APPENDIX C

CONSTRUCTION QUALITY ASSURANCE PLAN

CONSTURCTION QUALITY ASSURANCE PLAN

for

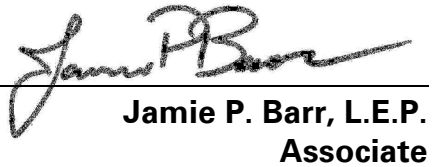
FONF Expansion/Sabre Park BCP
1705 Factory Outlet Boulevard
Town of Niagara, New York 14304

Prepared For:

Fashion Outlets II, LLC and Macerich-Niagara, LLC
c/o Macerich Management Co.
401 Wilshire Boulevard, Suite 700
Santa Monica, California 90401

Prepared By:

Langan Engineering, Environmental, Surveying, and Landscape Architecture, D.P.C.
River Drive Center 1, 619 River Drive
Elmwood Park, New Jersey 07407



Jamie P. Barr, L.E.P.
Associate

9 October 2013
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1.0 PROJECT DESCRIPTION

1.1. INTRODUCTION

This Construction Quality Assurance Plan (CQAP) specifies analytical methods to be used to ensure that data from the Remedial Action at the FONF Expansion/Sabre Park BCP project are precise, accurate, representative, comparable, and complete.

1.2. PROJECT OBJECTIVES

The objective of the IRM Work Plan is to provide the means and methods to remediate areas of concern identified during historical assessments and the RI, to be protective of human health and the environment, mitigate the potential further migration of contaminants in soil, groundwater, and/or soil gas and to facilitate redevelopment of this property.

1.3. SCOPE OF WORK

The specific scope of work for this IRM is described in detail in the Interim Remedial Measures Work Plan (IRMWP) dated 9 October 2013. The IRM will be conducted by the remediation contractor and overseen by Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C. (Langan) on behalf of Macerich Management Co. (Macerich). Collection and analysis of soil waste characterization samples and hotspot confirmation samples as required for off-site disposal in accordance with sampling protocol. The specific scope of work for this IRM is described in detail in the IRM Work Plan.

1.4. DATA QUALITY OBJECTIVES AND PROCESSES

Data quality objectives (DQOs) are qualitative and quantitative statements, which specify the quality of data required to support the remediation of the Site. DQOs focus on the identification of the end use of the data to be collected. The project DQOs will be achieved utilizing the definitive data category, as outlined in *Guidance for the Data Quality Objectives Process*, EPA QA/G-4 (September 1994). All sample analyses will provide definitive data, which are generated using rigorous analytical methods, such as the reference methods approved by the United States Environmental Protection Agency (USEPA). The purpose of this remediation is to remove the extent of contamination identified in the IRMWP. Within the context of the purpose stated above, the project DQOs for data collected during the remediation are:

- To document the conditions in subsurface soil/fill remaining in-place following hot spot removal;

- To maintain the highest possible scientific/professional standards for each procedure; and,
- To develop enough information to classify soil/fill materials proposed for off-site disposal, if necessary, and determine appropriate disposal facilities.

Sample analytical methodology for the media sampled and data deliverables will meet the requirements in the most recent NYSDEC Analytical Services Protocol (ASP). The analytical laboratory will be instructed that completed Sample Preparation and Analysis Summary forms are to be submitted with the analytical data packages. The laboratory also will be instructed that matrix interferences must be cleaned up, to the extent practicable. Data usability summary reports (DUSRs) will be generated. In order to achieve the definitive data category described above, the data quality indicators of precision, accuracy, representativeness, completeness, and comparability will be measured during offsite chemical analysis. The data quality indicators are summarized as the following:

- ***Precision*** – an expression of the reproducibility of measurements of the same parameter under a given set of conditions. Field sampling precision will be determined by analyzing coded duplicate samples and analytical precision will be determined by analyzing internal QC duplicates and matrix spike duplicates.
- ***Accuracy*** – a measure of the degree of agreement of a measured value with the true or expected value of the quantity of concern. Sampling accuracy will be determined through the assessment of the analytical results of field blanks and trip blanks for each sample set. Analytical accuracy will be assessed by examining the percent recoveries of surrogate compounds that are added to each sample (organic analyses only), and the percent recoveries of matrix spike compounds added to selected samples and laboratory blanks.
- ***Representativeness*** – expresses the degree to which sample data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point, or an environmental condition. Representativeness will be determined by assessing a number of investigation procedures, including chain of custody, decontamination, and analysis of field blanks and trip blanks.
- ***Completeness*** – the percentage of measurements made which are judged to be valid. Completeness will be assessed through 3rd party data validation. The QC objective for completeness is generation of valid data for at least 90% of the analyses requested.
- ***Comparability*** – expresses the degree of confidence with which one data set can be compared to another. The comparability of all data collected for this project will be ensured using several procedures, including standard methods for sampling and

analysis, instrument calibrations, using standard reporting units and reporting formats, and data validation.

Each of the above objectives is discussed in detail in Section 3.

2.0 PROJECT ORGANIZATION

The Remedial Action will be completed for Fashion Outlets II, LLC and Macerich-Niagara, LLC by Langan. Langan will oversee the excavation and off-site disposal of contaminated soil. Langan will collect waste characterization as required by the IRM Work Plan.

The analytical services will be performed by a certified laboratory. Data validation services will be performed by Langan.

Key contacts for this project are as follows:

Fashion Outlets II, LLC): Site Owner	Aladdin Ghafari, AVP Environmental Affairs Telephone: (310) 899-6387
Langan Project Director: Consults on project elements and reviews reports prior to submittal to NYSDEC.	Mr. Jamie P. Barr, L.E.P. Telephone: (917) 882-5428 Email: jbarr@langan.com
Langan Program/Project Manager: Manages the investigation on a day-to-day basis and coordinates report deliverables.	Mr. Jamie P. Barr, L.E.P. Telephone: (917) 882-5428 Email: jbarr@langan.com
Langan Project Executive/Quality Assurance Reviews reports prior to submittal to NYSDEC	Mr. Joel B. Landes, P.E. Telephone: (212) 479-5404 Email: jlandes@langan.com
Langan Field Team Leader Executes work plan, and documents field activities and sample collection	Mr. Justin Hall Telephone(cell): (203) 640-3180 Email: jhall@langan.com
Laboratory Contractor (York Analytical): Analyze project samples and provides NYSDEC category ASP B deliverables.	Mr. Richard August Telephone: (203) 325-1371 Email: RAugust@yorklab.com
Data Validation Coordinates with laboratory and reviews and interprets lab results and DUSR prepared by	Ms. Emily Strake Telephone: (267) 300-6309 Email: estrake@langan.com

laboratory

Resumes and/or statement of qualifications of key contacts are provided in Appendix C.

3.0 QUALITY ASSURANCE/QUALITY CONTROL (QA/QC) – OBJECTIVES FOR MEASUREMENT OF DATA

Required Quantitation Limits (CRQLs) are given in Section 7.

3.1. INTRODUCTION

The quality assurance and quality control objectives for all measurement data include precision, accuracy, representativeness, completeness, and comparability. These objectives are defined in following subsections. They are formulated to meet the requirements of the USEPA SW-846. The analytical methods and their Contract Required Quantitation Limits (CRQLs) are given in Section 7.

3.2. PRECISION

Precision is an expression of the reproducibility of measurements of the same parameter under a given set of conditions. Specifically, it is a quantitative measurement of the variability of a group of measurements compared to their average value (USEPA, 1987). Precision is usually stated in terms of standard deviation, but other estimates such as the coefficient of variation (relative standard deviation), range (maximum value minus minimum value), relative range, and relative percent difference (RPD) are common.

For this project, field sampling precision will be determined by analyzing coded duplicate samples (labeled so that the laboratory does not recognize them as duplicates) for the same parameters, and then, during data validation (Section 8), calculating the RPD for duplicate sample results.

Analytical precision will be determined by the laboratory by calculating the RPD for the results of the analysis of internal QC duplicates and matrix spike duplicates. The formula for calculating RPD is as follows:

$$RPD = \frac{|V1 - V2|}{(V1 + V2)/2} \times 100$$

where:

RPD	=	Relative Percent Difference.
V1, V2	=	The two values to be compared.
$\|V1 - V2\|$	=	The absolute value of the difference between the two values.
$(V1 + V2)/2$	=	The average of the two values.

The data quality objectives for analytical precision, calculated as the RPD between duplicate analyses, are presented in Table 1.

TABLE 1
QUALITY CONTROL LIMITS FOR SOIL SAMPLES

Laboratory Accuracy and Precision							
Analytical Parameters	**Analytical Method (a)**	**Matrix Spike (MS) Compounds**	**MS/MSD (b) % Recovery**	**MS/MSD RPD (c)**	**LCS (d) % Recovery**	**Surrogate Compounds**	**Surrogate % Recovery**
VOCs (e)	8260	Full List	Varies	Varies	Varies	1,2-Dichloroethane-d4 Bromofluorobenzene Toluene-d8	73-130 72-127 84-117
SVOCs (f)	8270	Full List	Varies	Varies	Varies	2,4,6-Tribromophenol 2-Fluorobiphenyl 2-Fluorophenol Nitrobenzene-d5 Phenol-d5 Terphenyl-d14	15-110 30-130 15-110 30-130 15-110 30-130
PCBs	8082	Aroclor 1016 Aroclor 1260	40-140 60-130	0-30 0-30	40-140 60-130	Decachlorobiphenyl Tetrachloro-m-xylene	30-150 30-150
Pesticides (l)	8081	Full List	Varies	Varies	Varies	Decachlorobiphenyl Tetrachloro-m-xylene	30-150 30-150
Inorganics (i)	6010,7470/7471, 7841,9010/9012/9014, OIA-1677, 7196	Inorganic Analytes	Varies	20 (k)	Varies	NA	NA
TCLP RCRA 8 Metals	EPA 3010A	Inorganic Analytes	Varies	20 (k)	Varies	NA	NA

NA – Not Applicable

(a) Analytical Methods: USEPA SW-846, 3rd edition, Revision 1, November 1990, any subsequent revisions shall supersede this information
(b) Matrix Spike/Matrix Spike Duplicate
(c) Relative Percent Difference
(d) Laboratory Control Sample
(e) Target Compound List Volatile Organic Compounds
(f) Target Compound List Semivolatile Organic Compounds
(g) Limits are advisory only
(h) Polychlorinated Biphenyls
(i) 6 NYCRR Part 375 metals
(j) Matrix spike only
(k) Laboratory duplicate RPD
(l) Includes herbicide 2,4,5 TP- Silvex

3.3. ACCURACY

Accuracy is a measure of the degree of agreement of a measured value with the true or expected value of the quantity of concern (Taylor, 1987), or the difference between a measured value and the true or accepted reference value. The accuracy of an analytical procedure is best determined by the analysis of a sample containing a known quantity of material, and is expressed as the percent of the known quantity which is recovered or measured. The recovery of a given analyte is dependent upon the sample matrix, method of analysis, and the specific compound or element being determined. The concentration of the analyte relative to the detection limit of the analytical method is also a major factor in determining the accuracy of the measurement. Concentrations of analytes which are close to the detection limits are less accurate because they are more affected by such factors as instrument "noise". Higher concentrations will not be as affected by instrument noise or other variables and thus should be more accurate.

Sampling accuracy may be determined through the assessment of the analytical results of field blanks and trip blanks for each sample set. Analytical accuracy is typically assessed by examining the percent recoveries of surrogate compounds that are added to each sample (organic analyses only), and the percent recoveries of matrix spike compounds added to selected samples and laboratory blanks. Additionally, initial and continuing calibrations must be performed and accomplished within the established method control limits to define the instrument accuracy before analytical accuracy can be determined for any sample set.

Accuracy is normally measured as the percent recovery (%R) of a known amount of analyte, called a spike, added to a sample (matrix spike) or to a blank (blank spike). The %R is calculated as follows:

$$\%R = \frac{SSR - SR}{SA} \times 100$$

where:

%R = Percent recovery.

SSR = Spike sample result: concentration of analyte obtained by analyzing the sample with the spike added (measured).

SR = Sample result: the background value, i.e., the concentration of the analyte obtained by analyzing the sample (measures).

SA = Spiked analyte: concentration of the analyte spike added to the sample (known).

The acceptance limits for accuracy for each parameter are presented in Table 1.

3.4. REPRESENTATIVENESS

Representativeness expresses the degree to which sample data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point, or an environmental condition. Representativeness is a qualitative parameter which is most concerned with the proper design of the sampling program (USEPA, 1987). Samples must be representative of the environmental media being sampled. Selection of sample locations and sampling procedures will incorporate consideration of obtaining the most representative sample possible.

Field and laboratory procedures will be performed in such a manner as to ensure, to the degree that is technically possible, that the data represents the in-place quality of the material sampled. Every effort will be made to ensure chemical compounds will not be introduced into the sample via sample containers, handling, and analysis. Decontamination of sampling devices and digging equipment will be performed between samples as outlined in the RIWP. Analysis of field blanks, trip blanks, and method blanks will also be performed to monitor for potential sample contamination from field and laboratory procedures.

The assessment of representativeness also must consider the degree of heterogeneity in the material from which the samples are collected. Sampling heterogeneity will be evaluated during data validation through the analysis of coded field duplicate samples. The analytical laboratory will also follow acceptable procedures to assure the samples are adequately homogenized prior to taking aliquots for analysis, so the reported results are representative of the sample received.

Chain-of-custody procedures will be followed to document that contamination of samples has not occurred during container preparation, shipment, and sampling. Details of blank, duplicate and Chain-of-custody procedures are presented in Sections 4 and 5.

3.5. COMPLETENESS

Completeness is defined as the percentage of measurements made which are valid (USEPA, 1987). The QC objective for completeness is generation of valid data for at least 90 % of the analyses requested. Completeness is defined as follows for all sample measurements:

$$\%C = \frac{V}{T} \times 100$$

where:

%C = Percent completeness.

V = Number of measurements judged valid.

T = Total number of measurements.

3.6. COMPARABILITY

Comparability expresses the degree of confidence with which one data set can be compared to another (USEPA, 1987). The comparability of all data collected for this project will be ensured by:

- Using identified standard methods for both sampling and analysis phases of this project;
- Requiring traceability of all analytical standards and/or source materials to the U.S. Environmental Protection Agency (USEPA) or National Institute of Standards and Technology (NIST);
- Requiring that all calibrations be verified with an independently prepared standard from a source other than that used for calibration (if applicable);
- Using standard reporting units and reporting formats including the reporting of QC data;
- Performing a complete 3rd party data validation on a representative fraction of the analytical results, including the use of data qualifiers in all cases where appropriate; and
- Requiring that all validation qualifiers be used any time an analytical result is used for any purpose.

These steps will ensure all future users of either the data or the conclusions drawn from them will be able to judge the comparability of these data and conclusions.

4.0 SAMPLING PROGRAM QA/QC

4.1. INTRODUCTION

The sampling program will provide data concerning the presence and the nature and extent of contamination of soil, groundwater, and soil vapor, if any. This section presents sample container preparation procedures, sample preservation procedures, sample holding times, and field QC sample requirements. Samples type, and the number of environmental and QC samples to be taken are given in Table 3. The sampling procedures are presented in the RIWP.

4.2. SAMPLE CONTAINER PREPARATION, SAMPLE COLLECTION, AND SAMPLE PRESERVATION

Sample containers will be properly washed and decontaminated prior to their use by either the analytical laboratory or the container vendor to the specifications required by the USEPA. Copies of the sample container QC analyses will be provided by the laboratory for each container lot used to obtain samples. The containers will be tagged, and the appropriate preservatives will be added. The types of containers are shown in Table 3.

Soil samples from end points will be collected either by hand or from polystyrene certified sterile sampling scoops from excavated sidewalls and excavated bases. When handling soil samples, field personnel will wear nitrile gloves that will be replaced after each sample.

Samples shall be preserved according to the preservation techniques given in Table 3. Soil samples will be stored in iced coolers. Sample will be kept in a secure area on Site. Preservatives will be added to the sample bottles by the laboratory prior to their shipment in sufficient quantities to ensure that proper sample pH is met. Samples will be picked up from the Site by a laboratory courier and delivered to the laboratory for analysis. Chain-of-custody procedures are described in Section 5.

4.3. SAMPLE LABORATORY HOLDING TIMES

The sample holding times for organic and inorganic parameters are given in Table 3, and will be in accordance with the NYSDEC ASP requirements. The NYSDEC ASP holding times will be adhered to by the laboratory. Any holding time exceedances will be reported to Langan.

4.4. FIELD QC SAMPLES

To assess field sampling and decontamination performance, two types of "blanks" will be collected and submitted to the laboratory for analyses. In addition, the precision of field sampling procedures will be assessed by collecting coded field duplicates and matrix spike/matrix spike duplicates (MS/MSDs). The blanks will include:

a. Trip Blanks - A Trip Blank will be prepared before the sample containers are sent by the laboratory. The trip blank will consist of a 40-ml VOA vial containing distilled, deionized water, which accompanies the other water sample bottles into the field and back to the laboratory. A trip blank will be included with each shipment of soil and groundwater samples for target compound list (TCL) volatiles analysis. The Trip Blank will be analyzed for TCL volatile organic compounds to assess any contamination from sampling and transport, and internal laboratory procedures.

b. Field Blanks - Field Blanks will be taken at a minimum frequency of one per 20 field samples (soil and groundwater). Field blanks are used to determine the effectiveness of the decontamination procedures for sampling equipment. It is a sample of deionized, distilled water provided by the laboratory that has passed through a decontaminated bailer or other sampling apparatus. It is usually collected as a last step in the decontamination procedure, prior to taking an environmental sample. The field blank may be analyzed for all or some of the parameters of interest.

The duplicates will consist of:

a. Coded Field Duplicate - To determine the representativeness of the sampling methods, coded field duplicates will be collected. The samples are termed "coded" because they will be labeled in such a manner that the laboratory will not be able to determine that they are a duplicate sample. This will eliminate any possible bias that could arise.

b. Matrix Spike/Matrix Spike Duplicate (MS/MSD) - MS/MSD samples (MS/MSD for organics; MS and laboratory duplicate for inorganics) will be taken at a frequency of one pair per 20 field samples (groundwater). These samples are used to assess the effect of the sample matrix on the recovery of target compounds or target analytes. The percent recoveries and RPDs are given in Table 1.

TABLE 2
SUMMARY OF PROPOSED SAMPLES AND ANALYSIS

Matrix	Parameter	Analytical Methods	Field Samples				QC Blanks		Total
			Field Samples	Field Duplicate[c]	MS/MSD[a] [c] (Total)	Sub-Total	Trip Blank[c]	Rinse Blank[b] [c]	
Waste Classification Soil Samples	TBD (Waste Classification Parameters will be determined by disposal facility)	TBD	N/A (approximate)	1/20 FD-SOIL-1-15	1/20 MS-SOIL-1-15	N/A	1/day TB-SOIL-1-10	1/20	**N/A**
PCB Post Excavation Samples	PCBs	EPA 8082	13	1	1	15	1/day TB-SOIL-1-10	1	**16**
Chromium Post Excavation Samples	Chromium	EPA 3010A	12	1 FD-SOIL-1-15	1 MS-SOIL-1-15	14	1/day TB-SOIL-1-10	1	**15**

(a) Matrix spike / matrix spike duplicate for organic analyses; matrix spike and laboratory duplicate for inorganic analysis.

(b) Rinse blanks for soil sampling will be collected off unused sampling scoops.

(c) Sample nomenclature identified below sample quantity.

(d) Quantity of waste classification samples will be determined during Site construction.

TABLE 3
SOIL SAMPLE
CONTAINERIZATION PRESENTATION AND HOLDING TIMES

Analysis	USEPA Method	Bottle Type	Preservation [a]	Holding Time [b]
Volatile Organic Compounds	8260	2 Oz wide-mouth glass w/ teflon lined cap	Cool to 4°C	14 days
Semi-volatile Organic Compounds	8270	8 Oz wide-mouth glass w/ Teflon lined cap	Cool to 4°C	10 days*
Metals	6010, 7470/7471, 9010/9012/9014	8 Oz wide-mouth plastic or glass	Cool to 4°C	6 months, except mercury (26 days), cyanide (14 days)
Hexavalent Chromium[c]	7196	250 mL glass jar w/ Teflon lined cap	Cool to 4°C	24 hours
PCBs	8082	8 Oz wide-mouth glass w/ Teflon lined cap	Cool to 4°C	40 Days
Pesticides	8081	8 Oz wide-mouth glass w/ Teflon lined cap	Cool to 4°C	40 Days

(a) All samples to be preserved in ice during collection and transport.

(b) Days from date of sample collection.

(c) Requires ORP (ASTM method D 1498-93) and pH (method 9045C) analyses.

Sohxlet or sonication procedures for extraction and concentration of soil/waste samples for SVOCs must be completed within 10 days of VTSR. Extracts of soil samples must be analyzed within 40 days of extraction.

5.0 SAMPLE TRACKING AND CUSTODY

5.1. INTRODUCTION

This section presents sample custody procedures for both the field and laboratory. Implementation of proper custody procedures for samples generated in the field is the responsibility of field personnel. Both laboratory and field personnel involved in the chain-of-custody (COC) and transfer of samples will be trained as to the purpose and procedures prior to implementation.

Evidence of sample traceability and integrity is provided by COC procedures. These procedures document the sample traceability from the selection and preparation of the sample containers by the laboratory, to sample collection, to sample shipment, to laboratory receipt and analysis. The sample custody flowchart is shown in Figure 1. A sample is considered to be in a person's custody if the sample is:

- In a person's possession;
- Maintained in view after possession is accepted and documented;
- Locked and tagged with Custody Seals so that no one can tamper with it after having been in physical custody; or
- In a secured area which is restricted to authorized personnel.

5.2. FIELD SAMPLE CUSTODY

A COC record (Figure 2) accompanies the sample containers during preparation at the laboratory shipment to the field, sample containment and preservation, and during return to the laboratory. Triplicate copies of the COC must be completed for each sample collected.

The COC lists the field personnel responsible for taking samples, the project name and number, the name of the analytical laboratory to which the samples are sent, and the method of sample shipment. The COC also lists a unique description of every sample bottle in the set. If samples are split and sent to different laboratories, a copy of the COC record will be sent with each sample.

The REMARKS space on the COC is used to indicate if the sample is a matrix spike, matrix spike duplicate, or any other sample information for the laboratory. Since they are not specific to any one sample point, trip and field blanks are indicated on separate rows. Once all bottles are properly accounted for on the form, a sampler will write his or her signature and the date and time on the first RELINQUISHED BY space. The sampler will also write the method of shipment, the shipping cooler identification number, and the shipper airbill number on the top of the COC. Mistakes will be crossed out with a single line in ink and initialed by the author.

One copy of the COC is retained by sampling personnel (notations identifying blind duplicate samples will be added to this copy of the COC but not the others that will go to the laboratory) and the other two copies are put into a sealable plastic bag and taped inside the lid of the shipping cooler. The cooler lid is closed, custody seals provided by the laboratory are affixed to the latch and across the back and front lids of the cooler, and the person relinquishing the samples signs their name across the seal. The seal is taped, and the cooler is wrapped tightly with packing tape. It is then relinquished by field personnel to personnel responsible for shipment, typically an overnight carrier. The COC seal must be broken to open the container. Breakage of the seals before receipt at the laboratory may indicate tampering. If tampering is apparent, the laboratory will contact the Project Manager, and the samples will not be analyzed.

FIGURE 1

SAMPLE CUSTODY

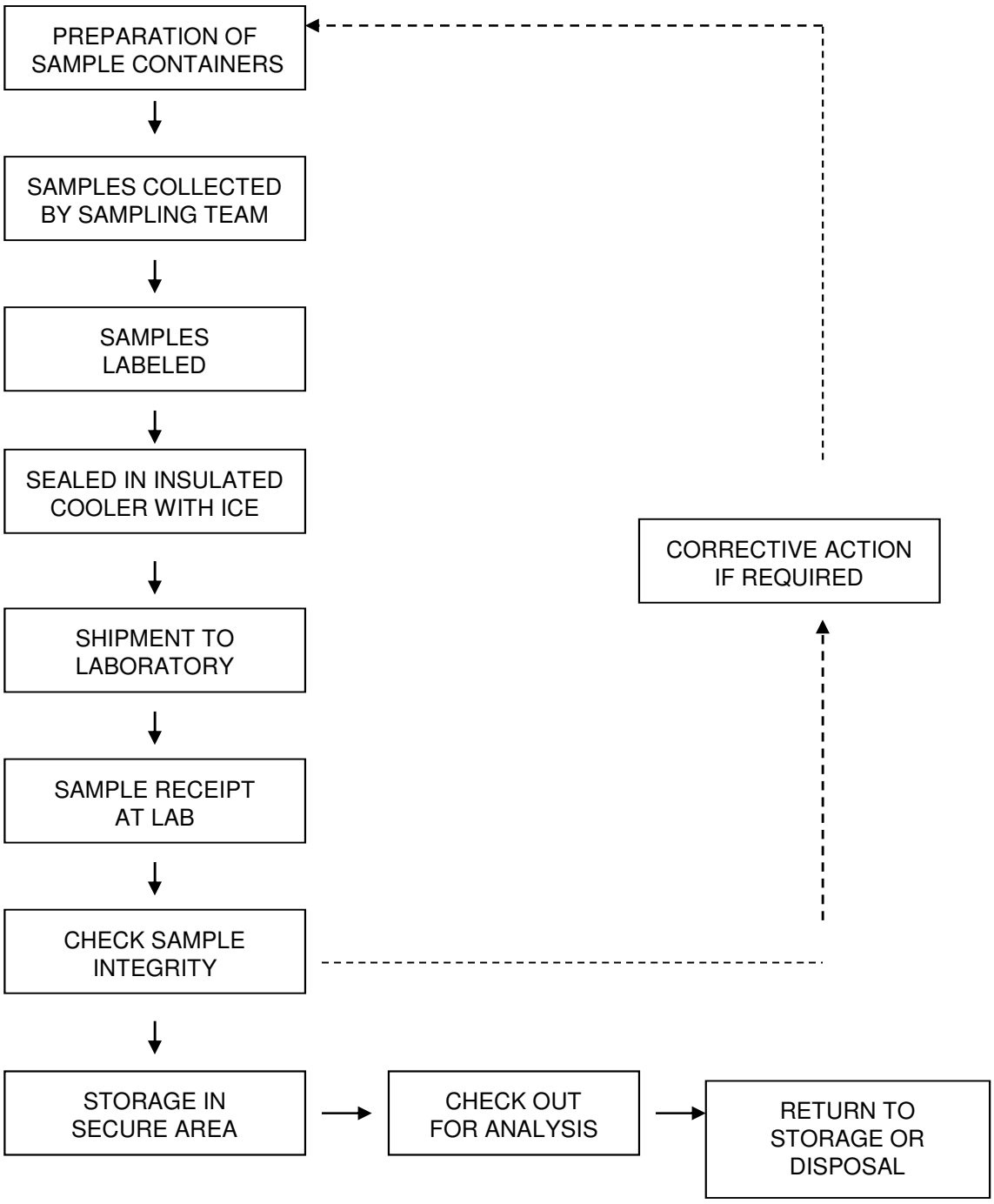
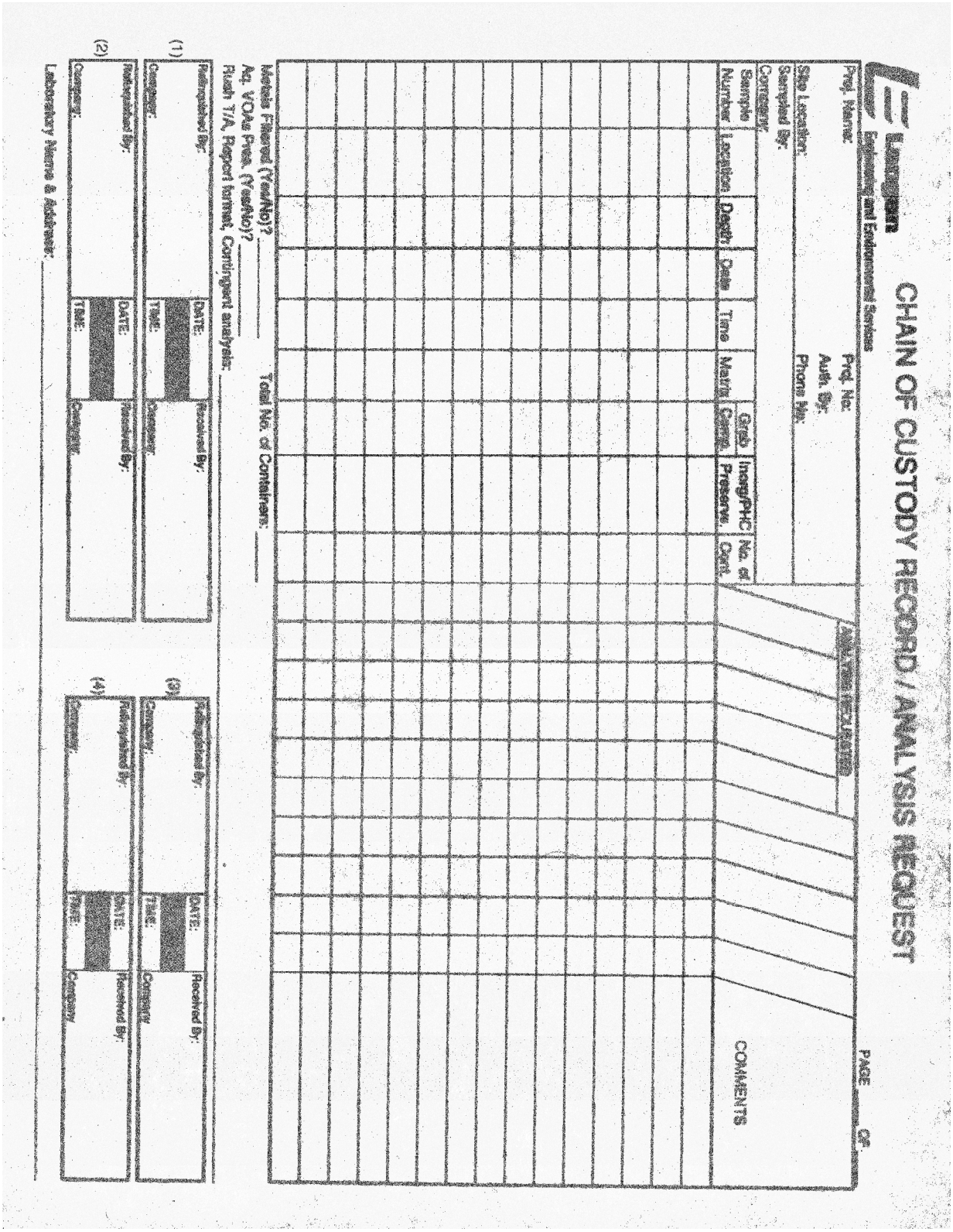


FIGURE 2

CHAIN-OF-CUSTODY RECORD



5.3. LABORATORY SAMPLE CUSTODY

The Project Manager or Field Team Leader will notify the laboratory of upcoming field sampling activities, and the subsequent shipment of samples to the laboratory. This notification will include information concerning the number and type of samples to be shipped as well as the anticipated date of arrival.

The following laboratory sample custody procedures will be used:

- The laboratory will designate a sample custodian who will be responsible for maintaining custody of the samples, and for maintaining all associated records documenting that custody.
- Upon receipt of the samples, the custodian will check cooler temperature, and check the original COC documents and compare them with the labeled contents of each sample container for correctness and traceability. The sample custodian will sign the COC record and record the date and time received.
- Care will be exercised to annotate any labeling or descriptive errors. In the event of discrepant documentation, the laboratory will immediately contact the Project Manager or Field Team Leader as part of the corrective action process. A qualitative assessment of each sample container will be performed to note any anomalies, such as broken or leaking bottles. This assessment will be recorded as part of the incoming chain-of-custody procedure.
- The samples will be stored in a secured area at a temperature of approximately 4 degrees Celsius until analyses commence.
- A laboratory tracking record will accompany the sample or sample fraction through final analysis for control.
- A copy of the tracking record will accompany the laboratory report and will become a permanent part of the project records.
- The laboratory will provide NYSDEC ASP Category B data deliverables.

6.0 CALIBRATION PROCEDURES

6.1. FIELD INSTRUMENTS

All field analytical equipment will be calibrated immediately prior to each day's use. The calibration procedures will conform to manufacturer's standard instructions and are described in the RIWP. This calibration will ensure that the equipment is functioning within the allowable tolerances established by the manufacturer and required by the project. Records of all

instrument calibration will be maintained by the Field Team Leader. Copies of all the instrument manuals will be maintained on-site by the Field Team Leader.

Calibration procedures for instruments used for monitoring health and safety hazards (e.g., photoionization detector and explosimeter) are provided in the Health and Safety Plan.

6.2. LABORATORY INSTRUMENTS

The laboratory will follow all calibration procedures and schedules as specified in the sections of the USEPA SW-846 and subsequent updates that apply to the instruments used for the analytical methods given in Section 7.

7.0 ANALYTICAL METHODS

Samples will be analyzed according to the USEPA SW-846 "Test Methods for Evaluating Solid Waste," November 1986, 3rd edition and subsequent updates. Specific analytical methods are listed in Table 3.

8.0 DATA VALIDATING, REDUCTION, AND REPORTING

8.1. INTRODUCTION

Data collected during the field investigation will be reduced and reviewed by the laboratory QA personnel, and a report on the findings will be tabulated in a standard format. The criteria used to identify and quantify the analytes will be those specified for the applicable methods in the USEPA SW-846 and subsequent updates. The data package provided by the laboratory will contain all items specified in the USEPA SW-846 appropriate for the analyses to be performed, and be reported in NYSDEC ASP Category B format.

The completed copies of the chain-of-custody records (both external and internal) accompanying each sample from time of initial bottle preparation to completion of analysis shall be attached to the analytical reports.

8.2. DATA REDUCTION

One copy of the final analytical data packages and an electronic disk deliverable will be provided by the laboratory approximately 7 or 8 days after receipt of a complete sample delivery group. The Project Manager will arrange for data validation of the data package. The disk deliverable will be used to generate summary tables. These tables will form the database for assessment of the site contamination condition.

Each electronic deliverable will be formatted and copied using an operating system compatible to both Langan and the laboratory. To avoid transcription errors, data will be loaded directly from the laboratory information management system (LIMS). If this cannot be accomplished, Langan should be notified via letter of transmittal indicating that manual entry of data is required for a particular method of analysis. All electronic deliverables must also undergo a QC check by the laboratory before delivery. The original data, tabulations, and electronic media are stored in a secure and retrievable fashion.

The Project Associate or Project Manager will maintain close contact with the QA reviewer to ensure all non-conformance issues are acted upon prior to data manipulation and assessment routines. Once the QA review has been completed, the Project Manager may direct the Team Leaders or others to initiate and finalize the analytical data assessment.

8.3. DATA VALIDATION

Data validation will be performed in accordance with the USEPA validation guidelines for organic and inorganic data review. Validation will include the following:

- Verification of QC sample results (both qualitative and quantitative),
- Verification of the identification of sample results (both positive hits and non-detects),
- Recalculation of 10% of all investigative sample results, and
- Data Usability Summary Report (DUSR).

A DUSR will be prepared by a third party validator and reviewed by the Program Quality Assurance Monitor (PQAM) before issuance. The DUSR will present the results of data validation, including a summary assessment of laboratory data packages, sample preservation and COC procedures, and a summary assessment of precision, accuracy, representativeness, comparability, and completeness for each analytical method. A detailed assessment of each sample delivery group (SDG) will follow. The DUSR will also contain copies of results forms with any changes made to the results by the data validator. For each of the organic analytical methods, the following will be assessed:

- Holding times;
- Instrument tuning;
- Instrument calibrations;
- Blank results;
- System monitoring compounds or surrogate recovery compounds (as applicable);
- Internal standard recovery results;
- MS and MSD results;

- Target compound identification;
- Chromatogram quality;
- Pesticide cleanup (if applicable);
- Compound quantitation and reported detection limits;
- System performance; and
- Results verification.

For each of the inorganic compounds, the following will be assessed:

- Holding times;
- Calibrations;
- Blank results;
- Interference check sample;
- Laboratory check samples;
- Duplicates;
- Matrix Spike;
- Furnace atomic absorption analysis QC;
- ICP serial dilutions; and
- Results verification and reported detection limits.

Based on the results of data validation, the validated analytical results reported by the laboratory will be assigned one of the following usability flags:

- "U" - Not detected at given value;
- "UJ" - Estimated not detected at given value;
- "J" - Estimated value;
- "N" – Presumptive evidence at the value given;
- "R" - Result not useable; and
- No Flag - Result accepted without qualification.

A Statement of Qualifications and relevant resumes of the data validator is included in Appendix A.

8.4. REPORTING

Upon receipt of validated analytical results, NYSDEC format electronic data deliverables (EDDs), that are compatible with Equis, will be prepared and submitted to the NYSDEC.

9.0 INTERNAL QUALITY CONTROL CHECKS AND FREQUENCY

9.1. QUALITY ASSURANCE BATCHING

Each set of samples will be analyzed concurrently with calibration standards, method blanks, matrix spikes (MS), matrix spike duplicates (MSD) or laboratory duplicates, and QC check samples (if required by the protocol). The MS/MSD samples will be designated by the field personnel. If no MS/MSD samples have been designated, the laboratory will contact the Langan Project Manager for corrective action.

9.2. CALIBRATION STANDARDS AND SURROGATES

All organic standard and surrogate compounds are checked by the method of mass spectrometry for correct identification and gas chromatography for degree of purity and concentration. All standards are traceable to a source of known quality certified by the USEPA or NIST, or other similar program. When the compounds pass the identity and purity tests, they are certified for use in standard and surrogate solutions. Concentrations of the solutions are checked for accuracy before release for laboratory use. Standard solutions are replaced monthly or more frequently, based upon data indicating deterioration.

9.3. ORGANIC BLANKS AND MATRIX SPIKE

Analysis of blank samples verifies that the analytical method does not introduce contaminants or detect "false positives". The blank water can be generated by reverse osmosis and Super-Q filtration systems, or distillation of water containing $KMnO_4$. The matrix spike is generated by addition of surrogate standard to each sample.

9.4. TRIP AND FIELD BLANKS

Trip blanks and field blanks will be utilized in accordance with the specifications in Section 4. These blanks will be analyzed to provide a check on sample bottle preparation and to evaluate the possibility of atmospheric or cross contamination of the samples.

10.0 QUALITY ASSURANCE PERFORMANCE AUDITS & SYSTEM AUDITS

10.1. INTRODUCTION

Quality assurance audits may be performed by the project quality assurance group under the direction and approval of the PQAM. These audits will be implemented to evaluate the capability and performance of project and subcontractor personnel, items, activities, and

documentation of the measurement system(s). Functioning as an independent body and reporting directly to corporate quality assurance management, the PQAM may plan, schedule, and approve system and performance audits based upon procedures customized to the project requirements. At times, the PQAM may request additional personnel with specific expertise from company and/or project groups to assist in conducting performance audits. However, these personnel will not have responsibility for the project work associated with the performance audit.

10.2. SYSTEM AUDITS

System audits may be performed by the PQAM or designated auditors, and encompass a qualitative evaluation of measurement system components to ascertain their appropriate selection and application. In addition, field and laboratory quality control procedures and associated documentation may be system audited. These audits may be performed once during the performance of the project. However, if conditions adverse to quality are detected or if the Project Manager requests, additional audits may occur.

10.3. PERFORMANCE AUDITS

The laboratory may be required to conduct an analysis of Performance Evaluation (PE) samples or provide proof that Performance Evaluation samples submitted by USEPA or a state agency have been analyzed within the past twelve months.

10.4. FORMAL AUDITS

Formal audits refer to any system or performance audit that is documented and implemented by the QA group. These audits encompass documented activities performed by qualified lead auditors to a written procedure or checklists to objectively verify that quality assurance requirements have been developed, documented, and instituted in accordance with contractual and project criteria. Formal audits may be performed on project and subcontractor work at various locations.

Audit reports will be written by auditors who have performed the site audit after gathering and evaluating all data. Items, activities, and documents determined by lead auditors to be in noncompliance shall be identified at exit interviews conducted with the involved management. Non-compliances will be logged, and documented through audit findings which are attached to and are a part of the integral audit report. These audit finding forms are directed to management to satisfactorily resolve the noncompliance in a specified and timely manner.

The Project Manager has overall responsibility to ensure that all corrective actions necessary to resolve audit findings are acted upon promptly and satisfactorily. Audit reports must be

submitted to the Project Manager within fifteen days of completion of the audit. Serious deficiencies will be reported to the Project Manager within 24 hours. All audit checklists, audit reports, audit findings, and acceptable resolutions are approved by the PQAM prior to issue. Verification of acceptable resolutions may be determined by re-audit or documented surveillance of the item or activity. Upon verification acceptance, the PQAM will close out the audit report and findings.

11.0 PREVENTATIVE MAINTENANCE PROCEDURES AND SCHEDULES

11.1. PREVENTIVE MAINTENANCE PROCEDURES

Equipment, instruments, tools, gauges, and other items requiring preventive maintenance will be serviced in accordance with the manufacturer's specified recommendations and written procedure developed by the operators.

A list of critical spare parts will be established by the operator. These spare parts will be available for use in order to reduce the downtime. A service contract for rapid instrument repair or backup instruments may be substituted for the spare part inventory.

11.2. SCHEDULES

Written procedures will establish the schedule for servicing critical items in order to minimize the downtime of the measurement system. The laboratory will adhere to the maintenance schedule, and arrange any necessary and prompt service. Required service will be performed by qualified personnel.

11.3. RECORDS

Logs shall be established to record and control maintenance and service procedures and schedules. All maintenance records will be documented and traceable to the specific equipment, instruments, tools, and gauges. Records produced shall be reviewed, maintained, and filed by the operators at the laboratories. The PQAM may audit these records to verify complete adherence to these procedures.

FIGURE 3

CORRECTIVE ACTION REQUEST
Number: _____ Date: _____
TO: _____ You are hereby requested to take corrective actions indicated below and as otherwise determined by you to (a) resolve the noted condition and (b) to prevent it from recurring. Your written response is to be returned to the project quality assurance manager by _____
CONDITION:
REFERENCE DOCUMENTS:
RECOMMENDED CORRECTIVE ACTIONS:
_____ _____ _____ _____ _____ _____ Originator Date Approval Date Approval Date
RESPONSE
CAUSE OF CONDITION
CORRECTIVE ACTION (A) RESOLUTION (B) PREVENTION (C) AFFECTED DOCUMENTS
C.A. FOLLOWUP: CORRECTIVE ACTION VERIFIED BY: _____ DATE:_____

12.0 REFERENCES

USEPA, 1986. SW-846 "Test Method for Evaluating Solid Waste," dated November 1986. U.S. Environmental Protection Agency, Washington, D.C.

Taylor, J. K., 1987. Quality Assurance of Chemical Measurements. Lewis Publishers, Inc., Chelsea, Michigan

USEPA, 1987. Data Quality Objectives for Remedial Response Actions Activities: Development Process, EPA/540/G-87/003, OSWER Directive 9355.0-7- U.S. Environmental Protection Agency, Washington, D.C.

USEPA, 1992a. CLP Organics Data Review and Preliminary Review. SOP No. HW-6, Revision #8, dated January 1992. USEPA Region II.

USEPA, 1992b. Evaluation of Metals Data for the Contract Laboratory Program (CLP) based on SOW 3/90. SOP No. HW-2, Revision XI, dated January 1992. USEPA Region II.

New York State Department of Environmental Conservation (NYSDEC). 1995. *Analytical Services Protocol*, (ASP) 10/95 Edition. Albany: NYSDEC.

Appendix A
York Analytical Laboratories, Inc.
Statement of Qualifications

YORK
ANALYTICAL LABORATORIES, INC.

www.yorklab.com

Statement of Qualifications

120 Research Drive, Stratford, CT 06615
www.yorklab.com
phone: 203-325-1371

Table of Contents

I. INTRODUCTION

York Analytical Laboratories, Inc. (YORK) is a full service independent analytical laboratory providing analyses of water, wastewater, soil, solid waste, hazardous waste and air in support of regulated activities under the applicable local, state and federal environmental guidelines.

With roots in air monitoring that predate the creation of the U.S. Environmental Protection Agency (EPA), YORK has evolved into one of the premier full-service environmental laboratories in the Northeast.

YORK's diverse client base includes consulting engineers, municipalities, city and state agencies, industry end-users and manufacturers, construction companies, and property management companies.

A best-in-class client service offering is the driving force behind YORK's success…which is getting clients the sample analyses data they need, when they need, and in the format that they need it in.

YORK has made significant investments in its systems and staff to ensure the ever-changing market and regulatory demands can be met. Some recent activity in this area includes:

- Hiring of YORK's first dedicated Laboratory Technical Manger to provide in-house expertise in EDD and reporting strategies to meet growing demand by regulatory bodies and clients.

- Most significant technical program in YORK's history with the implementation of a state-of-the-art Laboratory Information Management System (LIMS) developed by Promium created specifically for environmental laboratories that test air, water and soil.

- In addition to recently added new major instrumentation (ICP/MS and ICP), YORK expanded its air laboratory in 2011 with state-of-the-art new sampling equipment and instrumentation.

For more information about YORK -- including additional details on our staff, copies of YORK's newsletter, instructional videos and pictures of lab -- please visit our website at **www.yorklab.com.**

II. SERVICES

YORK is one of the few independently-owned laboratories in the Northeast to provide expert in-house analysis for all environmental matrices in support of the following guidelines or regulations:

- **CT RSR/RCP**
- **NYSDEC DER-10 (Formerly STARS and TAGM)**
- **NJDEP (N.J.A.C. Title 7)**
- **Resource Conservation and Recovery Act (RCRA)**
- **Clean Water Act and CERCLA/SARA (Superfund)**
- **Land Transfer Regulations**

The extensive experience and availability of its seasoned professionals allows YORK to provide clients with invaluable technical support related to regulatory programs, project planning, and data interpretation. The YORK team, which is comprised of industry veterans with 15 to 20+ years of experience, knows what it takes to ensure successful results and provides senior level attention to every client email and phone call.

YORK provides analytical laboratory services that conform to the needs of clients and satisfies regulatory requirements. To meet this standard of service, YORK has developed a Quality Assurance Program which defines day to day operations in the laboratory through the execution of comprehensive Standard Operating Procedures. This program is fully documented, endorsed by company management, and available for review in the YORK QA Manual and related Standard Operating Procedures.

Analytical data is used for many purposes including: compliance with regulatory requirements, determination of the presence, concentration and movement of potentially hazardous materials in the environment, potential effects on determination of protection required for individuals, and possible actions necessary for the disposal or treatment of hazardous materials.

YORK's Quality Assurance Program aims to ensure data for any application is of known quality and conforms to the requirements of specific protocols. Key elements that drive the program are:

- Maintain an effective, ongoing quality control program which measures and verifies laboratory performance.
- Meet data requirements for accuracy, precision, recovery and completeness through strict adherence to SOPs which reflect approved methodologies.
- Recognize and provide corrective actions for any factor that affect data quality.

- Maintain complete records of sample submittal, client communications, laboratory performance, and completed analyses and support data to provide data quality verification.

Electronic Deliverables (EDDs)

YORK's new LIMS provides the power to create a broad array of electronic deliverables packages including EQuIS, EZ-EDD, NJDEP and NYSDEC Environmental Information Management System (EIMS) EquIS among more than 100 other formats from simple excel to more complex staged EDDs.

These report packages are designed to meet specific regulatory requirements for client projects and can easily be customized accordingly.

Air Testing

During the late 1980s through mid-1990s YORK was involved in analyzing thousands of ambient air samples in urban environments for VOCs using EPA compendium methods TO-14 and TO-14A. Since the late 1990s, YORK has been and continues to provide VOC analysis by EPA Compendium Method TO-15 for numerous public and private clients.

Recently, there has been a resurgence in air monitoring including indoor air quality, sub-slab soil vapor and soil vapor extraction wells analysis in support of regulatory initiatives such as NYSDEC DER-10 and other city and agency-driven guidelines. Soil Vapor Intrusion (SVI) studies have taken hold and are being mandated in many commercial property transfers. Closed sites are being reopened to examine SVI potential.

These initiatives have raised the bar for air VOC analysis in the sense that the limits of detection required to meet regulatory needs are on the order of 0.25 - 1.0 ug/m3 (0.05 to 0.5 pp depending upon the compound of interest).

This has created analytical challenges for laboratories in terms of instrument operating parameters, sampling system integrity and reporting requirements.

YORK has made significant investments to meet these regulatory requirements and provide turn-key solutions for client programs including soil vapor, land-fill gas, geoprobe samples, ambient air:

- Increased inventory of inert Summa passivated Silonite canisters
- Various sample flow controllers to meet 1, 8, and 24 hour sampling needs
- Automated Summa Canister Cleaning systems
- Three Stage microscale purge/trap systems for sample introduction into GC/MS systems for TO-15 analyses

- Multiple Gas Chromatography/Mass Spectrometry Sytems (GC/MS) Systems including simultaneous SCAN/SIM Agilent 7890GC/5975C-MS systems
- Strategic partnering with instrument manufacturers to maximize technical parameters
- LIMS system to produce a myriad of fully automated Electronic Data Deliverables (EDDs) including: EQuIS, EZ-EDD, NJDEP and NYSDEC Environmental Information Management System (EIMS) EquIS among more than 100 other formats from simple excel to more complex staged EDDs.
- Fully automated data packages for validation including NYSDEC ASP B-like, CTDEP RCP, and EPA CLP-like, etc.

Web Access (YORK ClientConnect)

Real-time data lab reports and EDDs are available to clients via password protected web-based access. In addition, YORK's web access program - ClientConnect - provides additional custom features that help clients prepare for projects and present data to clients, such as tables related to YORK detection limits, graphs and charts on end point results, and bottle requirements.

Courier Service

YORK takes great pride in its courier service which reliably and predictably covers New York State south of Albany, including all boroughs of NYC and Long Island, central and northern New Jersey and all of Connecticut.

YORK's in-house team of couriers pick-up samples and drop-off bottles/cooler/canisters at client offices or job site locations. Most requests can be handled with just one day notice and can be scheduled easily through our website.

Turnaround Time

YORK understands that time is of the essence when it comes to client sample results. Rush priority services - including same day and next day - are available upon request.

III. Licensing

YORK is a NELAC accredited laboratory and maintains comprehensive licenses in various states including: Connecticut, New York, New Jersey & Pennsylvania.

- **State of Connecticut License** **No. PH-0723**
- **State of New York NELAP/ELAP** **No. 10854**
- **State of New Jersey** **No. CT-005**
- **State of Pennsylvania** **No. 68-0440**

YORK's licenses support analysis of air, water, wastewater, and solid and hazardous waste for:

- Volatiles
- Semi-volatiles (BNA)
- Pesticides/PCBs/Herbicides
- Metals
- Other conventional parameters

Full copies of YORK's licenses are available upon request.

IV. Project Experience

YORK serves engineering consulting firms, major municipalities, utilities and industry, without geographical limitations. Some of the clients YORK has provided for include:

Consulting Engineers/Remediation Firms

- AECOM/Metcalf & Eddy
- AKRF
- Chazen Companies
- Clean Harbors
- Conestoga-Rovers
- Connecticut Tank Removal
- Gannett-Fleming
- GeoInsight
- GZA
- Kiewit Construction
- Langan Environmental
- Leggette Brashears and Graham
- Lehrer, McGovern, Bovis
- Lenard Engineering
- Liro Group
- Malcolm Pirnie
- Miller Environmental
- Moran Environmental Recovery
- Moretrench
- STV
- TRC Environmental
- Tyree Company
- VHB/Freudenthal & Elkowitz
- Woodard & Curran

Municipalities

- CT DEP
- CT DOT
- Hartford Metropolitan District
- Long Island Railroad/MTA
- Metro- North Railroad/MTA
- NYC DDC
- NYC DEP
- NYC SCA

Utilities

- Central Hudson Gas and Electric Co
- Consolidated Edison, New York
- Niagara Mohawk Power Corp
- Northeast Utilities

Industry/Agencies

- Chemtura/Crompton Manufacturing Corp. (Uniroyal Chemical)
- Clairol, Inc.
- Connecticut-American Water Co
- Cytec, Inc.
- General Motors
- IBM

Listed below is a cross section of representative projects, which illustrate our capabilities to handle multi-discipline projects dealing with simple to complex matrices.

- **Railroad client** - Full analytical support for SPDES permits, groundwater remediation systems, RIFS programs, and emergency response support.

- **CT-based (20-person consulting firm) -** Full support analyses for Brownfields Redevelopment projects for Stop & Shop and Rite-Aid.

- **NYC agency in conjunction with large multi-office remediation firm -** Multi-year ambient air study involving sampling and analysis of 1,000 samples for airborne particulate (PM10), metals, sulfate, and volatile organics using SUMMA canisters

- **International manufacturer with CT facility** - Developed a direct aqueous injection GC/MS/SIM Method for the determination of methyl carbamate in river water to determine plume of contamination down to a 5 ppb lower limit detection.

- **NJ disposal facility -** Comprehensive sampling and analysis program to characterize raw landfill gas for volatiles, semi volatiles, pesticides and PCBs.

- **International services company with office in Hudson Valley** - Performed analyses of groundwater and industrial effluents throughout a major manufacturing facility. Analyses included volatiles, semi-volatiles, metals and TOC.

- **National consulting firm with NYC offices** - Project involved analytical support for major U.S. Postal Service waste characterization program in the northeastern part of the country. Program involved numerous TCLP analyses for volatiles, semi-volatiles, pesticides/herbicides and metals along with physical characteristics.

- **Joint venture and NYC agency** - Provided analytical support for a major underground storage tank decommissioning program in the five boroughs of NYC. Analysis includes volatiles, semi-volatiles, metals, TCLP parameters, and geoprobe gas analysis. All analytical work done with NYSDEC ASP Category A and B deliverables.

- **Joint venture and NYC agency** - Conducted numerous analyses in support of multiyear/ multi-New York City borough petroleum-impacted sites. Required ASP-B deliverables.

- **Hudson Valley municipality** - Conducted odor study involving compound identification using GC/MS techniques.

- **International manufacturer with NJ facility** - Weekly analysis of wastewater treatment plant effluent for conventional parameters.

- **Various state agencies and utilities** - Master services agreement to provide on-call laboratory services for multiple facilities.

- **Global consulting firm.** - Analysis of groundwater, soil and building materials for volatiles, PCBs and metals at a major Bridgeport, CT chemical facility. Project required EPA Level III deliverables.

- **Global consulting firm** - Task order contract for analysis support for U.S Army facility. Project involved analysis of wastes, soil and groundwater with ASP B deliverables.

- **Global consulting firm -** YORK provided hundreds of analyses of soil and water in support of major land transfer project. Analyses involved 4 hour turn-around for QA/QC deliverables.

- **Numerous Consulting/Engineering Firms -** Analysis of landfill wells, monitoring wells soils and surface waters for regulated parameters in support of Superfund activities as well as routine state requirements (i.e. NYCRR Part 360).

V. Facilities

Located two miles from the Bridgeport/Long Island Ferry in Stratford, CT to provide for immediate access for the NY/CT/NJ tri-state area, the 13,000 sq. ft. laboratory is fully equipped to address analysis of all environmental matrices. Separate laboratory environments are provided for volatiles, sample preparation, and sample control to minimize cross-contamination potential.

The move to the current location in 2003 allowed for the construct and modification of the building with a laboratory layout that provides for current and future needs.

The instrumentation laboratories are segregated by discipline (organics analysis, sample preparation, wet chemistry and atomic spectroscopy) and are provided with separate recirculating air conditioning systems to further protect client samples from common laboratory solvents (methylene chloride, acetone, hexane and toluene) used in extractions.

VI. Major Equipment & Instrumentation

YORK maintains all analytical instrumentation and support equipment necessary to provide analysis in support of client needs. A substantial inventory of stock chemicals, gases, commercially purchased standards, glassware and other items needed for analysis. YORK is continuously evaluating and investing in new equipment and instrument. Major items in use at YORK include:

- Accelerated Solvent Extraction Systems (ASE) Dionex
- Autoanalyzer, SKALAR flow injection-Nitrate, Nitrite, o-Phosphate, Ammonia, TN
- Autoclaves (National Steril-Quik), Sybron/Barnstead
- Balances, Analytical (Mettler, various)
- Balance, Analytical, Air Pollution (Mettler H-15) 1
- Balance, Top Loading (various)
- Barometer (Airguide Model 211B)
- Centrifuge, Clinical (IEC)
- Class S Weights, 10 mg to 100 g (Troemner, Inc.)
- Clean-up System-Florisil/Alumina- 12 Position (Supelco, Inc.)1
- Cold Vapor Mercury /Hydride System (Buck Scientific 403)
- Computer systems, various
- Server Systems (5 separate systems)
- Conductance Meter, Laboratory Model (YSI)
- Dessicator, Stainless Steel, various
- Diazomethane generator, Wheaton/Aldrich DIAZALD Kits
- Dispensing Pipets, Various sizes uL to ml, numerous
- Distillation Systems, Ammonia, phenol (Wheaton)
- Extraction Apparati, Liquid-Liquid (Supelco, Inc .)
- Extractors, Zero Headspace, numerous
- Eye Wash Stations, fixed and Portables (Bel-Art, Inc .)
- Flash Point Apparati (Pensky-Martin, Closed Cup)
- Furnaces (Thermolyne Type 1500)
- Furnace, Muffle Furnace, 1.5 CF (Gardsmen)
- Gas Chromatograph (HP 5890 ECD,FID ALS 7673 , HP ChemStation)
- Gas Chromatograph (HP 5890 dual ECD dual ALS7673 ,HP ChemStation), numerous
- Gas Chromatograph (HP 5890II,G.S.V.FPD,TCD)
- Gas Chromatograph (Perkin Elmer Autosystem 2000 FID/ECD)
- EST PT2 VOA analysis interface modules, numerous
- Gas Chromatograph/Mass Spectrometer/Data Systems (HP 5890 II/5971 & 5972/ChemStation) 8 systems
- Gas Chromatograph/Mass Spectrometer/Data Systems (HP 5890 II/5970/w/ ALS 7673
- Gas Concentration System/Interface TO-14A/15-ENTECH 7100 with 16 position ALS tree
- Gas Dilution System (Environics Model 2000)

- Gas Leak Detector (GM 21-250)-Helium detector
- Gel Permeation Chromatograph -OI AP-1000 18 sample autosystem-GPC
- Incubators (Lab-line No. 3554-17)
- Incubator, 20C, BOD (VWR 2005)
- Incubator, Electric (Hotpack 28912)
- Incubator, Low Temp., 2 CF (Blue M)
- Inductively Coupled Plasma/Mass Spectrometer (Perkin Elmer ELAN 9000)
- Inductively Coupled Plasma (PE-Optima 7300 Dual View)
- Ion Chromatograph Dionex ICS 1100 with AS-DV Chromeleon 7 software
- Laboratory Hoods (Labconco, others) 9
- LIMS System (Promium Element/SQL Server)
- Microscope (Olympus CH-2)
- Microscope, Stereoscope (STEREOZOOM-3, B& L)1
- Ovens, Blue M and VWR, various
- Oxygen Meters/BOD Probes (VWR 122372)
- pH/ISE Meter, Portable (Orion Serial, Orion EA 940)
- pH Meter/Specific Ion Meter (Orion SA-720)
- Printers, network and local, various
- Pump, Vacuum, numerous
- Pumps, Personal Sampling (SKC & Gilian)
- Purge & Trap-PTS Encon systems, numerous
- Purge & Trap systems (Tekmar LCS 3100), numerous
- Purge & Trap auto sampler systems-Archon 51 position sampler, numerous
- Reflux/Distillation Systems-cyanide, sulfide, numerous
- Refrigerator/Freezers, numerous
- Sample Concentrator (Supelco, Inc. Mini-VAP-6) 1
- Sample Concentrator, TurboVap systems (Biotage/Zymark VAP II), numerous
- Sonic Cleaning System (Branson 1200)
- Spectrophotometers, SPEC 20D+ systems
- TCLP Extraction Apparati- 2 x 12 systems
- Total Organic Carbon Analyzer, SKALAR
- Water purification system -Ion Exchange, Carbon, Reverse Osmosis-Hydro Systems

VII. Key Personnel Qualifications

- Robert Q. Bradley — Managing Director & Executive Vice-President
- Philip A. Murphy, III — Laboratory Operations Manager
- Joseph Weikel — Laboratory Technical Manager
- Richard H. August — Client Services Manager
- Teresa Weikel — Q/A Officer
- John Gale — Sample Control Manager & Safety Director
- Johanna Pozzi-Woodfield — Group Leader – Gas Chromatography
- Michael Woodfield — Group Leader – Metals
- Nezar Mejalli — MIS Manager / Senior Systems Engineer

Robert Q. Bradley

Managing Director and Executive Vice-President

As Managing Director of York Analytical Laboratories, Inc., Mr. Bradley is responsible for all business and technical operations of the lab. His extensive experience as both an analytical chemist, and in the management of laboratory facilities provides a combination of technical knowledge and managerial insight that is unique in the industry. His specialized expertise includes:

- Laboratory Management
- Analytical Chemistry
- Data Evaluation and Validation
- Environmental Chemistry
- Air Analysis

Mr. Bradley is fully versed with all current methods of analysis of water, wastewater, solid and hazardous waste and air using classical as well as instrumental techniques. He has extensive instrumental experience in the areas of Gas Chromatography, Gas Chromatography/ Mass Spectrometry, Infrared Spectrophotometry, Atomic Spectroscopy (AA/ICP/ICP-MS) and wet chemistry techniques.

Mr. Bradley also has had extensive experience involving hazardous waste assessments according to RCRA and CERCLA guidelines. He has spearheaded mobile laboratory programs at major New England landfills where hundreds of drums of hazardous waste were assessed.

He has had extensive experience in the sampling and analysis of airborne emissions from municipal and hazardous waste landfills. This experience is centered around sampling and analysis for target and non-target volatile and semi-volatile organics, as well as target trace metals.

He has had extensive experience in the analysis techniques related to industrial hygiene and ambient air studies including NIOSH, EPA, APHA, and other methods. He also has had significant experience in the sampling and analysis of water, wastewater, and particulate and gaseous emissions employing ASME, EPA, NYSDEC, EPA CLP and other methodologies.

His experience also includes on-site gas chromatographic evaluations involving asphalt roofing plants, stationary sources as well as many industrial processes.

Mr. Bradley has also been instrumental in the development of gas chromatographic/mass spectrometry methods for the evaluation of organic contaminants in the process waste streams of various industries. These developments include rapid screening methods, methods for removal of circumvention of potential interferences, and novel approaches to

the quantification and identification of organic compounds. His other developments include gas chromatographic techniques for the sample analysis of sulfur gases from refineries, Kraft paper mills, and coke oven gas systems; procedure for sampling and analysis in the fiber glass industry; development of ion-specific filter medium determining the character of ambient particulate in proximity with stationary sources; development of gas chromatography procedures for quantifying gasoline contamination of surface waters; development of qualitative procedures for the determination of gasoline brand and fuel oil types when found in well supplies and aquifers.

He has had experience in the evaluation of many products including hazardous waste adsorbents; water purification devices; air filtration media and plastics. Mr. Bradley is experienced in the supervision of technical and sales staff providing the analytical services required for environmental analyses. He has analyzed and interpreted data and prepared reports for various industrial and government clients. He is experienced in the evaluation, selection, and cost control of analytical procedures developed and used in the laboratory, the establishment and maintenance of quality control/quality assurance programs for analytical methods and the training of personnel in the performance of analytical procedures.

Education

- B.S./Chemistry Georgetown University, Washington, D.C.
- M.S./Chemistry Georgetown University, Washington, D.C.

Professional Affiliations

- American Chemical Society
- American Water Works Association
- Association of Official Analytical Chemists
- American Management Association
- American Society for Testing and Materials
- Association of Consulting Chemists
- Environmental Assessment Association

Selected Publications

- New Approach to the Synthesis of 2-aryl Substituted Aziridinium Salts and Reactivity Studies, given at the American Chemical Society Meeting, 1972,New York by D.R. Crist, Georgetown University, Washington, D.C.
- R.Q. Bradley, The Chemistry of Nitrogen and Sulfur Oxides, 1977, York Research Corporation, In-house paper.
- R.Q. Bradley, A Routine Gas Chromatographic Method for the Determination of Gasoline in Water in the parts per billion (ppb) Range, York Research Corporation, In-house paper.
- R.Q. Bradley, R.S. Kearton, Oil and Gas Spill Source Identification, The Petroleum Marketer Magazine, September-October, 1977.

- R.Q. Bradley, Dynamic Headspace Hydrocarbon Concentration versus "Real" Gasoline Concentration in Water, York Research/Exxon Co., U.S.A. proprietary report, 1976.
- R.Q. Bradley, D.A. Sommerer, Magnesia FGD Process Testing on a Coal-fired Power Plant, Environmental Protection Technology Series, EPA-600/2-77-165, August 1977.
- R.Q. Bradley, Analytical Techniques for the Characterization of Raw and Treated Coke Oven Gas, In-house manual, January, 1979.
- R. Q. Bradley, Strategies for the Sampling & Analysis of Volatile Organics in Air, Connecticut's Environment, March 1995

Joseph Weikel

Laboratory Technical Manager

Mr. Weikel has a diverse twenty years of experience in the environmental and instrumentation industries serving as implementer of laboratory systems for a leading west coast-based environmental LIMS company, software technical manager at a Fortune 500 medical device manufacturer and managing a full service west coast environmental laboratory.

As York's Laboratory Technical Manager, Mr. Weikel has focused on maximizing the versatility and power of its instrument systems and laboratory information management systems (LIMS). He directly responsible for all technical applications in the laboratory including quality, reporting and data analyses.

Education

- B.S./Chemistry, University of Washington

Philip A. Murphy, III
Laboratory Operations Manager

As Laboratory Operations Manager at York, Mr. Murphy is responsible for the day-to-day operations of the laboratory. His specialized expertise includes:

- Laboratory Operations Management
- Drinking Water Analysis
- Inorganics Analysis (Metals, Classic Chemistry)
- Microbiological Analysis
- Air Analysis using applicable Protocols
- Indoor Air Quality Studies
- QA/QC Implementation

Mr. Murphy has twenty years experience in environmental analysis. He has extensive experience in the analysis of wastewater for microbiological, metals and general wet chemistry parameters. He has conducted numerous indoor air quality evaluations, sampling and analyzing for fungi and molds, volatile organic compounds and inorganic parameters in industrial, commercial and residential environments.

Mr. Murphy also has extensive experience with USEPA Standard Method analyses in support of NPDES, SPDES, RCRA, CWA, SWDA and CAA Programs. His experience includes wet chemistry, physical and microbiological procedures, as well as graphite furnace, flame atomic absorption and gas chromatography.

Mr. Murphy is also a certified Laboratory Director for public health applications in the State of Connecticut, and has expertise in sample handling and chain-of custody procedures.

Education

- B.S./Aquatic Biology University of Connecticut
- M.S./Environmental Biology University of Bridgeport, Connecticut

Professional Affiliations

- American Microbiological Society
- American Chemical Society
- Trout Unlimited, Mianus, C (Served as President, Secretary, Stream Action Committee Chair and on the Board of Directors)

Richard H. August
Client Services Manager

Mr. August has twenty years of environmental laboratory experience. He has extensive experience with all current methods of analysis for water, wastewater, solid, hazardous waste and air. Having had five years of experience as a Laboratory Manager with large Massachusetts based company, Mr. August has extensive experience with methods development and documentation in the areas of Gas Chromatography, Gas Chromatography/Mass Spectrometry, infrared. Spectrophotometry and wet chemistry techniques. He also has had experience in analytical methods (NIOSH, OSHA, EPA) associated with Indoor Air Quality and Industrial Hygiene studies. His areas of specialization include:

- Environmental Regulations (EPA, RCRA, STARS, SPOTS, UST)
- Client Service and Laboratory Analysis for Volatiles and Semi-Volatiles
- OSHA/NIOSH Analysis
- QA/QC Programs

Mr. August has also been involved with the development, implementation and maintenance of laboratory Quality Assurance/Quality control programs.

Mr. August has had extensive experience in Hazardous Waste Assessments in accordance with RCRA and CERCLA, and has been involved with analysis and classification of hundreds of drums of unknown waste.

At York, Mr. August is responsible for client services. He provides technical support to clients for specific compliance purposes, specific analysis strategies, guidance on appropriate analytical methods and helps to ensure that all data quality objectives are met. He is also involved with the organics analysis, analysis and interpretation of data as well as the preparation of technical reports for various industrial and governmental clients.

Education

- B.S./Biology, Southern Connecticut State University
- Continuing Graduate Studies, Environmental Science Program, University of New Haven, New Haven, CT

Jill M. Duhancik
Manager, Client Services

Mrs. Duhancik has over 14 years experience in the environmental laboratory industry. She is knowledgeable of current analytical methods and monitors compliance with industry regulations, contractual agreements and program specifications. Mrs. Duhancik has ten years of experience as a Project Manager with a National Environmental Laboratory, managing key client accounts and projects through all phases of laboratory operations, ensuring fulfillment of commitments to client requirements, error-free work and on-time data delivery. Serving as a liaison between the client and laboratory, she has generated and managed price quotations, change orders, and subcontracting, set up projects and ensuring certification and program compliance.

At York Analytical, Mrs. Duhancik's responsibilities include administrative management of the laboratory reporting department. She maintains communication with laboratory operations to ensure that projects are executed properly, timely and effectively. She assists with generating of reports, EDDs, invoices, price quotations, assists with client inquiries, discussing technical issues, and scheduling sample pickups.

Education

- B.S./Biology, Saint Joseph College, West Hartford, CT
- B.S./Environmental Science, Saint Joseph College, West Hartford, CT

Teresa Weikel
Quality Assurance Officer

Teresa Weikel holds full responsibility for the Quality Assurance/Quality Control Program at YORK including Quality Systems, SOP preparation and maintenance, new procedure review and approval, data package review (EPA CLP, NYSDEC ASP, NJDEP, CT RCP), internal audits and corrective action follow-up.

Mrs. Weikel has over ten years of experience in environmental laboratory analyses and laboratory QA/QC procedures. As a chemist with various environmental testing laboratories, she performed and was frequently solely responsible for a wide variety of both organic and inorganic analyses and extractions in varying environmental matrices following EPA, state and self-designed methods. During this time she was also responsible for instrument calibration and maintenance, data reporting and quality, safe laboratory procedures and setup and use of programs and appropriate record keeping for various government/state certifications.

Her wide ranging hands-on experience volatiles, semi-volatiles, PCBs, metals and wet chemistry coupled with her experience as a Quality Control Specialist at a biotechnology company, provides a unique blend of expertise to perform QA duties..

Mrs. Weikel is versed in NELA (TNI) standards and ISO-1705 protocols.

Aside from her time in the laboratory, Mrs. Weikel spent ten years as a licensed sonographer with several well-respected Washington-area hospitals and medical device companies.

Education

- B.S. Chemistry, Pacific Lutheran University
- Numerous discipline-specific training courses

John R. Gale

Sample Control Manager
Health and Safety Officer

Mr. Gale has 25 years of experience in the analysis of water, wastewater, solid and hazardous waste for conventional pollutants in accordance with Standard Methods, EPA Methods and SW-846 Methods.

He is also highly versed in all OSHA and laboratory safety guidelines. He has an extensive background in the preparation and analysis of varied matrices for inorganic species and purgeable organic compounds, extractable base-neutral and acid organic compounds, pesticides and PCB's according to EPA Methods. He is thoroughly versed in the clean-up of pesticide/PCB extracts utilizing column chromatography methods. Mr. Gale also has extensive experience in extraction techniques - liquid/liquid continuous extractions and sonic disruption extractions. Mr. Gale is also experienced with analyses of samples for volatiles and semi-volatiles by GC/MS using USEPA Contract Lab Program Protocols and is involved with routine maintenance and troubleshooting of the GC/MS systems and Gas Chromatographs.

His experience also includes the analysis of petroleum products and fossil fuels by ASTM and ASME methods including bomb calorimetry and elemental analysis.

At York Mr. Gale is responsible for all inorganics analysis and sample preparation and extraction staff in the laboratory.

Education

- A.S./Chemistry Sacred Heart University, Bridgeport, CT

Occupational Certifications

- 40 Hour HAZMAT OSHA Certified

Johanna Pozzi-Woodfield

Group Leader - Gas Chromatography

Ms. Pozzi has more than twenty years of experience in environmental laboratory analysis. Previously, she was Manager of Organics Analyses for an environmental laboratory. Her responsibilities included the overall supervision of the Organics Department for the analysis of water, wastewater, soil, sediment and oil. In addition, she held full responsibility for the in-house Quality Control Program.

Ms. Pozzi has extensive experience in the analyses of organics in accordance with SW-846 Methods, 8010/8015/8020/8021, 8240, 8260, 8270, 8151, 8015M and 8081. She is also familiar with troubleshooting analytical systems.

Prior to her environmental laboratory experience, she was a Quality Control Supervisor in the Specialty Chemical and Plating industries.

At YORK, Ms. Pozzi is responsible for all organics analyses with special emphasis on Gas Chromatography methods. These methods are applied to all environmental matrices, including air.

Her instrumental experience includes use of gas chromatography utilizing many detectors including: electron capture, flame photometric, nitrogen/phosphorous, flame ionization and thermal conductivity.

Education

- B.S./Chemistry, University of New Haven

Michael Woodfield

Group Leader - Metals Preparation and Analysis

Mr. Woodfield has more than twenty years of experience in environmental laboratory analysis. Previously, Mr. Woodfield was involved in inorganics analysis using common spectroscopic methods. He also has performed organics analyses including Gas Chromatography and Gas Chromatography/Mass Spectrometry. He is fully versed in all the related SW-846 analysis.

Mr. Woodfield also has extensive experience in metals analysis utilizing flame atomic absorption(AA), Zeeman graphite furnace AA and Inductively Coupled Plasma (ICP).

He also has extensive experience in sampling of groundwater and effluents relative to CTDEP requirements. Mr. Woodfield is also experienced with all wet chemistry procedures typically utilized in the industry.

At York Mr. Woodfield is currently responsible for all analyses of trace metals utilizing ICP, GFAA, FAA and Mercury. He has extensive experience in all related QA/QC procedures. In addition, he is responsible for QA/QC and client interface as a secondary role.

Education

- B.S./Chemistry, Paul Smith's College, Paul Smith's, NY

Nezar Mejalli

Senior Systems Engineer/ MIS Manager

Mr. Mejalli has over ten years of experience in the environmental industry serving in various capacities including air quality engineering and computer systems design, build and training.

As York's MIS Manager, Mr. Mejalli is directly responsible for troubleshooting, maintaining and safeguarding all York computers and systems, including data security. In this role, he has designed and implemented 4 twenty-five user Novell Network and Windows NT 4 into Sister Company to optimize data evaluation, report generation and overall company production.

As an environmental engineer at York, Mr. Mejalli has:

- Designed and automated a Continuous Emissions Monitoring Network for ambient air encompassing Manhattan's North River Water Pollution Control Facility, utilizing a total of eight different data sites within the plant and in the surrounding community.
- Designed and automated a prototype Air Quality Monitoring Station for hydrogen sulfide and implemented into the existing Continuous Emissions Monitoring Network.
- Authored numerous monthly reports, quarterly reports and annual reports with respect to the data generated by the monitoring system.
- Directly responsible to the New York City Department of Environmental Protection Agency and the New York State Department of Environmental Conservation for the upkeep of the Monitoring Network, and the validity of data.
- Engineered vital components to monitor for Dioxins throughout the State of Connecticut via semi-volatile organic compounds (SVOC)samplers.
- Directly responsible for field samples, data collection and data validity.
- Directly responsible for the maintenance of Air Quality Monitoring Stations.
- Operated and maintained numerous samplers for inhalable particulate (PM10), semi-volatile organic compounds (SVOC) and volatile organic compounds (VOC).

Education

- B.S./Electrical Engineering, Manhattan College, Riverdale, NY

Appendix B
Resumes for Key Site Contacts

Jamie P. Barr, LEP

Associate
Geological Engineer

13 years in the industry ~ 9 years with Langan

Mr. Barr is a Geological Engineer with over 13 years of diversified civil, geotechnical, and environmental experience that includes environmental regulatory compliance, remedial system design, permitting, feasibility studies, Phase I/II/III environmental site assessments, construction management, geotechnical investigations, site/civil design, stormwater management, mining exploration, and aquatic toxicology. Mr. Barr has experience coordinating and negotiating with regulatory agencies in Connecticut, New York, New Jersey, Illinois, Indiana, and Massachusetts. Mr. Barr has extensive experience with projects in the Connecticut Property Transfer Program, New York State and City Brownfield Cleanup Programs, as well as the USEPA Superfund Program. Mr. Barr served as a co-chair on a committee formed by the CTDEEP for the transformation of the Connecticut regulations. Mr. Barr's specialties include transfer act and facility compliance, remediation system design, environmental site assessment, construction management, and property due diligence.

Selected Projects

UNISYS: Former Remington Rand, Middletown, CT
Unilever Clinton Plant, Clinton, CT
The Hershey Company: Former Peter Paul Facility, Naugatuck, CT
United Nations Capital Master Plan, New York, NY
RBS GBM Building, Stamford, CT
Ryder Systems Inc., Various Locations, CT
John Jay College Expansion, New York, NY
Waterside Power Plant, Stamford, CT
The Shops at Atlas Park, Glendale, NY
DLC Management, Various Locations, CT
Former CS&T Drycleaners, Columbus, IN
The Hershey Company, Hershey, PA
1 Hudson Plaza, Extell Development, New York, NY

Education

University of New Brunswick, Bachelor of Science: Geological Engineering

Professional Registration

Licensed Environmental Professional – CT

Affiliations

Connecticut Building Congress

New Haven Manufacturers Association

Environmental Professionals of CT

National Brownfield Association

Environmental Business Association

Association of Professional Engineers and Geoscientists of New Brunswick

LANGAN

Justin Hall

Staff Scientist
Environmental Scientist

5 years in the industry ~ 1 year with Langan

Mr. Hall has a strong background in environmental science and construction and geotechnical inspection. Mr. Hall has four years of construction and geotechnical inspection experience and one year of regulatory and consulting experience. During his employment as a field inspector Mr. Hall worked on numerous jobs ranging from the construction of nuclear waste holding cells at Vermont's Yankee Rowe Nuclear Power Station to the construction of sub-stations and high voltage power lines across Connecticut and Massachusetts. During his employment with Langan, Mr. Hall has worked on numerous environmental and geotechnical projects for industrial, commercial, residential, and public facilities in several states including New York, New Jersey, and Connecticut. He has experience with permitting, compliance, design, and remediation tasks associated with projects in several Connecticut and New York regulatory programs.

Mr. Hall has conducted Phase I Environmental Site Assessments (ESA), Phase II/III Site Investigations (SI) and site remedial actions. He has inspected, tested, and provided oversight for the implementation of construction materials. He has provided oversight for environmental and geotechnical soil boring and test pit excavations. He is familiar with conducting subsurface boring investigations, test pit excavations and possesses field sampling experience including soil, sediment, soil vapor, and groundwater.

Selected Projects

UNILEVER: RCRA Hazardous Waste Storage Room Closure, Clinton, CT
The Stop & Shop Supermarket Company, LLC, Various Sites in CT and NY
Ryder Truck Rental, Inc., Various Sites in CT

TRAINING AND CERTIFICATIONS

40 Hour OSHA – HAZWOPER Certification
Nuclear Gauge Safety Certification
HAZMAT Certification
Confined Space Entrant, Supervisor, and Manager Trained
Level 1 American Concrete Institute Field Technician Certified

Education

University of Massachusetts Amherst, Bachelor of Science: Environmental Science

LANGAN

Joel B. Landes, PE

Vice President/ Program Director
Environmental Engineering & Project Management

37 years in the industry ~ 12 years with Langan

Mr. Landes has over 37 years of diversified experience directing environmental engineering and consulting projects for Fortune 500 manufacturing firms, real estate developers and public utilities. His experience includes Management of Environmental Compliance for a major pharmaceutical company and as an Environmental Affairs Consultant for private clients. He has expertise in redevelopment of former industrial, chemical, petroleum storage and manufactured gas plant Brownfield sites into residential and commercial use. He has lead environmental studies for acquisitions and divestitures of pharmaceutical and industrial facilities; industrial site selection and permitting.

He currently oversees all Langan environmental services in the New York City Metropolitan area including Phase I and II Environmental Site Assessments; remedial investigations and feasibility studies; remedial measure design and implementation.

Selected Projects

Columbia University, Manhattanville Development, New York, NY
The Shops at Atlas Park, Glendale, NY
Gateway at Bronx Terminal Market, Bronx, NY
John Jay College Expansion, New York, NY
Jacob Javits Convention Center, New York, NY
10 Chelsea, Manhattan, New York, NY
High Line Park, New York, NY
Yankee Stadium Redevelopment Project, Bronx, NY
Peter Cooper Village/Stuyvesant Town (MGP Consultation), New York, NY
First Aviation Services Hangar and Terminal at Teterboro Airport, Teterboro, NJ
JFK and LaGuardia International Airport, American Airline Terminals Environmental Assessments, Queens, NY
Confidential Independent Power Producer, Siting Analysis, Midwest, Mid Atlantic and Southern United States
Con Edison Historic MGP Facility Site Assessments, New York
Schmid Labs, West Patterson, NJ
Columbia University - The Studebaker Building Renovation, New York, NY
Silverstein Properties, River Place, New York, NY
Confidential Pharmaceutical Acquisition, Europe, Caribbean, and Africa
Silvercup West, Long Island City, NY
Copper Processing Environmental Assessment, Sofia, Bulgaria
Steel Processing Environmental assessment, Pernik, Bulgaria

Education

Graduate Studies in
Business Management
Union College

M.E., Environmental Planning and Management
The Cooper Union

B.S., Chemical Engineering
Polytechnic Institute of Brooklyn

Professional Registration

Professional Engineer (PE) in NY, NJ

Affiliations

New York Building Congress

NYC Partnerships of Brownfield Professionals

Business Council of New York State

Environmental Business Association

National Brownfield Association – NYS Chapter

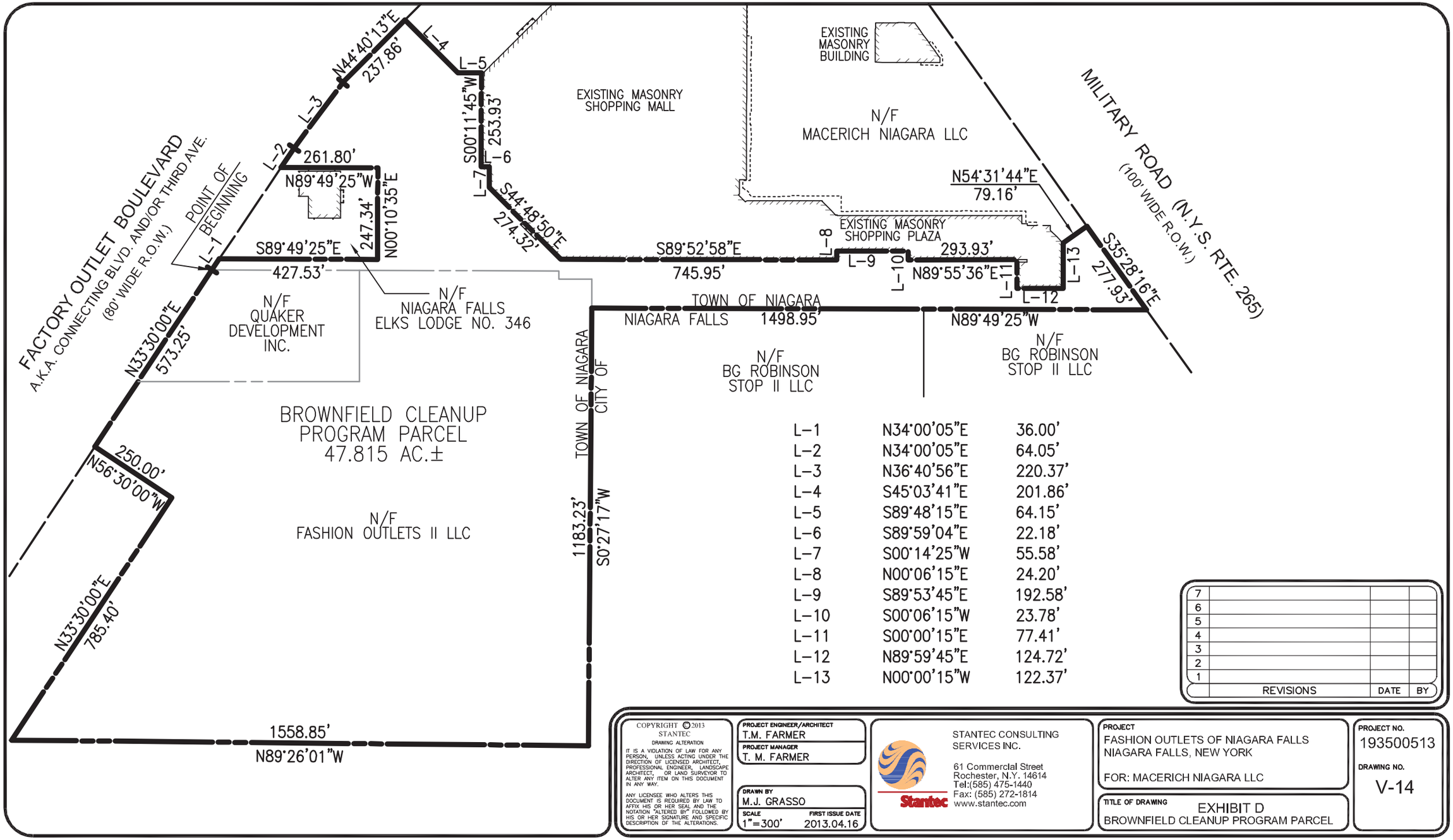
LANGAN

APPENDIX D

PROPOSED DEVELOPMENT PLANS
(ON ATTACHED CD)

APPENDIX E

METES AND BOUNDS



L-1	N34°00'05"E	36.00'
L-2	N34°00'05"E	64.05'
L-3	N36°40'56"E	220.37'
L-4	S45°03'41"E	201.86'
L-5	S89°48'15"E	64.15'
L-6	S89°59'04"E	22.18'
L-7	S00°14'25"W	55.58'
L-8	N00°06'15"E	24.20'
L-9	S89°53'45"E	192.58'
L-10	S00°06'15"W	23.78'
L-11	S00°00'15"E	77.41'
L-12	N89°59'45"E	124.72'
L-13	N00°00'15"W	122.37'

	REVISIONS	DATE	BY
7			
6			
5			
4			
3			
2			
1			

PROJECT ENGINEER/ARCHITECT: T.M. FARMER
PROJECT MANAGER: T. M. FARMER
DRAWN BY: M.J. GRASSO
SCALE: 1"=300'
FIRST ISSUE DATE: 2013.04.16

STANTEC CONSULTING SERVICES INC.
61 Commercial Street
Rochester, N.Y. 14614
Tel:(585) 475-1440
Fax: (585) 272-1814
www.stantec.com

PROJECT: FASHION OUTLETS OF NIAGARA FALLS
NIAGARA FALLS, NEW YORK
FOR: MACERICH NIAGARA LLC

TITLE OF DRAWING: EXHIBIT D
BROWNFIELD CLEANUP PROGRAM PARCEL

PROJECT NO.: 193500513
DRAWING NO.: V-14

193500513
D010
April 16, 2013

EXHIBIT D

Description of Brownfield Cleanup Program Parcel

All that tract or parcel of land containing 47.815 acres, more or less, situate in the Town of Niagara, County of Niagara, State of New York, all as shown on a map entitled “Fashion Outlets of Niagara Falls, Brownfield Cleanup Program Parcel”, prepared by Stantec Consulting Services, Inc. dated April 16, 2013, having drawing number 193500513 V-14, and being more particularly bounded and described as follows:

Beginning at a point of intersection of the easterly line of Factory Outlet Blvd. a.k.a. Connecting Blvd and/or Third Avenue (80 feet wide) with the northerly line of lands now or formerly of Quaker Development, Inc. said line also being the southerly line of lands of Macerich Niagara LLC; thence

1. N 34^0 00’ 05” E ,along said easterly line of Factory Outlet Blvd., a distance of 36.00 feet to a point of intersection with the southerly line of lands now or formerly of the Niagara Falls Elks Lodge No. 346; thence
2. S 89^0 49’ 25” E, along the last mentioned southerly line, a distance of 427.53 feet to a point of intersection with the easterly line of said lands; thence
3. N 00^0 10’ 35” E, along the last mentioned easterly line a distance of 247.34 feet to the point at the northeasterly corner of said lands; thence
4. N 89^0 49’ 25” W, along the northerly line of said lands, a distance of 261.80 feet to a point of intersection with the aforementioned easterly line of Factory Outlet Blvd. ; thence the following three (3) courses along said easterly line
5. N 34^0 00’ 05” E, a distance of 64.05 feet to a point; thence
6. N 36^0 40’ 56” E, a distance of 220.37 feet to a point; thence
7. N 44^0 40’ 13” E, a distance of 237.86 feet to a point; thence the following fifteen (15) courses through said lands of Macerich Niagara LLC
8. S 45^0 03’ 41” E, a distance of 201.86 feet to a point; thence
9. S 89^0 48’ 15” E, a distance of 64.15 feet to a point; thence
10. S 00^0 11’ 45” W, a distance of 253.93 feet to a point; thence
11. S 89^0 59’ 04” E, a distance of 22.18 feet to a point; thence
12. S 00^0 14’ 25” W, a distance of 55.58 feet to a point; thence
13. S 44^0 48’ 50” E, a distance of 274.32 feet to a point; thence
14. S 89^0 52’ 58” E, a distance of 745.95 feet to a point; thence
15. N 00^0 06’ 15” E, a distance of 24.20 feet to a point; thence
16. S 89^0 53’ 45” E, a distance of 192.58 feet to a point; thence
17. S 00^0 06’ 15” W, a distance of 23.78 feet to a point; thence
18. N 89^0 55’ 36” E, a distance of 293.93 feet to a point; thence
19. S 00^0 00’ 15” E, a distance of 77.41 feet to a point; thence
20. N 89^0 59’ 45” E, a distance of 124.72 feet to a point; thence
21. N 00^0 00’ 15” W, a distance of 122.37 feet to a point; thence
22. N 54^0 31’ 44” E, a distance of 79.16 feet to a point of intersection with the southwesterly line of Military Road (100 feet wide); thence

23. S 35^0 28’ 16” E, along said southwesterly line, a distance of 277.93 feet to a point of intersection with the southerly line of the aforementioned lands of Macerich Niagara LLC; thence
24. N 89^0 49’ 25” W, along said southerly line, a distance of 1498.95 feet to a point of intersection with the easterly line of lands now or formerly of Fashion Outlets II LLC; thence
25. S 00^0 27’ 17” W, along said easterly line, a distance of 1183.23 feet to a point at the southeasterly corner of said lands; thence
26. N 89^0 26’ 01” W, along the southerly line of said lands, a distance of 1558.85 feet to a point; thence
27. N 33^0 30’ 00” E, along the westerly line of said lands, a distance of 785.40 feet to a point; thence
28. N 56^0 30’ 00” W, along the westerly line of said lands, a distance of 250.00 feet to a point of intersection with the aforementioned easterly line of Factory Outlet Blvd.; thence
29. N 33^0 30’ 00” E, along the aforementioned easterly line of Factory Outlet Blvd., a distance of 573.25 feet to the Point or Place of Beginning.

Subject to any easements or encumbrances of record.

APPENDIX F

SITE SCGS

APPENDIX F

1.0 SCG's for site characterization and remedial investigation

The following standards and criteria typically will apply to Site Characterizations and Remedial Investigations conducted in New York State:

- 6 NYCRR Part 371 - Identification and Listing of Hazardous Wastes
- 6 NYCRR Part 375 - Inactive Hazardous Waste Disposal Sites
- 6 NYCRR Parts 700-706 - Water Quality Standards (June 1998)
- 6 NYCRR Part 182 - Endangered & Threatened Species of Fish & Wildlife
- 6 NYCRR Part 608 - Use and Protection of Waters
- 6 NYCRR Part 661 - Tidal Wetlands - Land Use Regulations
- 6 NYCRR Part 663 - Freshwater Wetlands Maps and Classification
- 6 NYCRR Parts 700-706 - Water Quality Standards (June 1998)
- 6 NYCRR Part 257 - Air Quality Standards
- 10 NYCRR Part 5 of the State Sanitary Code - Drinking Water Supplies (May 1998)
- 29 CFR Part 1910.120 - Hazardous Waste Operations and Emergency Response
- 6 NYCRR Part 175 - Special Licenses and Permits--Definitions and Uniform Procedures

The following guidance typically applies to Site Characterizations and Remedial Investigations conducted in New York State:

- TAGM 4046 - Determination of Soil Cleanup Objectives and Cleanup Levels (January 1994)
- STARS #1 - Petroleum-Contaminated Soil Guidance Policy
- SPOTS #14 - Site Assessments at Bulk Storage Facilities (August 1994)

- TOGS 1.1.1 - Ambient Water Quality Standards & Guidance Values and Groundwater Effluent Limitations
- Fish and Wildlife Impact Analysis for Inactive Hazardous Waste Sites (October 1994)
- Technical Guidance for Screening Contaminated Sediments (January 1999)
- Niagara River Biota Contamination Project: Fish Flesh Criteria for Piscivorus Wildlife (July 1987)
- Wildlife Toxicity Assessment for Cadmium in Soils (May 1999)
- Air Guide 1 - Guidelines for the Control of Toxic Ambient Air Contaminants
- The 10 ppt Health Advisory Guideline for 2,3,7,8-TCDD in Sportfish Flesh
- The 1 ppm Health Advisory Guideline for Cadmium in Sportfish Flesh
- Criteria for the Development of Health Advisories for Sportfish Consumption
- NYSDOH Indoor Air Sampling & Analysis Guidance (August 8, 2001 or subsequent update)
- NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York (draft October 2004 or subsequent final draft)
- DER Interim Strategy for Groundwater Remediation at Contaminated Sites in New York State

2.0 SCGs for remedy selection

The following standards and criteria typically apply to the remedy selection process conducted in New York State:

- 6 NYCRR Part 375 - Inactive Hazardous Waste Disposal Sites
- 6 NYCRR Part 376 - Land Disposal Restrictions
- 6 NYCRR Part 608 - Use and Protection of Waters
- 6 NYCRR Part 661 - Tidal Wetlands - Land Use Regulations
- 6 NYCRR Part 663 - Freshwater Wetlands - Permit Requirements
- 6 NYCRR Parts 700-706 - Water Quality Standards (June 1998)

- 19 NYCRR Part 600 - Waterfront Revitalization and Coastal Resources

The following guidance typically applies to the remedy selection process conducted in New York State:

- TAGM 4044 - Accelerated Remedial Actions at Class 2, Non-RCRA Regulated Landfills (March 1992)
- TAGM 4051 - Early Design Strategy (August 1993)
- Citizen Participation in New York's Hazardous Waste Site Remediation Program: A Guidebook (June 1998)
- TAGM 3028 - "Contained In" Criteria for Environmental Media: Soil Action Levels (August 1997)
- Freshwater Wetlands Regulations - Guidelines on Compensatory Mitigation (October 1993)
- Air Guide 1 - Guidelines for the Control of Toxic Ambient Air Contaminants
- Technical Guidance for Screening Contaminated Sediments (January 1999)
- USEPA Office of Solid Waste and Emergency Response Directive 9355.047FS Presumptive Remedies: Policy and Procedures (September 1993)
- USEPA Office of Solid Waste and Emergency Response Directive 9355.048FS Presumptive Remedies:
- Site Characterization and Technology Selection for CERCLA sites with Volatile Organic Compounds in Soils (September 1993)
- USEPA Office of Solid Waste and Emergency Response Directive 9355.049FS Presumptive Remedy for CERCLA Municipal Landfills (September 1993)

3.0 SCGs for underground storage tank closure

The following standards and criteria typically apply to UST closures conducted in New York State:

- 6 NYCRR Part 612 - Registration of Petroleum Storage Facilities (February 1992)
- 6 NYCRR Part 613 - Handling and Storage of Petroleum (February 1992)

- 6 NYCRR Part 614 - Standards for New and Substantially Modified Petroleum Storage Tanks (February 1992)
- 6 NYCRR Part 371 - Identification and Listing of Hazardous Wastes (November 1998)
- 6 NYCRR Subpart 374-2 - Standards for the Management of Used Oil (November 1998)
- 6 NYCRR Parts 700-706 - Water Quality Standards (June 1998)
- 40 CFR Part 280 - Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks

The following guidance typically applies to UST closures conducted in New York State:

- STARS #1 - Petroleum-Contaminated Soil Guidance Policy
- STARS #2 - Biocell and Biopile Designs for Small-Scale Petroleum-Contaminated Soil Projects
- SPOTS #14 - Site Assessments at Bulk Storage Facilities (August 1994)
- Spill Response Guidance Manual
- Permanent Closure of Petroleum Storage Tanks (July 1988)
- TAGM 3028 - "Contained In" Criteria for Environmental Media: Soil Action Levels (August 1997)
- TOGS 1.1.1 - Ambient Water Quality Standards & Guidance Values and Groundwater Effluent Limitations
- Air Guide 1 - Guidelines for the Control of Toxic Ambient Air Contaminants
- NYSDOH Environmental Health Manual CSFP-530 - “Individual Water Supplies - Activated Carbon Treatment Systems”

4.0 SCGs for remedial action

The following standards and criteria typically apply to Remedial Actions conducted in New York State:

- 29 CFR Part 1910.120 - Hazardous Waste Operations and Emergency Response
- 40 CFR Part 144 - Underground Injection Control Program
- 10 NYCRR Part 67 – Lead
- 12 NYCRR Part 56 - Industrial Code Rule 56 (Asbestos)
- 6 NYCRR Part 175 - Special Licenses and Permits--Definitions and Uniform Procedures
- 6 NYCRR Part 361 - Siting of Industrial Hazardous Waste Facilities
- 6 NYCRR Part 371 - Identification and Listing of Hazardous Wastes (November 1998)
- 6 NYCRR Part 372 - Hazardous Waste Manifest System and Related Standards for Generators, Transporters and Facilities (November 1998)
- 6 NYCRR Subpart 373-4 - Facility Standards for the Collection of Household Hazardous Waste and Hazardous Waste from Conditionally Exempt Small Quantity Generators (November 1998)
- 6 NYCRR Subpart 374-1 - Standards for the Management of Specific Hazardous Wastes and Specific Types of Hazardous Waste Management Facilities (November 1998)
- 6 NYCRR Subpart 374-3 - Standards for Universal Waste (November 1998)
- 6 NYCRR Part 375 - Inactive Hazardous Waste Disposal Sites (as amended January 1998)
- 6 NYCRR Part 376 - Land Disposal Restrictions
- 19 NYCRR Part 600 - Waterfront Revitalization and Coastal Resources
- 6 NYCRR Part 608 - Use and Protection of Waters
- 6 NYCRR Part 661 - Tidal Wetlands - Land Use Regulations
- 6 NYCRR Part 663 - Freshwater Wetlands - Permit Requirements

- 6 NYCRR Parts 700-706 - Water Quality Standards (June 1998)
- 6 NYCRR Part 750 through 758 - Implementation of NPDES Program in NYS ("SPDES Regulations")
- Technical Guidance for Screening Contaminated Sediments (January 1999)

The following guidance typically applies to Remedial Actions conducted in New York State:

- TAGM 4013 - Emergency Hazardous Waste Drum Removal/ Surficial Cleanup Procedures (March 1996)
- TAGM 4046 - Determination of Soil Cleanup Objectives and Cleanup Levels (January 1994)
- TAGM 4059 - Making Changes To Selected Remedies (May 1998)
- STARS #1 - Petroleum-Contaminated Soil Guidance Policy
- STARS #2 - Biocell and Biopile Designs for Small-Scale Petroleum-Contaminated Soil Projects
- TAGM 3028 - "Contained In" Criteria for Environmental Media: Soil Action Levels (August 1997)
- Citizen Participation in New York's Hazardous Waste Site Remediation Program: A Guidebook (June 1998)
- TOGS 1.1.1 - Ambient Water Quality Standards & Guidance Values and Groundwater Effluent Limitations
- TOGS 1.3.8 - New Discharges to Publicly Owned Treatment Works
- TOGS 2.1.2 - Underground Injection/Recirculation (UIR) at Groundwater Remediation Sites
- Air Guide 1 - Guidelines for the Control of Toxic Ambient Air Contaminants
- State Coastal Management Policies
- OSWER Directive 9200.4-17 - Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites (November 1997)

- NYSDOH Environmental Health Manual CSFP-530 - “Individual Water Supplies - Activated Carbon Treatment Systems”

5.0 SCGs for site management

The following standards and criteria typically apply to Site Management activities conducted in New York State:

- 6 NYCRR Part 175 - Special Licenses and Permits--Definitions and Uniform Procedures

The following guidance typically applies to Site Management activities conducted in New York State:

- Groundwater Monitoring Well Decommissioning Procedures (May 1995)
- The activity is a component of a program selected by a process complying with the public participation requirements of section 1.10, to the extent applicable.
- NYSDOH Environmental Health Manual CSFP-530 - “Individual Water Supplies - Activated Carbon Treatment Systems”