49-8	0.018	70	130	30	30	70-130	70-130
p-Chlorotoluene	106-43-4	0.018	70	130	30	30	70-130	70-130
1,2-Dibromo-3-chloropropane	96-12-8	0.018	70	130	30	30	70-130	70-130
Hexachlorobutadiene	87-68-3	0.018	70	130	30	30	70-130	70-130
Isopropylbenzene	98-82-8	0.0034	70	130	30	30	70-130	70-130
p-Isopropyltoluene	99-87-6	0.0034	70	130	30	30	70-130	70-130
Naphthalene	91-20-3	0.018	70	130	30	30	70-130	70-130
Acrylonitrile	107-13-1	0.034	70	130	30	30	70-130	70-130
n-Propylbenzene	103-65-1	0.0034	70	130	30	30	70-130	70-130
1,2,3-Trichlorobenzene	87-61-6	0.018	70	130	30	30	70-130	70-130
1,2,4-Trichlorobenzene	120-82-1	0.018	70	130	30	30	70-130	70-130
1,3,5-Trimethylbenzene	108-67-8	0.018	70	130	30	30	70-130	70-130
1,2,4-Trimethylbenzene	95-63-6	0.018	70	130	30	30	70-130	70-130
1,4-Diethylbenzene	105-05-5	0.014	70	130	30	30	70-130	70-130

Standard QC Limits for Soil Samples
Aristocrat Dry Cleaners - Hartsdale, New York

		Reporting Limit			RPD Limits		Recovery Limits	
VOCs by GC/MS (continued)	**CAS#**	**(mg/kg)**	**UCL**	**LCL**	**MS/MSD**	**Duplicates**	**MS/MSD**	**Blank Spike**
4-Ethyltoluene	622-96-8	0.014	70	130	30	30	70-130	70-130
1,2,4,5-Tetramethylbenzene	95-93-2	0.014	70	130	30	30	70-130	70-130
Ethyl ether	60-29-7	0.018	70	130	30	30	70-130	70-130
trans-1,4-Dichloro-2-butene	110-57-6	0.018	70	130	30	30	70-130	70-130

		Reporting Limit			RPD Limits		Recovery Limits	
Organochlorine pesticides by GC	**CAS#**	**(mg/kg)**	**UCL**	**LCL**	**MS/MSD**	**Duplicates**	**MS/MSD**	**Blank Spike**
Delta-BHC	319-86-8	0.0131	30	150	50	50	30-150	30-150
Lindane	58-89-9	0.00434	30	150	50	50	30-150	30-150
Alpha-BHC	319-84-6	0.00434	30	150	50	50	30-150	30-150
Beta-BHC	319-85-7	0.0131	30	150	50	50	30-150	30-150
Heptachlor	76-44-8	0.00521	30	150	50	50	30-150	30-150
Aldrin	309-00-2	0.0131	30	150	50	50	30-150	30-150
Heptachlor epoxide	1024-57-3	0.0195	30	150	50	50	30-150	30-150
Endrin	72-20-8	0.00434	30	150	50	50	30-150	30-150
Endrin ketone	53494-70-5	0.0131	30	150	50	50	30-150	30-150
Dieldrin	60-57-1	0.00651	30	150	50	50	30-150	30-150
4,4'-DDE	72-55-9	0.0195	30	150	50	50	30-150	30-150
4,4'-DDD	72-54-8	0.0131	30	150	50	50	30-150	30-150
4,4'-DDT	50-29-3	0.0195	30	150	50	50	30-150	30-150
Endosulfan I	959-98-8	0.0131	30	150	50	50	30-150	30-150
Endosulfan II	33213-65-9	0.0195	30	150	50	50	30-150	30-150
Endosulfan sulfate	1031-07-8	0.00434	30	150	50	50	30-150	30-150
Methoxychlor	72-43-5	0.0195	30	150	50	50	30-150	30-150
trans-Chlordane	5103-74-2	0.0131	30	150	50	50	30-150	30-150
Chlordane	57-74-9	0.0846	30	150	50	50	30-150	30-150

Standard QC Limits for Soil Samples
Aristocrat Dry Cleaners - Hartsdale, New York

		Reporting Limit			RPD Limits		Recovery Limits	
PCBs by GC	**CAS#**	**(mg/kg)**	**UCL**	**LCL**	**MS/MSD**	**Duplicates**	**MS/MSD**	**Blank Spike**
Aroclor 1016	12674-11-2	0.0427	40	140	50	50	40-140	40-140
Aroclor 1221	11104-28-2	0.0427	40	140	50	50	40-140	40-140
Aroclor 1232	11141-16-5	0.0427	40	140	50	50	40-140	40-140
Aroclor 1242	53469-21-9	0.0427	40	140	50	50	40-140	40-140
Aroclor 1248	12672-29-6	0.0427	40	140	50	50	40-140	40-140
Aroclor 1254	11097-69-1	0.0427	40	140	50	50	40-140	40-140
Aroclor 1260	11096-82-5	0.0427	40	140	50	50	40-140	40-140

		Reporting Limit			RPD Limits		Recovery Limits	
SVOCs by GC/MS	**CAS#**	**(mg/kg)**	**UCL**	**LCL**	**MS/MSD**	**Duplicates**	**MS/MSD**	**Blank Spike**
1,2,4-Trichlorobenzene	120-82-1	0.42	38	107	50	50	38-107	38-107
Bis(2-chloroethyl)ether	111-44-4	0.42	40	140	50	50	40-140	40-140
1,2-Dichlorobenzene	95-50-1	0.42	40	140	50	50	40-140	40-140
1,3-Dichlorobenzene	541-73-1	0.42	40	140	50	50	40-140	40-140
1,4-Dichlorobenzene	106-46-7	0.42	28	104	50	50	28-104	28-104
3,3'-Dichlorobenzidine	91-94-1	0.84	40	140	50	50	40-140	40-140
2,4-Dinitrotoluene	121-14-2	0.42	28	89	50	50	28-89	28-89
2,6-Dinitrotoluene	606-20-2	0.42	40	140	50	50	40-140	40-140
4-Chlorophenyl phenyl ether	7005-72-3	0.42	40	140	50	50	40-140	40-140
4-Bromophenyl phenyl ether	101-55-3	0.42	40	140	50	50	40-140	40-140
Bis(2-chloroisopropyl)ether	108-60-1	0.42	40	140	50	50	40-140	40-140
Bis(2-chloroethoxy)methane	111-91-1	0.42	40	140	50	50	40-140	40-140
Hexachlorocyclopentadiene	77-47-4	0.84	40	140	50	50	40-140	40-140
Isophorone	78-59-1	0.42	40	140	50	50	40-140	40-140
Nitrobenzene	98-95-3	0.42	40	140	50	50	40-140	40-140
NitrosoDiPhenylAmine(NDPA)/DP	86-30-6	1.3	40	140	50	50	40-140	40-140
n-Nitrosodi-n-propylamine	621-64-7	0.42	41	126	50	50	40-140	40-140
Bis(2-Ethylhexyl)phthalate	117-81-7	0.84	40	140	50	50	40-140	40-140
Butyl benzyl phthalate	85-68-7	0.42	40	140	50	50	40-140	40-140
Di-n-butylphthalate	84-74-2	0.42	40	140	50	50	40-140	40-140
Di-n-octylphthalate	117-84-0	0.42	40	140	50	50	40-140	40-140
Diethyl phthalate	84-66-2	0.42	40	140	50	50	40-140	40-140
Dimethyl phthalate	131-11-3	0.42	40	140	50	50	40-140	40-140
Biphenyl	92-52-4	0.42	40	140	50	50	40-140	40-140

Standard QC Limits for Soil Samples
Aristocrat Dry Cleaners - Hartsdale, New York

		Reporting Limit			RPD Limits		Recovery Limits	
SVOCs by GC/MS (continued)	**CAS#**	**(mg/kg)**	**UCL**	**LCL**	**MS/MSD**	**Duplicates**	**MS/MSD**	**Blank Spike**
4-Chloroaniline	106-47-8	0.42	40	140	50	50	40-140	40-140
2-Nitroaniline	88-74-4	0.42	40	140	50	50	40-140	40-140
3-Nitroaniline	99-09-2	0.42	40	140	50	50	40-140	40-140
4-Nitroaniline	100-01-6	0.59	40	140	50	50	40-140	40-140
Dibenzofuran	132-64-9	0.42	40	140	50	50	40-140	40-140
1,2,4,5-Tetrachlorobenzene	95-94-3	1.6	40	140	50	50	40-140	40-140
Acetophenone	98-86-2	1.6	40	140	50	50	40-140	40-140
2,4,6-Trichlorophenol	88-06-2	0.42	30	130	50	50	30-130	30-130
P-Chloro-M-Cresol	59-50-7	0.42	26	103	50	50	26-103	26-103
2-Chlorophenol	95-57-8	0.51	25	102	50	50	25-102	25-102
2,4-Dichlorophenol	120-83-2	0.84	30	130	50	50	30-130	30-130
2,4-Dimethylphenol	105-67-9	0.42	30	130	50	50	30-130	30-130
2-Nitrophenol	88-75-5	1.6	30	130	50	50	30-130	30-130
4-Nitrophenol	100-02-7	0.84	11	114	50	50	11-114	11-114
2,4-Dinitrophenol	51-28-5	1.6	4	130	50	50	4-103	4-103
4,6-Dinitro-o-cresol	534-52-1	1.6			50	50		
Phenol	108-95-2	0.6	26	90	50	50	26-90	26-90
2-Methylphenol	95-48-7	0.51	30	130	50	50	30-130	30-130
3-Methylphenol/4-Methylphenol	108-39-4	0.51	30	130	50	50	30-130	30-130
2,4,5-Trichlorophenol	95-95-4	0.42	30	130	50	50	30-130	30-130
Benzoic Acid	65-85-0	4.2			50	50		
Benzyl Alcohol	100-51-6	0.84			50	50		
Carbazole	86-74-8	0.42			50	50		

		Reporting Limit			RPD Limits		Recovery Limits	
SVOCs by GC/MS SIM	**CAS#**	**(mg/kg)**	**UCL**	**LCL**	**MS/MSD**	**Duplicates**	**MS/MSD**	**Blank Spike**
Acenaphthene	83-32-9	0.016	31	137	50	50	31-137	31-137
2-Chloronaphthalene	91-58-7	0.016	40	140	50	50	40-140	40-140
Fluoranthene	206-44-0	0.016	40	140	50	50	40-140	40-140
Hexachlorobutadiene	87-68-3	0.042	40	140	50	50	40-140	40-140
Naphthalene	91-20-3	0.016	40	140	50	50	40-140	40-140
Benzo(a)anthracene	56-55-3	0.016	40	140	50	50	40-140	40-140
Benzo(a)pyrene	50-32-8	0.016	40	140	50	50	40-140	40-140
Benzo(b)fluoranthene	205-99-2	0.016	40	140	50	50	40-140	40-140

Standard QC Limits for Soil Samples
Aristocrat Dry Cleaners - Hartsdale, New York

		Reporting Limit			RPD Limits		Recovery Limits	
SVOCs by GC/MS SIM (continued)	**CAS#**	**(mg/kg)**	**UCL**	**LCL**	**MS/MSD**	**Duplicates**	**MS/MSD**	**Blank Spike**
Benzo(k)fluoranthene	207-08-9	0.016	40	140	50	50	40-140	40-140
Chrysene	218-01-9	0.016	40	140	50	50	40-140	40-140
Acenaphthylene	208-96-8	0.016	40	140	50	50	40-140	40-140
Anthracene	120-12-7	0.016	40	140	50	50	40-140	40-140
Benzo(ghi)perylene	191-24-2	0.016	40	140	50	50	40-140	40-140
Fluorene	86-73-7	0.016	40	140	50	50	40-140	40-140
Phenanthrene	85-01-8	0.016	40	140	50	50	40-140	40-140
Dibenzo(a,h)anthracene	53-70-3	0.016	40	140	50	50	40-140	40-140
Indeno(1,2,3-cd)Pyrene	193-39-5	0.016	40	140	50	50	40-140	40-140
Pyrene	129-00-0	0.016	35	142	50	50	35-142	35-142
2-Methylnaphthalene	91-57-6	0.016	40	140	50	50	40-140	40-140
Pentachlorophenol	87-86-5	0.067	17	109	50	50	17-109	17-109
Hexachlorobenzene	118-74-1	0.067	40	140	50	50	40-140	40-140
Hexachloroethane	67-72-1	0.067	40	140	50	50	40-140	40-140
1,2,3-Trichlorobenzene	87-61-6	0.018	70	130	30	30	70-130	70-130
1,2,4-Trichlorobenzene	120-82-1	0.018	70	130	30	30	70-130	70-130
1,3,5-Trimethylbenzene	108-67-8	0.018	70	130	30	30	70-130	70-130
1,2,4-Trimethylbenzene	95-63-6	0.018	70	130	30	30	70-130	70-130
1,4-Diethylbenzene	105-05-5	0.014	70	130	30	30	70-130	70-130
4-Ethyltoluene	622-96-8	0.014	70	130	30	30	70-130	70-130
1,2,4,5-Tetramethylbenzene	95-93-2	0.014	70	130	30	30	70-130	70-130
Ethyl ether	60-29-7	0.018	70	130	30	30	70-130	70-130
trans-1,4-Dichloro-2-butene	110-57-6	0.018	70	130	30	30	70-130	70-130

		Reporting Limit			RPD Limits		Recovery Limits	
Total Metals	**CAS#**	**(mg/kg)**	**UCL**	**LCL**	**MS/MSD**	**Duplicates**	**MS/MSD**	**Blank Spike**
Aluminum, Total	7429-90-5	4			35	35	75-125	75-125
Antimony, Total	7440-36-0	2			35	35	75-125	75-125
Arsenic, Total	7440-38-2	0.4			35	35	75-125	75-125
Barium, Total	7440-39-3	0.4			35	35	75-125	75-125
Beryllium, Total	7440-41-7	0.2			35	35	75-125	75-125
Cadmium, Total	7440-43-9	0.4			35	35	75-125	75-125
Calcium, Total	7440-70-2	4			35	35	75-125	75-125
Chromium, Total	7440-47-3	0.4			35	35	75-125	75-125

Standard QC Limits for Soil Samples
Aristocrat Dry Cleaners - Hartsdale, New York

		Reporting Limit			RPD Limits		Recovery Limits	
Total Metals (continued)	**CAS#**	**(mg/kg)**	**UCL**	**LCL**	**MS/MSD**	**Duplicates**	**MS/MSD**	**Blank Spike**
Cobalt, Total	7440-48-4	0.8			35	35	75-125	75-125
Copper, Total	7440-50-8	0.4			35	35	75-125	75-125
Iron, Total	7439-89-6	2			35	35	75-125	75-125
Lead, Total	7439-92-1	2			35	35	75-125	75-125
Magnesium, Total	7439-95-4	4			35	35	75-125	75-125
Manganese, Total	7439-96-5	0.4			35	35	75-125	75-125
Mercury, Total	7439-97-6	0.08			35	35	70-130	80-120
Nickel, Total	7440-02-0	1			35	35	75-125	75-125
Potassium, Total	7440-09-7	100			35	35	75-125	75-125
Selenium, Total	7782-49-2	2			35	35	75-125	75-125
Silver, Total	7440-22-4	0.4			35	35	75-125	75-125
Sodium, Total	7440-23-5	80			35	35	75-125	75-125
Thallium, Total	7440-28-0	2			35	35	75-125	75-125
Vanadium, Total	7440-62-2	0.4			35	35	75-125	75-125
Zinc, Total	7440-66-6	2			35	35	75-125	75-125

Notes:
As specified by Alpha Analytical.

Standard QC Limits for Aqueous Samples
Aristocrat Dry Cleaners - Hartsdale, New York

		Reporting Limit			RPD Limits		Recovery Limits	
VOCs by GC/MS	**CAS#**	**(ug/l)**	**UCL**	**LCL**	**MS/MSD**	**Duplicates**	**MS/MSD**	**Blank Spike**
Methylene chloride	75-09-2	5	70	130	20	20	70-130	70-130
1,1-Dichloroethane	75-34-3	0.75	70	130	20	20	70-130	70-130
Chloroform	67-66-3	0.75	70	130	20	20	70-130	70-130
Carbon tetrachloride	56-23-5	0.5	70	130	20	20	70-130	70-130
1,2-Dichloropropane	78-87-5	1.8	70	130	20	20	70-130	70-130
Dibromochloromethane	124-48-1	0.5	70	130	20	20	70-130	70-130
1,1,2-Trichloroethane	79-00-5	0.75	70	130	20	20	70-130	70-130
Tetrachloroethene	127-18-4	0.5	70	130	20	20	70-130	70-130
Chlorobenzene	108-90-7	0.5	75	130	20	20	75-130	75-130
Trichlorofluoromethane	75-69-4	2.5	70	130	20	20	70-130	70-130
1,2-Dichloroethane	107-06-2	0.5	70	130	20	20	70-130	70-130
1,1,1-Trichloroethane	71-55-6	0.5	70	130	20	20	70-130	70-130
Bromodichloromethane	75-27-4	0.5	70	130	20	20	70-130	70-130
trans-1,3-Dichloropropene	10061-02-6	0.5	70	130	20	20	70-130	70-130
cis-1,3-Dichloropropene	10061-01-5	0.5	70	130	20	20	70-130	70-130
1,1-Dichloropropene	563-58-6	2.5	70	130	20	20	70-130	70-130
Bromoform	75-25-2	2	70	130	20	20	70-130	70-130
1,1,2,2-Tetrachloroethane	79-34-5	0.5	70	130	20	20	70-130	70-130
Benzene	71-43-2	0.5	76	127	20	20	76-130	76-130
Toluene	108-88-3	0.75	76	125	20	20	76-130	76-130
Ethylbenzene	100-41-4	0.5	70	130	20	20	70-130	70-130
Chloromethane	74-87-3	2.5	70	130	20	20	70-130	70-130
Bromomethane	74-83-9	1	70	130	20	20	70-130	70-130
Vinyl chloride	75-01-4	1	70	130	20	20	70-130	70-130
Chloroethane	75-00-3	1	70	130	20	20	70-130	70-130
1,1-Dichloroethene	75-35-4	0.5	61	145	20	20	61-130	61-130
trans-1,2-Dichloroethene	156-60-5	0.75	70	130	20	20	70-130	70-130
Trichloroethene	79-01-6	0.5	71	120	20	20	71-120	71-120
1,2-Dichlorobenzene	95-50-1	2.5	70	130	20	20	70-130	70-130
1,3-Dichlorobenzene	541-73-1	2.5	70	130	20	20	70-130	70-130
1,4-Dichlorobenzene	106-46-7	2.5	70	130	20	20	70-130	70-130
Methyl tert butyl ether	1634-04-4	1	70	130	20	20	70-130	70-130
p/m-Xylene	106-42-3/108-38-3	1	70	130	20	20	70-130	70-130
o-Xylene	95-47-6	1	70	130	20	20	70-130	70-130

Standard QC Limits for Aqueous Samples
Aristocrat Dry Cleaners - Hartsdale, New York

		Reporting Limit			RPD Limits		Recovery Limits	
VOCs by GC/MS (continued)	**CAS#**	**(ug/l)**	**UCL**	**LCL**	**MS/MSD**	**Duplicates**	**MS/MSD**	**Blank Spike**
cis-1,2-Dichloroethene	156-59-2	0.5	70	130	20	20	70-130	70-130
Dibromomethane	74-95-3	5	70	130	20	20	70-130	70-130
1,2,3-Trichloropropane	96-18-4	5	70	130	20	20	70-130	70-130
Acrylonitrile	107-13-1	5	70	130	20	20	70-130	70-130
Styrene	100-42-5	1	70	130	20	20	70-130	70-130
Dichlorodifluoromethane	75-71-8	5	70	130	20	20	70-130	70-130
Acetone	67-64-1	5	70	130	20	20	70-130	70-130
Carbon disulfide	75-15-0	5	70	130	20	20	70-130	70-130
2-Butanone	78-93-3	5	70	130	20	20	70-130	70-130
Vinyl acetate	108-05-4	5	70	130	20	20	70-130	70-130
4-Methyl-2-pentanone	108-10-1	5	70	130	20	20	70-130	70-130
2-Hexanone	591-78-6	5	70	130	20	20	70-130	70-130
Bromochloromethane	74-97-5	2.5	70	130	20	20	70-130	70-130
2,2-Dichloropropane	594-20-7	2.5	70	130	20	20	70-130	70-130
1,2-Dibromoethane	106-93-4	2	70	130	20	20	70-130	70-130
1,3-Dichloropropane	142-28-9	2.5	70	130	20	20	70-130	70-130
1,1,1,2-Tetrachloroethane	630-20-6	0.5	70	130	20	20	70-130	70-130
Bromobenzene	108-86-1	2.5	70	130	20	20	70-130	70-130
n-Butylbenzene	104-51-8	0.5	70	130	20	20	70-130	70-130
sec-Butylbenzene	135-98-8	0.5	70	130	20	20	70-130	70-130
tert-Butylbenzene	98-06-6	2.5	70	130	20	20	70-130	70-130
o-Chlorotoluene	95-49-8	2.5	70	130	20	20	70-130	70-130
p-Chlorotoluene	106-43-4	2.5	70	130	20	20	70-130	70-130
1,2-Dibromo-3-chloropropane	96-12-8	2.5	70	130	20	20	70-130	70-130
Hexachlorobutadiene	87-68-3	0.6	70	130	20	20	70-130	70-130
Isopropylbenzene	98-82-8	0.5	70	130	20	20	70-130	70-130
p-Isopropyltoluene	99-87-6	0.5	70	130	20	20	70-130	70-130
Naphthalene	91-20-3	2.5	70	130	20	20	70-130	70-130
n-Propylbenzene	103-65-1	0.5	70	130	20	20	70-130	70-130
1,2,3-Trichlorobenzene	87-61-6	2.5	70	130	20	20	70-130	70-130
1,2,4-Trichlorobenzene	120-82-1	2.5	70	130	20	20	70-130	70-130
1,3,5-Trimethylbenzene	108-67-8	2.5	70	130	20	20	70-130	70-130
1,2,4-Trimethylbenzene	95-63-6	2.5	70	130	20	20	70-130	70-130
1,4-Diethylbenzene	105-05-5	2	70	130	20	20	70-130	70-130

Standard QC Limits for Aqueous Samples
Aristocrat Dry Cleaners - Hartsdale, New York

		Reporting Limit			RPD Limits		Recovery Limits	
VOCs by GC/MS (continued)	**CAS#**	**(ug/l)**	**UCL**	**LCL**	**MS/MSD**	**Duplicates**	**MS/MSD**	**Blank Spike**
4-Ethyltoluene	622-96-8	2	70	130	20	20	70-130	70-130
1,2,4,5-Tetramethylbenzene	95-93-2	2	70	130	20	20	70-130	70-130
Ethyl ether	60-29-7	2.5	70	130	20	20	70-130	70-130
trans-1,4-Dichloro-2-butene	110-57-6	2.5	70	130	20	20	70-130	70-130

		Reporting Limit			RPD Limits		Recovery Limits	
Organochlorine pesticides by GC	**CAS#**	**(ug/l)**	**UCL**	**LCL**	**MS/MSD**	**Duplicates**	**MS/MSD**	**Blank Spike**
Delta-BHC	319-86-8	0.02	30	150	30	30	30-150	30-150
Lindane	58-89-9	0.02	30	150	30	30	30-150	30-150
Alpha-BHC	319-84-6	0.02	30	150	30	30	30-150	30-150
Beta-BHC	319-85-7	0.02	30	150	30	30	30-150	30-150
Heptachlor	76-44-8	0.02	30	150	30	30	30-150	30-150
Aldrin	309-00-2	0.02	30	150	30	30	30-150	30-150
Heptachlor epoxide	1024-57-3	0.02	30	150	30	30	30-150	30-150
Endrin	72-20-8	0.04	30	150	30	30	30-150	30-150
Endrin ketone	53494-70-5	0.04	30	150	30	30	30-150	30-150
Dieldrin	60-57-1	0.04	30	150	30	30	30-150	30-150
4,4'-DDE	72-55-9	0.04	30	150	30	30	30-150	30-150
4,4'-DDD	72-54-8	0.04	30	150	30	30	30-150	30-150
4,4'-DDT	50-29-3	0.04	30	150	30	30	30-150	30-150
Endosulfan I	959-98-8	0.02	30	150	30	30	30-150	30-150
Endosulfan II	33213-65-9	0.04	30	150	30	30	30-150	30-150
Endosulfan sulfate	1031-07-8	0.04	30	150	30	30	30-150	30-150
Methoxychlor	72-43-5	0.2	30	150	30	30	30-150	30-150
Toxaphene	8001-35-2	0.2	30	150	30	30	30-150	30-150
trans-Chlordane	5103-74-2	0.02	30	150	30	30	30-150	30-150
Chlordane	57-74-9	0.2	30	150	30	30	30-150	30-150

		Reporting Limit			RPD Limits		Recovery Limits	
PCBs by GC	**CAS#**	**(ug/l)**	**UCL**	**LCL**	**MS/MSD**	**Duplicates**	**MS/MSD**	**Blank Spike**
Aroclor 1016	12674-11-2	0.083	40	140	50	50	40-140	40-140
Aroclor 1221	11104-28-2	0.083	40	140	50	50	40-140	40-140
Aroclor 1232	11141-16-5	0.083	40	140	50	50	40-140	40-140

Standard QC Limits for Aqueous Samples
Aristocrat Dry Cleaners - Hartsdale, New York

		Reporting Limit			RPD Limits		Recovery Limits	
PCBs by GC (continued)	**CAS#**	**(ug/l)**	**UCL**	**LCL**	**MS/MSD**	**Duplicates**	**MS/MSD**	**Blank Spike**
Aroclor 1242	53469-21-9	0.083	40	140	50	50	40-140	40-140
Aroclor 1248	12672-29-6	0.083	40	140	50	50	40-140	40-140
Aroclor 1254	11097-69-1	0.083	40	140	50	50	40-140	40-140
Aroclor 1260	11096-82-5	0.083	40	140	50	50	40-140	40-140

		Reporting Limit			RPD Limits		Recovery Limits	
SVOCs by GC/MS	**CAS#**	**(ug/l)**	**UCL**	**LCL**	**MS/MSD**	**Duplicates**	**MS/MSD**	**Blank Spike**
1,2,4-Trichlorobenzene	120-82-1	5	39	98	30	30	39-98	39-98
Bis(2-chloroethyl)ether	111-44-4	5	40	140	30	30	40-140	40-140
1,2-Dichlorobenzene	95-50-1	5	40	140	30	30	40-140	40-140
1,3-Dichlorobenzene	541-73-1	5	40	140	30	30	40-140	40-140
1,4-Dichlorobenzene	106-46-7	5	36	97	30	30	36-97	36-97
3,3'-Dichlorobenzidine	91-94-1	50	40	140	30	30	40-140	40-140
2,4-Dinitrotoluene	121-14-2	6	24	96	30	30	24-96	24-96
2,6-Dinitrotoluene	606-20-2	5	40	140	30	30	40-140	40-140
4-Chlorophenyl phenyl ether	7005-72-3	5	40	140	30	30	40-140	40-140
4-Bromophenyl phenyl ether	101-55-3	5	40	140	30	30	40-140	40-140
Bis(2-chloroisopropyl)ether	108-60-1	5	40	140	30	30	40-140	40-140
Bis(2-chloroethoxy)methane	111-91-1	5	40	140	30	30	40-140	40-140
Hexachlorocyclopentadiene	77-47-4	30	40	140	30	30	40-140	40-140
Isophorone	78-59-1	5	40	140	30	30	40-140	40-140
Nitrobenzene	98-95-3	5	40	140	30	30	40-140	40-140
NitrosoDiPhenylAmine(NDPA)/DP	86-30-6	15	40	140	30	30	40-140	40-140
n-Nitrosodi-n-propylamine	621-64-7	5	41	116	30	30	40-140	40-140
Bis(2-Ethylhexyl)phthalate	117-81-7	5	40	140	30	30	40-140	40-140
Butyl benzyl phthalate	85-68-7	5	40	140	30	30	40-140	40-140
Di-n-butylphthalate	84-74-2	5	40	140	30	30	40-140	40-140
Di-n-octylphthalate	117-84-0	5	40	140	30	30	40-140	40-140
Diethyl phthalate	84-66-2	5	40	140	30	30	40-140	40-140
Dimethyl phthalate	131-11-3	5	40	140	30	30	40-140	40-140
Biphenyl	92-52-4	5	40	140	30	30	40-140	40-140
4-Chloroaniline	106-47-8	5	40	140	30	30	40-140	40-140
2-Nitroaniline	88-74-4	5	40	140	30	30	40-140	40-140
3-Nitroaniline	99-09-2	5	40	140	30	30	40-140	40-140

Standard QC Limits for Aqueous Samples
Aristocrat Dry Cleaners - Hartsdale, New York

		Reporting Limit			RPD Limits		Recovery Limits	
SVOCs by GC/MS (continued)	**CAS#**	**(ug/l)**	**UCL**	**LCL**	**MS/MSD**	**Duplicates**	**MS/MSD**	**Blank Spike**
4-Nitroaniline	100-01-6	7	40	140	30	30	40-140	40-140
Dibenzofuran	132-64-9	5	40	140	30	30	40-140	40-140
1,2,4,5-Tetrachlorobenzene	95-94-3	20	40	140	30	30	40-140	40-140
Acetophenone	98-86-2	20	40	140	30	30	40-140	40-140
2,4,6-Trichlorophenol	88-06-2	5	30	130	30	30	30-130	30-130
P-Chloro-M-Cresol	59-50-7	5	23	97	30	30	23-97	23-97
2-Chlorophenol	95-57-8	6	27	123	30	30	27-123	27-123
2,4-Dichlorophenol	120-83-2	10	30	130	30	30	30-130	30-130
2,4-Dimethylphenol	105-67-9	10	30	130	30	30	30-130	30-130
2-Nitrophenol	88-75-5	20	30	130	30	30	30-130	30-130
4-Nitrophenol	100-02-7	10	10	80	30	30	10-80	10-80
2,4-Dinitrophenol	51-28-5	30	20	130	30	30	20-130	20-130
4,6-Dinitro-o-cresol	534-52-1	20			30	30		
Phenol	108-95-2	7	12	110	30	30	12-110	12-110
2-Methylphenol	95-48-7	6	30	130	30	30	30-130	30-130
3-Methylphenol/4-Methylphenol	108-39-4	6	30	130	30	30	30-130	30-130
2,4,5-Trichlorophenol	95-95-4	5	30	130	30	30	30-130	30-130
Benzoic Acid	65-85-0	50			30	30		
Benzyl Alcohol	100-51-6	10			30	30		
Carbazole	86-74-8	5			30	30		

		Reporting Limit			RPD Limits		Recovery Limits	
SVOCs by GC/MS SIM	**CAS#**	**(ug/l)**	**UCL**	**LCL**	**MS/MSD**	**Duplicates**	**MS/MSD**	**Blank Spike**
Acenaphthene	83-32-9	0.2	37	111	40	40	37-111	37-111
2-Chloronaphthalene	91-58-7	0.2	40	140	40	40	40-140	40-140
Fluoranthene	206-44-0	0.2	40	140	40	40	40-140	40-140
Hexachlorobutadiene	87-68-3	0.5	40	140	40	40	40-140	40-140
Naphthalene	91-20-3	0.31	40	140	40	40	40-140	40-140
Benzo(a)anthracene	56-55-3	0.2	40	140	40	40	40-140	40-140
Benzo(a)pyrene	50-32-8	0.2	40	140	40	40	40-140	40-140
Benzo(b)fluoranthene	205-99-2	0.2	40	140	40	40	40-140	40-140
Benzo(k)fluoranthene	207-08-9	0.2	40	140	40	40	40-140	40-140
Chrysene	218-01-9	0.2	40	140	40	40	40-140	40-140
Acenaphthylene	208-96-8	0.2	40	140	40	40	40-140	40-140

Standard QC Limits for Aqueous Samples
Aristocrat Dry Cleaners - Hartsdale, New York

		Reporting Limit			RPD Limits		Recovery Limits	
SVOCs by GC/MS SIM (continued)	**CAS#**	**(ug/l)**	**UCL**	**LCL**	**MS/MSD**	**Duplicates**	**MS/MSD**	**Blank Spike**
Anthracene	120-12-7	0.2	40	140	40	40	40-140	40-140
Benzo(ghi)perylene	191-24-2	0.2	40	140	40	40	40-140	40-140
Fluorene	86-73-7	0.2	40	140	40	40	40-140	40-140
Phenanthrene	85-01-8	0.2	40	140	40	40	40-140	40-140
Dibenzo(a,h)anthracene	53-70-3	0.2	40	140	40	40	40-140	40-140
Indeno(1,2,3-cd)Pyrene	193-39-5	0.2	40	140	40	40	40-140	40-140
Pyrene	129-00-0	0.2	26	127	40	40	26-127	26-127
2-Methylnaphthalene	91-57-6	0.2	40	140	40	40	40-140	40-140
Pentachlorophenol	87-86-5	0.8	9	103	40	40	9-103	9-103
Hexachlorobenzene	118-74-1	0.8	40	140	40	40	40-140	40-140
Hexachloroethane	67-72-1	0.8	40	140	40	40	40-140	40-140

		Reporting Limit			RPD Limits		Recovery Limits	
Total Metals	**CAS#**	**(ug/l)**			**MS/MSD**	**Duplicates**	**MS/MSD**	**Blank Spike**
Aluminum, Total	7429-90-5	100			20	20	75-125	80-120
Antimony, Total	7440-36-0	0.5			20	20	80-120	80-120
Arsenic, Total	7440-38-2	5			20	20	75-125	80-120
Barium, Total	7440-39-3	10			20	20	75-125	80-120
Beryllium, Total	7440-41-7	0.5			20	20	80-120	80-120
Cadmium, Total	7440-43-9	5			20	20	75-125	80-120
Calcium, Total	7440-70-2	100			20	20	75-125	80-120
Chromium, Total	7440-47-3	10			20	20	75-125	80-120
Cobalt, Total	7440-48-4	20			20	20	75-125	80-120
Copper, Total	7440-50-8	10			20	20	75-125	80-120
Iron, Total	7439-89-6	50			20	20	75-125	80-120
Lead, Total	7439-92-1	10			20	20	75-125	80-120
Magnesium, Total	7439-95-4	100			20	20	75-125	80-120
Manganese, Total	7439-96-5	10			20	20	75-125	80-120
Mercury, Total	7439-97-6	0.2			20	20	70-130	80-120
Nickel, Total	7440-02-0	25			20	20	75-125	80-120
Potassium, Total	7440-09-7	2500			20	20	75-125	80-120
Selenium, Total	7782-49-2	10			20	20	75-125	80-120
Silver, Total	7440-22-4	7			20	20	75-125	80-120
Sodium, Total	7440-23-5	2000			20	20	75-125	80-120

Standard QC Limits for Aqueous Samples
Aristocrat Dry Cleaners - Hartsdale, New York

		Reporting Limit			RPD Limits		Recovery Limits	
Total Metals (continued)	**CAS#**	**(ug/l)**			**MS/MSD**	**Duplicates**	**MS/MSD**	**Blank Spike**
Thallium, Total	7440-28-0	0.5			20	20	80-120	80-120
Vanadium, Total	7440-62-2	10			20	20	75-125	80-120
Zinc, Total	7440-66-6	50			20	20	75-125	80-120

		Reporting Limit			RPD Limits		Recovery Limits	
General Chemistry - SM4500 CN-CE	**CAS#**	**(mg/l)**	**UCL**	**LCL**	**MS/MSD**	**Duplicates**	**MS/MSD**	**Blank Spike**
Cyanide, Total	57-12-5	0.005	90	110	20	20	90-110	90-110
General Chemistry - 9010/9012A								
Cyanide, Total	57-12-5	0.005	80	120	20	20	80-120	80-120

Notes:
As specified by Alpha Analytical.

ATTACHMENT 3

RESUMES OF KEY PROJECT PERSONNEL

EnviroTrac
Environmental Services

Peter C. Breen, CPG
Senior Project Manager

Experience Summary

- *Environmental site investigation and remediation*
- *Data assessment and conceptual model development*
- *Strategic planning and scoping*
- *Groundwater flow and transport modeling*
- *Aquifer testing*
- *Surface and borehole geophysical evaluations*
- *Soil vapor intrusion assessments*
- *Project management and quality assurance*
- *Regulatory agency negotiation*
- *Litigation and public affairs support*
- *Staff development, training and mentoring*

Education

- *BS Biology, University of Miami, Coral Gables, Florida*
- *MS Earth Science, Adelphi University, Garden City, New York, concentration in Applied Hydrogeology.*

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Mr. Breen has been providing professional services to clients, focusing on environmental site investigation and remediation, for twenty seven years. Before joining EnviroTrac, he was a member of Kleinfelder's Technical Resources Council (TRC) and Principal Professionals Group (PPG); associations representing the highest level of technical practitioners in the firm. During his career he has worked throughout the United States including California, Connecticut, Delaware, Florida, Kansas, Massachusetts, New Hampshire, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Tennessee, Virginia, West Virginia and Wisconsin.

Mr. Breen is responsible for the development of cost-effective methods in the investigation, delineation and remediation of environmentally impacted sites and in the implementation of emerging sustainable and "green" technologies. His extensive experience has been gained as a result of managing and serving as technical director for large and complex site investigation and remedial projects. In those roles he was responsible for the development and implementation of technical scopes, budgets and schedules, served as primary contact with regulatory agencies, and assisted clients with related public affairs and legal issues. Additional expertise provided by Mr. Breen includes the performance of technical "cold eyes" review and forensic evaluations.

Professional Certifications

Certified Professional Geologist, CPG #11417, American Institute of Professional Geologists
OSHA HazWOPER Certification, 40-hour Training. 1987
OSHA HazWOPER 8-hour Refresher (completed annually)
Loss Prevention System (LPS) 8-hour Training, 2004

Professional Affiliations

National Ground Water Association

Peter C. Breen, CPG
Senior Project Manager

Professional History

- 1984 – 1990, Roux Associates, Hydrogeologist/Project Manager
- 1990 – 1991, Blasland & Bouck Engineers, Project Manager
- 1991 – 2003, Environmental Resources Management, Senior Project Manager
- 2003 – 2008, Geologic Services Corporation/Kleinfelder, Principal Professional
- 2008 – Present, EnviroTrac Ltd., Senior Project Manager

Professional Highlights and Selected Projects

Litigation Support

- **Insurance Firm** – Mr. Breen assisted council in 2009 regarding a matter involving methyl tertiary butyl ether (MTBE), a formerly used gasoline additive that was detected in a public water supply distribution system on Long Island, New York. The insured party (defendant) owned, or had previously owned, a portfolio of retail gasoline stations that were identified by the NYSDEC as potential sources. In excess of 30,000 documents were reviewed during a one-year discovery phase. That information included results of an expedited site assessment, aquifer testing, down-hole geophysical testing and stratigraphic analyses, 3-dimensional numerical groundwater flow and contaminant transport simulations, a two-phase interim remedial measure (IRM) conducted to capture and remove MTBE from groundwater, and other work conducted by the NYSDEC. Other information included numerous reports and other information pertaining to the defendant's properties and information associated with a multitude of other facilities (identified as potential sources by the NYSDEC) owned and operated by other named parties, information regarding activities conducted by two water supply districts (plaintiff's facilities) and hydrogeologic reports and other information developed by others. Based on Mr. Breen's work the case against the defendant was dismissed.

- **Insurance Firm** - Assessed environmental records pertaining to a portfolio of fourteen (14) retail petroleum sites located in Florida. The work was conducted to support negotiations between client insurance firm and successor firm. The client had been the provider of insurance for the sites until late 2004 at which time responsibilities for policy management were transferred to the successor firm. Recently, petroleum contaminated soil and groundwater was discovered at the sites. Responsibility for the funding of the investigative and remedial work to address these issues is being negotiated by the two insurance firms.

- **Major Oil Company** - Reviewed environmental records pertaining to sixteen (16) MTBE release sites on Long Island, New York. Results of the evaluations were used to develop/update/critique conceptual site models, focusing on assessing spill histories, groundwater plume migration pathways, and plume persistence.

- **Major Oil Company** - Technical director of a groundwater remediation project located on Long Island, New York. The project is conducted under the oversight of the New York State Department of Environmental Conservation (NYSDEC) under a negotiated Order on Consent. Mr. Breen assisted defense council in a civil action brought forth by local residents. The project scope includes high definition delineation, monitoring and remediating an extensive off-site plume containing methyl tertiary butyl ether (MTBE). This is accomplished through testing and sampling of 1,000+ vertically nested monitoring well points installed throughout a residential neighborhood, wetland assessments, indoor air quality evaluations and through the use of a high capacity (500 gpm) groundwater pump and treat system. Supporting technical evaluations conducted to assess plume migration included gamma logging of boreholes to assess stratigraphic heterogeneities, and slug and constant rate pump testing to support remediation goals. The project includes assessment and remediation activities at the sources of the off-site plume; two former retail gasoline stations. Remedial efforts at these on-site locations have included groundwater pump and treat, soil vapor extraction and air sparging (SVE/AS), in-situ chemical oxidation (ISCO) using modified Fenton's Reagent and hotspot soil excavation conducted during demolition activities.

Litigation Support (continued)

- **Commercial Real Estate Development/Property Management -** Managed site investigation and remedial activities at an industrial park located in New York. Site consisted of eight associated properties, activities included evaluation of leaching pools associated with sanitary and storm water systems, and potable water testing. The intent of the work, conducted on the behalf of council in supporting cost recovery efforts, included the identification of responsible parties for historic spills and discharges and preparation of remedial cost estimates. Based on site assessment results it was determined that sediments and liquids present in numerous leaching pools associated with both systems were impacted with chemical contaminants including VOCs, PAHs and inorganic compounds at levels requiring remediation in accordance with Suffolk County Department of Health Action Levels.

- **Mining Facility -** Lead hydrogeologist for a regional-scale ground water investigation conducted in the vicinity of a salt mining facility located in south central Kansas. Project was conducted in support of litigation, working for defendants. Aquifer characterization resulted in delineation of saline ground water and assessment of contaminated soil resulting from historic solution mining activities. The plume was found to extend more than seven miles from the Site over an area of approximately 2,500 acres within a highly prolific alluvial aquifer utilized locally for central pivot crop irrigation and potable water supply. In excess of 100 test wells were installed, including three 16-inch diameter groundwater extraction wells. Mr. Breen planned, supervised and analyzed results of three 72-hour high capacity aquifer pumping tests, tested soil and groundwater and conducted other evaluations, including the construction of a numerical groundwater flow model utilizing Modflow to support litigation strategy and assess remedial alternatives.

Petroleum Industry

- **Oceanside, New York -** Project director of a former petroleum terminal site investigation and remediation project conducted under a stipulation agreement with the New York State Department of Environmental Conservation (NYSDEC). The project scope includes delineating, monitoring and remediating ground water containing petroleum compounds including benzene, toluene, ethylbenzene and xylene (BTEX), methyl tertiary butyl ether (MTBE). Initial work conducted to support cost recovery efforts by the client included a forensic evaluation of prior site use and spill history. An interim remedial measure (IRM) implemented to reduce on-site chemical constituent concentrations entailed the use of a constructed on-site groundwater pump and treat system consisting of seven recovery wells and air stripping technology. Supplemental remediation technologies are in the process of being evaluated to achieve site closure goals. This process will be supported through additional site testing and stratigraphic evaluation.

- **Linden, New Jersey -** Managed a Remedial Investigation for a 72-acre research and development site conducted under an Administrative Order of Consent with the New Jersey Department of Environmental Protection (NJDEP). Work included a detailed forensic evaluation of historic site activities which resulted in the identification of 30 Areas of Environmental Concern (AOCs) and led to the assessment of associated soil and ground water in overburden and layered siltstone bedrock aquifers. Due to the varied historic activities conducted at the Site a wide range of chemical constituents including inorganics, organics and semi-volatile compounds were found in soil and groundwater. Petroleum related constituents represented the primary COCs in the overburden groundwater while TCE and associated breakdown products were found in the bedrock Associated work included evaluation of sediment and surface water at on-site wetlands, the development of a baseline ecological evaluation (BEE) and removal of thirteen formerly abandoned in place USTs ranging in capacity from 550 to 10,000 gallons. Bedrock evaluations employed regional and local fracture trace analysis and an innovative testing approach utilizing downhole closed circuit television, acoustic televiewer, heat pulse flow meter and pumping test applications.

Peter C. Breen, CPG
Senior Project Manager

Petroleum Industry (continued)

- **Florham Park, New Jersey -** Managed a Remedial Investigation conducted in support of divesting a 270-acre research and development Site. A significant portion of the Site is occupied by wetland areas that were evaluated within the context of a BEE. Environmental impacts found at the Site included pesticides and inorganic compounds resulting from historic agricultural use of the land, and VOCs and SVOCs from activities conducted by the current occupant. Remedial activities to address these impacts included soil mixing and sediment excavation, groundwater pump and treat and soil vapor extraction/air sparging (SVE/AS) technologies, and in-situ treatment options.

- **Retail Station Portfolio, Metropolitan New York -** Served as the senior technical advisor supporting environmental activities pertaining to a large portfolio of retail petroleum site investigation and remediation projects located throughout the Long Island and New York City metropolitan area, advising clients and assisting project managers with construction of site conceptual models, investigation approach and remedial and public affairs strategy development, and serving in a peer review capacity. Project sites are situated within urban and suburban settings and are located in ice contact or glacial outwash settings.

Manufacturing Facilities

- **Bay Shore, New York -** Managed site assessment and remediation activities conducted at a large medical products manufacturing facility. The scope of work included soil and groundwater evaluations consisting of soil boring and well installations, soil and groundwater sampling, and developing a historic use model of on-site drains and leaching pools. Chemical constituents of concern included metals and chlorinated VOCs. Approximately 1,300 tons of metals contaminated soil was excavated and disposed offsite. Based on Mr. Breen's evaluation of the prior consultant's groundwater modeling and site assessment findings he was successful in negotiating the elimination of significant quantity of groundwater related site assessment and remediation work that had previously been proposed to the overseeing regulatory agency, and afforded the client considerable cost savings.

- **Yaphank, New York -** Conducted Phase II site investigation and remediation activities at an automotive parts manufacturing plant. A detailed evaluation of historic manufacturing process/waste management was conducted and revealed the use of improper practices that resulted in the contaminated of soil at waste staging area and on-site sanitary and storm water management facilities. The remediation of soil and leaching pool structures was required based on the presence of VOCs, SVOCs and inorganic chemical constituents at levels exceeding NYSDEC and SCDOHS criteria. As a result of cleanup activities conducted, 67 tons of soil contaminated with petroleum related compounds and chlorinated VOCs was excavated from the former drum staging area was hauled from the Site for disposal. Remedial activities associated with the on-site leaching pools resulted in 45,000 gallons of liquid and 71 tons of solids requiring disposal containing a mixture of sanitary and chemical waste. Following completion of these activities a notice of no further action (NFA) was obtained.

Peter C. Breen, CPG
Senior Project Manager

Aerospace Industry

- **Eatontown, New Jersey -** Managed a Remedial Investigation performed under ECRA, ISRA requirements at a manufacturing facility. Media of investigation included soil, ground water, sediment, surface water and air. The principal contaminants of concern included chlorinated VOCs. As a result of compiling and analyzing the significant repository of environmental documentation and constructing a detailed conceptual site model, Mr. Breen was the first investigator to link the on-site groundwater contaminant plume with a small stream located nearby. Subsequent testing revealed elevated concentrations of vinyl chloride in surface water associated with that stream persisting at detectable concentrations at locations more than a mile off-site.

- **Greenfield, Massachusetts -** Managed an intensive investigation resulting in characterization and delineation of a TCE plume in ground water emanating from a former tool and die manufacturing facility. Work included establishment of on-site and off-site monitoring well networks, assessment of surface water resulting from seeps located within the core of the plume and investigating potential volatilization to a nearby child daycare facility, residences and commercial structures located within the plume footprint. An additional component of the project related to monitoring and evaluating the performance of an on-site UV peroxidation groundwater treatment facility.

- **Bethpage and Calverton, New York -** Conducted environmental site assessment evaluations at two large manufacturing facilities as part of site decommissioning activities. Work activities included a comprehensive review of historic manufacturing practices resulting in the identification of numerous areas of environmental concern and required subsequent tracing and testing of interior and exterior locations of drains and leaching structures, former ordinance testing locations, and conducting soil and groundwater characterization activities.

Industrial Sites

- **Woburn, Massachusetts** - Conducted hydrogeologic and geophysical evaluations to define the extent of animal hide piles and former on-site chemical disposal lagoons, and assess associated impacts of volatile and inorganic chemical constituents to soil, sediment and groundwater at the 245-acre Industri-Plex Superfund Site. Geophysical testing included the use of electromagnetics, resistivity and metal detection techniques. Hydrogeologic assessments included slug testing and constant rate pump testing techniques.

- **Mount Pleasant, Tennessee -** Characterized the hydrogeology of a karst limestone watershed setting at a large chemical formulation facility. The site consisted of raw material mining areas and an associated chemical manufacturing plant. Key on-site features that were investigated included a bedrock fault zone, a stream that bisects the site and numerous springs. Work elements included the installation of test wells in unconsolidated and bedrock settings and conducting hydraulic parameter assessments, surface water flow monitoring, hydrologic budget estimations and assessment of ground water/surface water hydraulic relationships.

Peter C. Breen, CPG
Senior Project Manager

Regulatory and Public Agencies

- **NYSDEC: Nassau County, New York -** Managed a program of SVI testing conducted to evaluate potential intrusion of chlorinated solvent compounds and monitor the progress of an ongoing remedial action in a neighborhood of 65 residences during the 2009 and 2010 heating seasons. Directed field activities and served as the primary contact for the NYSDEC and coordinated analytical laboratory and data validator subcontractor services. Work was conducted in accordance with the 2006 NYSDOH Guidance on SVI evaluations and included the collection of 24-hour duration sub-slab, indoor and outdoor air TO-15 samples. This work is continuing during 2011.

- **NYSDEC: New York State -** Managed a program of geophysical surveys conducted at 25 inactive hazardous waste sites located throughout New York State. Developed technical approach, analyzed data, prepared reports and served as primary contact with the NYSDEC. Methods included the use of magnetometer, electrical resistivity, electromagnetic (EM) and metal detection techniques. The work assignment also included conducting four Phase II Site Investigations at facilities located on Long Island, New York that included on-site soil and groundwater quality evaluations conducted through the installation of soil borings and groundwater monitoring wells and performance of slug tests.

- **NYSDEC: Blooming Grove, New York -** Evaluated impacts to soil and groundwater at a former landfill. Geophysical testing utilizing a variety of techniques was conducted to delineate the lateral and vertical extent of fill material. Monitoring well installations were completed in unconsolidated material and underlying shale bedrock to assess environmental impacts and to support fate and transport assessments; ground water flow pathway identification within the bedrock was assisted through the use of 3D photographic fracture trace analysis. Numerous ephemeral seeps were identified and assessed to determine potential impacts to on-site ponded water and local streams.

- **EPA: Holbrook, New York -** Evaluated impacts to soil and groundwater at a former audio recordings manufacturing site through the implementation of a RI/FS conducted for the EPA. Potential impacts to a nearby municipal water supply well field and a down gradient wetland were assessed utilizing site test data and groundwater flow and transport modeling techniques.

- **Middlesex County Utility Authority: Middlesex County, New Jersey -** Performed a detailed third party peer review and technical critique of a comprehensive hydrogeologic investigation conducted to support the proposed expansion of a major municipal landfill. The study was conducted on behalf of the utility authority to support proposed expansion of the landfill and considered potential effects to nearby wetlands and estuarine environments as the site is located adjacent to a large tidally influenced surface water feature. In addition, the hydraulic effects of an existing containment slurry wall were assessed, under existing conditions and under scenarios representing the expanded landfill.

Short Courses and Seminars Attended

January 1987 - *Ground Water Contaminant Transport Modeling.* Princeton, New Jersey. Princeton University.

September 1989 - *New Field Techniques for Quantifying the Physical and Chemical Properties of Heterogeneous Aquifers*. New York City, New York. EPA.

March 1999 - *Monitored Natural Attenuation for Ground Water*, New York City, New York. EPA.

December 1999 - *DNAPLs in Fractured Geologic Media: Monitoring, Remediation & Natural Attenuation,* San Francisco, CA. University of Waterloo.

May 2001 - *Strategies for Characterizing Subsurface Releases of Gasoline Containing MTBE, Princeton*, New Jersey. API.

December 2003 - *MTBE & TBA: Comprehensive Site Assessment and Successful Groundwater Remediation*, Stony Brook, New York. NYSDEC and ITRC.

Publications, Presentations and Events

April 2004 - *Evaluating Plume Capture Through Mass Flux Estimates*. LIG Conference SUNY Stony Brook, New York.

March 2006 - *Evaluating the Performance of a Groundwater Recovery System Through a Detailed Site Characterization and Contaminant Mass Flux Estimate.* ExxonMobil Global Remediation Conference, Orlando, Florida.

Spring 2008 - *Engineering Social Responsibility: Kleinfelder Adopts Company-Wide Sustainability Principles*. EFCG Sustainability Newsletter, Edition 1.

May 2008 - Environmental Services Sector Representative, *Round Table Discussion*. Queens Sustainability Summit at CUNY School of Law, Flushing, New York.

January 2009 - Panelist, *Environmental Law -Turning Brown Fields Green*. Queens Green Business Summit at Queens College, Flushing, New York.

February 2010 - Panelist, *Green Remediation -Turning Brown Fields Green*. Queens Green Business Summit at Queens College, Flushing, New York.

October 2010 - Panelist, *The Green Movement*. The 41st Annual Conference of the Long Island Business Development Council, Montauk, New York.

Patrick Criscuola
Senior Environmental Scientist

Experience Summary

- *Environmental site investigation and remediation*
- *Field Implementation of projects*
- *Contractor coordination and supervision*
- *Data assessment*
- *Project planning and scoping*
- *Client and regulatory agency communications*
- *Public affairs support*

Education

- *BS Environmental Geology, State University of New York at Binghamton, 2005.*

- *MS Hydrogeology, State University of New York at Stony Brook, 2010.*

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Mr. Criscuola has been providing professional services to clients for five years, focusing on environmental site investigations and remediation. Before joining EnviroTrac he was a member of VHB's Engineering, Surveying and Landscape Architecture, P.C.'s (VHB) Oil and Hazardous Materials Division (OHM). He has worked throughout New York and New Jersey for a large variety of clients and project types.

Mr. Criscuola is experienced in many aspects of environmental cleanups including Phase I and Phase II environmental site assessments, due diligence investigations and managing on-site remediation activities. In those roles, he was responsible for implementation of scopes of work, serving as a field representative in communicating with regulatory agencies during the implementation of on-site activities and assisting project management in formulating recommendations to clients. Mr. Criscuola has experience working at high-profile, public affairs driven and politically sensitive projects.

Professional Certifications

OSHA Certification, 40 hr Health and Safety Training at Hazardous Waste Sites
OSHA Certification 8 hr Refresher Health and Safety Training at Hazardous-Waste sites
Loss Prevention System (LPS) 8-hour training, 2006
CPR training, 2006
Emergency First Air, 2006
MTA and LIRR training, 2006

Professional Affiliations

National Ground Water Association

Patrick Criscuola
Senior Environmental Scientist

Professional History

- 2006 — 2007, Roux Associates, Staff Assistant Hydrogeologist
- 2007 — 2009, Freudenthal and Elkowitz Consulting Group, Inc., Environmental Technician II
- 2009 — 2011, VHB Engineering, Surveying and Landscape Architecture, P.C., Environmental Scientist
- 2011 — Present, EnviroTrac Ltd., Senior Environmental Scientist

Professional Highlights and Selected Projects

NYC Superfund Site – Mr. Criscuola conducted and provided oversight for field services pertaining to a large scale remediation project conducted at a site located in northern Brooklyn. Responsibilities included performing, coordinating and overseeing on-site operation and maintenance activities, well gauging and monitoring and contractor oversight.

NYC High-profile Real Estate Development – Mr. Criscuola completed multiple scopes of work at a large re-development project in central Brooklyn. The tasks included on-site contractor oversight and field investigations pertaining to the politically sensitive, high public interest project.

Telecom Macro Cellular Sites – Mr. Criscuola was involved with all phases of environmental investigation for wireless communications macro-sites for multiple major wireless carriers. Following completion of the investigations, he managed activities associated with the removal of impacted soil during the installation of monopole transmission towers.

Phase I and Phase II Environmental Site Assessments – Mr. Criscuola has completed numerous ESAs in the Long Island and New York City markets at commercial/retail, manufacturing/industrial and residential properties.

Donna Eschrich
Staff Scientist

Experience Summary

- *Ground-water Monitoring Well Installation Oversight*
- *Soil Vapor Intrusion Investigations*
- *Neighborhood Canvassing*
- *Monitoring, Station Upgrade, and Site Closure Report Preparation*
- *Work Order Preparation*
- *Change order tracker updating*
- *Maintenance report tracking*
- *Soil and Ground-water Sampling*
- *Groundwater Gauging*
- *Sample Management*

Education

- BS Environmental Policy, Institutions and Behaviors with a Public Health Concentration - Rutgers University- Cook College 2002

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Experience Summary

Since January 7, 2010, Ms. Eschrich has been a Staff Scientist at EnviroTrac Ltd. Ms. Eschrich has assisted in the formatting and organization of information and documentation for projects. Responsibilities include: preparation of monitoring, station upgrade, and site closure reports, preparation of ground-water sampling and operation and maintenance work orders for 24 hr. petroleum-release sites, and the ordering of sampling materials for air sampling and groundwater events. Ms. Eschrich is experienced in ground-water and soil sampling and gauging.

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Professional Certifications:

API WorkSafe Certification
OSHA 40 Hour HAZWOPER Certification
10 Hr. OSHA Construction Safety Training
Confined Space Entry Training
Fire Extinguisher Training
DOT HAZMAT/RCRA Training
Facility Security Officer Training

Donna Eschrich
Staff Scientist

Project Experience:

- Ms. Eschrich has participated in groundwater sampling and gauging for Hess Plainedge and Bayshore in January and March 2010. Ms. Eschrich has also participated in the BP 695 Great Neck groundwater sampling event.

- Ms. Eschrich has contributed to the investigation of soil vapor intrusion for the NYSDEC Hazardous Waste site known as the West Side Soil Vapor Investigation in Jamaica, NY. Ms. Eschrich provided photo-documentation of the investigation and helped coordinate neighborhood sampling amongst residents of the area. Ms. Eschrich also coordinated door to door canvassing of the neighborhood following the NYSDEC Guidelines and also conducted questionnaires with the participating residents. Upon completion of the investigation, Ms. Eschrich was responsible for sending all analytical information to the NYSDEC as well as maintaining a portal of photo documentation and scheduling.

- Ms. Eschrich has contributed to the investigation of soil vapor intrusion for the NYSDEC Hazardous Waste site known as the Meeker Avenue Plume Trackdown in Brooklyn, NY. Ms. Eschrich provided photo-documentation of the investigation and helped coordinate neighborhood sampling amongst residents of the area along side employees of URS. Ms. Eschrich also participated in door to door canvassing of the neighborhood following the NYSDEC Guidelines and also conducted questionnaires with the participating residents and chemical inventories. Upon completion of the investigation, Ms. Eschrich was responsible for sending all analytical information to URS as well as maintaining a portal of photo documentation. Ms. Eschrich was responsible for picking up sampling containers and data integrity as well.

- Ms. Eschrich has gauged wells at several Hess groundwater sampling events as well as packed and shipped samples to Accutest Lab.

Michael A. Clark, MS, CHMM
Health and Safety

Experience Summary

- *Directed company safety operations for construction and operations in New York City.*
- *Directed environmental, health, and safety program for materials and metals recovery/recycling operations, successfully obtained ISO 14001 certification.*
- *Managed hazardous material, waste, and petroleum storage operations, including emergency response programs and site remediation activities, for over 300 sites.*
- *Experienced trainer for safety programs: HazWOPER. - 40-hr & 8-hr refresher, Trenching & Excavation, Respiratory Protection, Confined Space Entry, etc.; defensive driver classes; and environmental awareness.*

Education

- *Master of Science, Environmental Science, New Jersey Institute of Technology, Newark, NJ, 1994.*
- *Bachelor of Science, Biology and Chemistry, Rowan University, Glassboro, NJ, 1987.*
- *Advanced Safety Certification, National Safety Council, 1998.*

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Environmental Services

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Mr. Clark has over 20 years experience in the environmental, health and safety field managing and directing programs in large corporate settings (Fortune 100), manufacturing and construction companies, and consulting firms. He currently is the Director of EnviroTrac's Health and Safety program. Safety is a strategic part of EnviroTrac's operations and as Director of Health and Safety, Michael ensures that the safety program focuses on our employees and that they have the knowledge and the tools to perform their jobs safely.

Using a behavior-based safety model, EnviroTrac employees are taught to take accountability for their own safe work practices. Task-specific hazards are identified and employees are trained, updated, and reviewed on how to avoid these hazards and mitigate their risks.

As Director of Health and Safety, he has developed and implemented: accident reporting, investigating, & root cause analysis procedures; ground disturbance procedures for subsurface investigation, drilling, and trenching & excavation; safe driving and behind-the-wheel training; in-house 40-hour OSHA HazWOPER and 8-hour refresher training; temporary traffic control and work area protection; respiratory protection; confined space entry; and various other safety programs.

EnviroTrac uses a network of Regional Safety Coordinators to oversee the safe work practices in every EnviroTrac office and Mr. Clark manages this network and has personally written, reviewed, and updated our Health & Safety Program so that the practices, polices, and procedures meet or exceed safety laws, regulations, client-specific requirements, and our own standards for the health and safety of our employees.

Professional Certifications

Certified Hazardous Materials Manager (CHMM), Institute of Hazardous Materials Management - Master's Level

Advanced Safety Certification, National Safety Council

40-hour HazWOPER certificate and subsequent 8-hr refresher training

Fundamentals of Industrial Hygiene - Harvard School of Public Health

Industrial Ventilation Workshop - AIHA

Advanced IAQ/HVAC Diagnostics Training Course - HL Turner Group

Implementing the ISO 14001:2004 Program workshop

Smith System Driver Safety Trainer

American Petroleum Institute—API Work Safe Certification

Think before you act, remember - Safety First!!!

Michael A. Clark, MS, CHMM
Health and Safety

Professional Highlights and Selected Projects

- Mr. Clark has directed the health and safety program for construction and installation operations conducted throughout all five boroughs of New York City. He developed and implemented programs that addressed heavy equipment/construction operations, work area protection, confined space entry, working at heights, and exposure to heat/cold, hazardous materials, personal safety, and other factors unique an extreme urban environment.
- In addition to his focus on safe work environments, Mr. Clark implemented a safe driving program for operations in New York City. The program addressed the requirements of operating vehicles in the most congested urban area of the country and used both classroom training and behind-the-wheel instruction to educate drivers on techniques to safely operate in this unique environment. Following the training, motor vehicle accidents for the company in that market decreased by 30%, resulting in overall cost savings estimated at over $100,000 per year.
- Developed and administered Respiratory Protection Programs for multiple companies encompassing hundreds of employees. These programs have included hazard identification, employee medical monitoring, baseline and periodic biological monitoring, respirator selection and change schedules, and annual review and update of the program as required by OSHA. Mr. Clark is a "Competent Person" as defined by OSHA to administer respirator fit tests and manage a respiratory protection program.
- Conducted over 200 indoor air quality and industrial ventilation investigations and implemented exposure control and remediation actions for worker exposure to heavy metals, VOC's, and other hazardous materials; confined spaces contaminated with hazardous materials; sick building syndrome and mold contamination; and industrial ventilation controls during manufacturing processes.
- Developed the in-house EnviroTrac 40-hour OSHA Hazardous Waste Operations and Emergency Response (HazWOPER) certification and 8-hour annual refresher training programs within the 29CFR 1910.120, Appendix A recommendations. Mr. Clark has personally delivered both the 40-hour and 8-hour training to EnviroTrac employees.
- In the environmental field, Mr. Clark has managed multi-faceted programs from hazardous material/waste management for 300+ facilities, emergency response operations for hazmat spills and releases, over a two-state area, petroleum storage operations, and environmental discharge permitting.
- Petroleum storage operation encompassed the installation of the storage systems, periodic monitoring and inspections, developing and updating SPCC plans, and upgrades to and removals of the tanks systems. Mr. Clark has managed multiple remediation activities from full site excavation of contaminated soils, to pump and treat systems, underground injection and extraction systems, and passive remediation and monitoring.
- For environmental discharge permitting, Mr. Clark wrote and obtained over 400 air and water discharge permits from environmental state agencies, implemented and audited programs to ensure that the permit requirements were followed, and submitting the required reports to the appropriate agencies. Type of permits include: Title V Air Discharge Permit, NJDEP RADIUS permits, NJDEP Air Quality Permits, PA DEP Air Quality Permits, NPDES permits.
- During the restoration efforts at *Ground Zero* in NYC after the attacks of 9/11, Mr. Clark designed and implemented procedures for the decontamination of a 30,000+ gallon fuel spill at the Verizon building that facilitated the restoration of 2M data and 1.5 M voice lines that re-established communications for lower Manhattan and Wall St.
- While directing the environmental operations for a materials and metals recovery/recycling firm, Mr. Clark developed and implemented the company's environmental program under the strict requirements of ISO 14001:2004. The program applied for and successfully passed the ISO audit with no "non-compliance" issues identified by the Accreditation body and was issued an ISO 14001 certification.