Galli engineering, P.C.

September 7, 2006

Joshua Cook, Project Manager
New York State Department of Environmental Conservation
Division of Environmental Remediation, Remedial Bureau C
625 Broadway
Albany, NY 12233-7014

Re: Spectrum Kensington LLC – Remedial Investigation Workplan
Site Number: C360081

Dear Mr. Cook,

Please find enclosed two copies of the Remedial Investigation Workplan, for the site located at 5 - 27 Kensington Road, Bronxville, NY 10708.

Should you have questions, please feel free to contact me at (631) 271-9292.

Sincerely,

Scott Davidow
Assistant Environmental Scientist

Galli Engineering, P.C.

c: Bob Paley – Spectrum Kensington LLC (w/ enc., 2 copies)
Carl Obermeyer – NYSDOH (w/ enc., 2 copies)
Gary Litwin – NYSDOH
Michael Rivara – NYSDOH
Rosalie K. Rusinko – NYSDEC
Michael Ryan - NYSDEC
File (w/ enc.)

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REMEDIAL INVESTIGATION WORKPLAN FOR CONTAMINATION IN SOIL AND GROUNDWATER

TO BE CONDUCTED AT
THE KENSINGTON
5 - 27 Kensington Road
Bronxville, New York 10708
Section 11, Block 5, Lots 1, 6 and 16

Brownfield Cleanup Program
Site Number C360081

PREPARED FOR:

SPECTRUM KENSINGTON LLC
115 Stevens Avenue
Valhalla, NY 10595

PREPARED BY:

Galli Engineering, P.C.
734 Walt Whitman Road, Suite 402A
Melville, NY 11747

August 2006

Richard D. Galli, P.E.

9-8-06
Date

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1.0 BACKGROUND AND PURPOSE

This Remedial Investigation Workplan ("RI Workplan") is intended to provide an operational framework for the investigation of the environmental quality of the soils and groundwater located at "The Kensington" (the Subject Property), located in Bronxville, New York, tax identification number: Section 11, Block 5, Lots 1, 6 and 16. This work plan has been prepared on behalf of Spectrum Kensington LLC ("Spectrum"), 115 Stevens Avenue, Valhalla, NY 10595, the prospective buyer and developer of the three contiguous parking lot parcels. It is proposed to construct residential condominiums on the site, with a subsurface parking garage.

The Kensington is located at 5-27 Kensington Road in the Village of Bronxville, Westchester County, New York. The site setting is predominantly suburban. The subject property consists of 1.63 acres of land, situated west-northwest of the intersection of Kensington Road and Sagamore Road. The subject property is currently developed as three contiguous parking lot parcels. It is bordered by Metro North Rail Road tracks to the west, a church and apartments across Kensington Road to the east, an office building to the south, and a Metro North transformer building to the north.

Spectrum Kensington, LLC proposes to redevelop this land in the heart of Bronxville. "The Kensington" will comprise 54 residential condominiums with a 300 space subsurface parking garage. The condominiums by design and pricing will be marketed to empty nesters from Bronxville and other surrounding Westchester towns. The condominium residences will average approximately 1,700 square feet and will feature large master suites and small second bedrooms. The design of the Kensington in the Tudor and Spanish Mission style architectures will complement the unique architectural style found throughout Bronxville. The pedestrian courtyard will provide residents with a gathering place and the motor courts will pull traffic off Kensington Road to within the project site thereby reducing traffic congestion and providing an easily accessible service area for dropping off and picking up passengers. Some of the homes will have a direct entry from the street, resulting in increased pedestrian activity along Kensington Road. In addition to the residential component and provision of approximately 100 parking spaces required for the project and its residents, the proposal includes plans to construct a parking garage containing approximately 200 parking spaces for use by the Village

of Bronxville. The 200 spaces will serve the Village's pressing need for parking in this area without the need for funding the acquisition of additional land and the cost of constructing a parking garage.

The project site is located immediately adjacent to the central business district and within walking distance to the Metro-North Railroad Bronxville station. As such, it is eminently appealing to empty nesters seeking a lively neighborhood will all the conveniences offered by the Village of Bronxville including the downtown restaurants and shops.

The land is situated in a general north-south direction. The topographic gradient of the land is to the west-southwest. The bedrock is composed of folded and faulted metamorphic rock from the Precambrian to Triassic age. Gneiss and schist are the dominant rock types. The bedrock is overlain by unconsolidated glacial deposits of Pleistocene age. These glacial deposits are a mixture of clays, silts, sands and boulders. Depth to bedrock ranges from 1 foot below land surface to 29 feet below land surface. The bedrock trend slopes down from east to west. The anticipated groundwater flow is from northeast to southwest. No surface water features are in close proximity to the subject site. The Bronx River is 2,400 feet to the northwest.

Past uses of this site have been documented since the turn of the 20th century. The subject property has been previously utilized for housing, a power plant, a gasoline station and an automobile repair facility. It is currently a municipal parking lot. Around 1905, the "Hotel Gramatan Power and Light Plant" was built on the area that is now the middle lot. Coal was used to fuel the power plant until 1961, when the plant switched over to fuel oil. Coal piles were identified on the Sanborn maps from the years 1918, 1932 and 1950. The "Gramatan Garage" (Texaco gas station) was operated on site from circa 1958-1994. It was closed by the Village of Bronxville in March, 1994. Since the early 1990s, the land has operated as a municipal parking lot, owned by the Village of Bronxville.

In preparation for development, extensive environmental investigations have been conducted on the subject property; including soil borings, ground penetrating radar, soil sample collection and analysis, monitoring well installation and groundwater sample collection and analysis.

Some contamination has been found to be present on the site, consistent with the past uses of the subject lots. A former gasoline station, an automotive repair shop and a parking facility have operated on the southern lot; and a coal burning power plant formerly existed on the middle lot. The power plant and other building structures have been demolished, and the debris has been graded and paved over to provide the land for the current parking lots.

The property is not in a flood prone zone and the groundwater is not a source of potable water. Monitoring wells will be installed to the west and southwest of the subject property beyond the Metro-North right of way and groundwater samples will be collected and analyzed to determine the extent of groundwater contamination. Soil samples will be collected from the northernmost lot to determine if any contamination exists on that portion of the site.

1.1 Environmental Conditions

The contamination consists of elevated levels of petroleum constituents in the soil on the south lot where underground storage tanks (UST's) were located. In the central lot, (the area of the former power plant) there are elevated concentrations of total petroleum hydrocarbons (TPH) in the soil. PCB contaminants were also detected in this area, from soil samples taken at a depth of 4-8 feet, but the contamination was below the Recommended Soil Cleanup Objectives (RSCO) expressed in the New York State Department of Environmental Conservation Technical and Administrative Guidance Memorandum #4046, "Determination of Soil Cleanup Objectives and Cleanup Levels" (TAGM 4046 – see the Data Usability Summary Report in Appendix D for a more detailed discussion on the use of the TAGM). The contaminated soils are present on the surface, just below the parking lot pavement, as well as the subsurface. Although no samples have been taken expressly from the northern lot, there is evidence, based upon the geotechnical borings as well as laboratory analysis of soils sampled from the boundary of the middle and northern lots, that there is contamination on a small portion of the northern lot in the area closest to the northwest portion of the middle lot, as shown on the Site Plan with Contamination Overlay in Appendix B.

Soil contaminants exceeding the New York State RSCO on all of the lots include the semi-volatile organic compounds (SVOC's): benzo(a)anthracene, benzo(a)pyrene,

benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo-a,h-anthracene, fluoranthene, indeno(1,2,3-cd)pyrene, phenanthrene and pyrene. These SVOC's are all Polycyclic Aromatic Hydrocarbons (PAHs). PAH is the general term applied to a group of compounds, comprised of several hundred organic substances with two or more aromatic rings. PAHs are major constituents of petroleum and its derivatives. Exposure to PAHs may result in a wide range of effects on biological organisms. While some PAHs are known to be carcinogenic, others display little or no carcinogenic activity. Other contaminants in the soils on site exceeding the RSCO are the heavy metals arsenic, cadmium, chromium, lead and mercury. Exposure to elevated levels of these metals has been shown to cause detrimental health effects to biological organisms. Potential exposure pathways for these contaminants include ingestion of soil, skin contact with soil or inhalation of particulate matter, and ingestion of contaminated water.

The major source areas contributing to the contamination of the site are the former Gramatan Garage, as well as the former power plant. The power plant operated on site from circa 1905 until the late 1980s. The power plant operated during the time period that coal gasification was ongoing, and there is possible evidence of coal tar in the soil samples taken from the central lot. Coal gasification contaminants include SVOC's and metals, and many of these contaminants were detected at a level above the NYSDEC RSCO. However, based on the results of the Toxicity Characteristic Leaching Procedure (TCLP) analyses, these soils do not meet the criteria for hazardous waste.

The groundwater samples in the south lot revealed contamination by volatile organic compounds (VOC's), SVOC's and metals. Specific contaminants above the NYS Groundwater Quality Standards include m,p-Xylene, arsenic, barium, cadmium, chromium, lead, mercury and silver in MW-2, and mercury in MW-1. The locations of the monitoring wells are shown on the Site Plan with Monitoring Well Locations in Appendix A.

There are open DEC Spill numbers associated with these parcels of land; spill #88-08146 corresponds to the former Gramatan Garage area, and spill #93-14613 corresponds to the former power plant area.

1.2 Summary of Environmental Investigations

Previous environmental investigations have been done on the property. An Environmental Site Assessment (ESA) report done in February 1989 by "Environmental Risk Limited" (ERL) identifies the Gramatan Garage as a Texaco gas station with two 2,000-gallon UST's which contained unleaded gasoline; and two 3,000-gallon UST's, one containing unleaded gasoline, and the other containing diesel fuel which were all installed around 1970. The gas station also contained a sealed floor drain, which is a cause for environmental concern as a potential pathway for contamination of the subsurface area. On October 26-28, 1989, one of the 3,000-gallon tanks was excavated and removed. A passive soil venting system was installed beneath the garage floor in January 1990. In April 1991, two other tanks were removed, and the last was abandoned in place. A tank closure report for the Gramatan Garage was prepared by Empire Soils Investigations, Inc. (ESI) in November 1989. The report states that one UST was removed from the garage in October 1989. Three groundwater monitoring wells were installed in March 1990, in the area of the former Gramatan Garage at the request of the NYSDEC. This area was assigned DEC spill number 88-08146. The area of the former power plant was assigned DEC spill number 93-14613.

Soil Mechanics Drilling Corporation (SMDC) performed a subsurface soil investigation for the entire subject property in June, 1992. Soil borings were done on the former Gramatan Garage area, the area of the former power plant and on the parking lot at the north end of the property. The findings showed elevated BTEX (benzene, toluene, ethylbenzene and xylene) contamination in the area of the former Gramatan Garage and elevated TPH concentration in the area of the former power plant. Groundwater samples were also analyzed by Soil Mechanics. Elevated BTEX contaminants above NYSDEC groundwater standards and elevated concentrations of TPH were detected in the monitoring wells.

A work plan for site remediation was prepared by Stoller Environmental Engineering, P.C./Sadat Associates, Inc. and submitted to the NYSDEC in March 1994, then amended and approved in April 1994. The work plan recommended excavation and removal of contaminated soil and installation of monitoring wells at the former power plant site. However, this work plan was never implemented.

In October 2003, Galli Engineering, along with subcontractors, collected groundwater samples from the two existing monitoring wells, advanced soil borings, collected soil samples, performed ground penetrating radar across the entire site and performed geotechnical borings on the subject property.

A total of two groundwater samples were taken from the existing monitoring wells. The groundwater analytical results revealed the presence of VOC's, SVOC's and Priority Pollutant (PP) Metals in varying concentrations. Arsenic, barium, cadmium, chromium, lead, mercury, silver and m,p-Xylene were detected above the NYSDEC Ambient Water Quality Standards and Guidance Values.

Seventy soil samples were collected for field screening with a PID, and twenty-two of those samples were selected for laboratory analysis. The soil sample analytical results revealed the presence of VOC's, SVOC's, PP Metals and PCB's in varying concentrations. Benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo-a,h-anthracene, fluoranthene, indeno(1,2,3-cd)pyrene, phenanthrene, pyrene, arsenic, cadmium, chromium, lead and mercury were detected above the NYSDEC RSCO. Based on the TCLP results, none of the soil samples met the criteria for characterization as hazardous waste.

The bedrock profile indicated a general downward gradient from east to west, with higher elevations along Kensington Road, and lower elevations near the rail road tracks. A depression in the bedrock is located in the northern part of the middle lot, possibly relating to the former power plant in that area.

Depth to bedrock on the southern lot ranged from 6-22 feet below land surface. The profile of the southern lot revealed greater depths to bedrock on the northwest side and lower depths on the southeast side. Depth to bedrock on the middle lot ranged from 1-29 feet below land surface. The bedrock profile is highest along the west, and lowest along the east side. On the northern lot, the depth ranged from 4-19 feet, with the greater depths to bedrock along the northwest side and lower depths along the southeast side.

2.0 SITE ACTIVITIES

The following scope of work is an outline of the process and steps that are to be used in the remedial investigation of the Site.

The Scope of Work is summarized as follows:

1. Install three off-site groundwater monitoring wells to the west and southwest;
2. Develop the wells in accordance with NYSDEC protocols;
3. Collect groundwater samples from the two existing monitoring wells and the three newly installed monitoring wells;
4. Perform laboratory analysis of groundwater samples for volatile organic compounds (VOCs) according to United States Environmental Protection Agency (US EPA) Method 8260B + TICs; semi-volatile organic compounds (SVOCs) according to US EPA Method 8270C Acid and Base/Neutral extractable + TICs; polychlorinated biphenyls (PCBs) according to US EPA Method 8080; and 8 RCRA metals (except mercury) according to US EPA Method 7000 series; and mercury according to US EPA Method SW7470A;
5. Install seven soil borings on the northernmost lot using a *geoprobe*;
6. Collect one soil sample from each of the seven borings;
7. Perform laboratory analysis of soil samples for volatile organic compounds according to United States Environmental Protection Agency (US EPA) Method 8260; semi-volatile organic compounds (SVOCs) according to US EPA Method 8270 Acid and Base/Neutral extractable; PCBs according to US EPA Method 8082; priority pollutant metals (except mercury) according to US EPA Method 6010; and mercury according to US EPA Method 7470/7471.
8. Evaluation of data;
9. Preparation of a Remedial Investigation Report.

The goals of this scope of work are to 1) delineate the extent of soil and groundwater contamination emanating from the site; 2) to evaluate the potential for additional off-site impacts; and 3) form the basis for development of a Remedial Workplan.

2.1 Install Groundwater Monitoring Wells

Because contamination has been confirmed in the soils at the subject property, there is a concern that the groundwater at the subject property may have been negatively impacted by the soil contaminants. The groundwater samples collected during earlier studies in the south lot revealed contamination by volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs) and metals. There is concern that the groundwater flow could carry contaminants downgradient and off-site.

During the installation of any new monitoring wells or soil borings, the work area will be monitored in accordance with the approved Health and Safety Plan using a Photoionization Detector (PID) or other suitable instruments.

Three groundwater monitoring wells be installed as part of this remedial investigation. The location of the wells will be to the west and southwest from the middle property lot (as shown in Appendix A – Site Plan with Monitoring Well Locations), to determine if contaminants have impacted the groundwater off-site, and to determine if any contaminant plume may be leaving the site, and to identify actual or potential impacts to sensitive receptors, resulting from the contamination migration.

A *Geoprobe* or drill-rig will be utilized to install three monitoring wells, in the locations shown on the site plan, depending on the subsurface encountered. The monitoring wells will be advanced until groundwater is reached. If groundwater is encountered in the overburden soils, the wells will not be installed into rock, and a *Geoprobe* will be utilized. If the groundwater encountered is along the bedrock, or within the bedrock, a drill rig will be used to core into the rock to install the monitoring wells. However, drilling into bedrock is not anticipated at this time. If field conditions require the wells be installed into bedrock, this section will be amended to incorporate the changes.

Monitoring wells will be installed with 2" diameter Schedule 40 PVC. Well screens will be 10 feet long, with 20 mil slots and set to intersect the water table. The wells will be completed with

2" diameter Schedule 40 PVC riser. Each boring will be backfilled with #2 sand to at least one foot above the screen. A one-foot bentonite seal will be placed above the sand. Monitoring wells will be completed with well cap locks and flush mount protective manholes. No solvents or glues will be used in the installation of the monitoring wells. An experienced geologist from Galli Engineering, P.C., (Galli) will be present to monitor all field activities and to take photographs. Drilling logs and well construction logs will be prepared for all borings and wells.

2.2 Develop Monitoring Wells

After installation, each well will be developed in accordance with NYSDEC protocols and well development will continue until the turbidity is less than 50 NTU. One week after development of the wells, Galli Engineering will collect groundwater samples from the newly installed groundwater monitoring wells in addition to the two existing wells.

2.3 Gauge Monitoring Wells

Each monitoring well will be gauged for depth to product/water and purged of a minimum of three well volumes prior to sampling.

2.4 Collect Groundwater Samples From Wells

Groundwater samples will be collected from the two existing monitoring wells and the three newly installed monitoring wells using dedicated HPDE bailers. The monitoring wells will be gauged for depth to product/water and product thickness to the nearest 0.01' and purged of a minimum of three well volumes prior to sampling. In the event that floating phase petroleum product is observed on the groundwater, no groundwater sample will be collected. Water quality parameters (pH, specific conductivity, turbidity, dissolved oxygen, temperature and salinity) will be measured and recorded using a Horiba U-10 water quality meter prior to purging, during purging, and prior to sampling.

2.5 Laboratory Analysis of Groundwater

Groundwater samples will be analyzed for the presence of volatile organic compounds (VOCs) according to United States Environmental Protection Agency (US EPA) Method 8260B + TICs; semi-volatile organic compounds (SVOCs) according to US EPA Method 8270C Acid and Base/Neutral extractable + TICs; polychlorinated biphenyls (PCBs) according to US EPA Method 8080; and priority pollutant metals (except mercury) according to US EPA Method 7000 series; and mercury according to US EPA Method SW7470A, to determine if any contamination has emanated off-site from the subject property. One trip blank and one field blank will be collected for quality control purposes. Galli Engineering, P.C. will follow generally accepted industry practices and NYSDEC protocols and guidelines and submit the samples to a NYSDOH ELAP-Certified Laboratory for analysis.

2.6 Evaluation of Groundwater Laboratory Results

The laboratory results of the groundwater samples collected as part of this investigation will be evaluated based on the methodologies published by the U.S. Environmental Protection Agency. Test results will be analyzed and assessed in accordance with the 6 NYCRR Chapter X, Part 703 "Surface Water and Groundwater Quality Standards and Groundwater Effluent Limitations".

2.7 Geoprobe Soil Borings

Soil borings will be conducted using a Geoprobe unit and advanced to the depth of bedrock, unless met by refusal on the subject property at locations shown on the "Site Plan with Monitoring Well Locations" (Appendix A). In case of refusal, boring locations will be shifted for a new attempt.

Prior to arrival on the subject site and between sample locations, the probes will be decontaminated with a detergent (Alconox) and potable water solution and then rinsed with distilled water. All sample vessels will be certified decontaminated containers supplied by a New York State Certified Commercial Laboratory.

Soil probes will be installed using a Geoprobe hydraulically powered soil-probing tool. The Geoprobe is a mechanized, vehicle mounted soil probe system that can apply both static force and hydraulically powered percussion blows for tool placement with static forces up to 3,000 pounds combined with percussion hammers of eight horsepower continuous output. Recovery of sufficiently large sample volumes will be accomplished with a probe-driven sampler. The probe-driven sampler consists of a hollow probe, which is opened via a mechanical mechanism at the selected sampling depth in the soil profile to allow soil to enter as it is advanced. Discrete samples will be secured at the desired depths and are contained within a non-reactive plastic sleeve that lined the hollow probe for subsequent inspection and analysis. The samples will be obtained using a 4-foot long macro core sampler.

2.8 Collect Soil Samples

A representative of Galli Engineering will collect soil samples and the soil will be screened using a photoionization detector as the borings are advanced at various depths according to elevated PID measurements, odors and/or discoloration. The PID meter is used to measure organic vapors as they evolve from the soils. The readings are not quantitative determinations of volatile content, but instead provide qualitative indications of the degree of volatile organic contamination.

Soil boring logs will be noted and written in log books for record keeping. Soil samples will be taken from the borings and will be collected using a single-use environmental grade disposable plastic sleeve inserted into the Geoprobe soil sampler and placed into clean Ziploc bags. Each bag will be labeled with the designated soil sample number and the collection depth, and then allowed to equilibrate. The headspace of each of the soil samples will then be screened for the presence of volatile organic vapors using a broadband photo ionization detector (PID). The PID

will be zero calibrated prior to screening soil samples at the subject property.

Seven soil borings will be advanced at the subject property, until bedrock is reached. Seven soil samples, one from each boring, will be collected for laboratory analysis.

The site assessment will consist of evaluation of soils in each boring for evidence of contamination. The soils will be evaluated in the field by:

- Visual and olfactory methods, i.e. looking for discoloration and checking for unnatural odors and

- Screening soil samples by use of a portable photo-ionization detector (PID). Samples from appropriate locations and depths will be screened, particularly those which exhibit discolorations or odors. The PID will detect those samples with significant concentrations of volatile components, and will aid in determining which samples will be submitted for laboratory analysis.

2.9 Laboratory Analysis of Soil

Laboratory analysis of soil samples will be analyzed for the presence of volatile organic compounds according to United States Environmental Protection Agency (US EPA) Method 8260; semi-volatile organic compounds (SVOCs) according to US EPA Method 8270C; PCBs according to US EPA Method 8082; priority pollutant metals (except mercury) according to US EPA Method 6010; and mercury according to US EPA Method 7470/7471, to determine if any contamination is present in the soils on the northern lot. One trip blank and one field blank will be collected for quality control purposes. Galli Engineering, P.C. will follow generally accepted industry practices and NYSDEC protocols and guidelines and submit the samples to a NYSDOH ELAP-Certified Laboratory for analysis.

2.10 Evaluation of Soil Sample Laboratory Results

The soil laboratory analytical results will be evaluated in accordance with the New York State Department of Environmental Conservation (NYSDEC) Technical and Administrative Guidance Memorandum (TAGM) #4046 "Determination of Soil Cleanup Objectives and Cleanup Levels".

3.0 AIR MONITORING

Air monitoring will be conducted using dust monitors and a Photo Ionization Detector (PID) to ensure that flammable vapors are not present and that particulate matter is not migrating from the site. Air monitoring will take place in accordance with the New York State Department of Health (NYSDOH) guidance values. Details on air monitoring are available in the Health and Safety Plan developed for this project. Monitoring for background levels will take place at the start of each workday. The monitors will then be moved to the downwind side of any ongoing work to monitor for excessive levels of dust or flammable gases. Air monitoring results will be recorded on the appropriate log sheet.

Dust suppression activities will be implemented if conditions indicate that dust may become problematic. The PID will be used to monitor for explosive vapors. Detection of levels in excess of 5 parts per million (ppm) above background levels will result in a stoppage of work until the levels have dropped back to within 5 ppm of background.

4.0 LAB ANALYSIS

Laboratory analysis of soil and groundwater samples will be performed for the presence of volatile organic compounds according to United States Environmental Protection Agency (US EPA) Method 8260; semi-volatile organic compounds (SVOCs) according to US EPA Method 8270C; PCBs according to US EPA Method 8082; priority pollutant metals (except mercury) according to US EPA Method 6010; and mercury according to US EPA Method 7470/7471. One trip blank and one field blank will be collected for quality control purposes. Galli Engineering, P.C. will follow generally accepted industry practices and NYSDEC protocols and guidelines and submit the samples to a NYSDOH ELAP-Certified Laboratory for analysis.

4.1 Quality Assurance and Quality Control (QA/QC)

The sampling QA/QC protocol is in accordance with the United States Environmental Protection Agency's (USEPA) accepted sampling procedures for hazardous waste streams (Municipal Research Laboratory, 1980, Sampling and Analysis Procedures for Hazardous Material Waste Streams, Environmental Protection Agency, Cincinnati, Ohio, EPA-600/280-018) and ASTM Material Sampling Procedures. Sample results will be reported with Category B data deliverables as defined in the NYSDEC Analytical Services Protocol (ASP). One trip blank and one field blank will be collected and analyzed for quality control purposes.

4.2 Sample Personnel

All samples will be taken by or under the auspices of a USEPA Office of Emergency and Remedial Response Certified Sampler for Hazardous Materials. Sampling technicians will possess a minimum of a BA Degree in the Earth and Space Sciences or a BS Degree in Engineering. Sampling technicians will have a minimum of one-year experience in environmental fieldwork.

4.3 Sampling Equipment

Prior to arrival on site and after each sample acquisition, any non-disposable sampling equipment will be decontaminated as follows:

- Washed by brushing with detergent solution (Alconox/Liquinox) and hot potable water
- Rinsed with distilled water
- Rinse with dilute (1%) nitric acid or dilute (1%) hydrochloric acid (for stainless steel)
- Distilled water rinse
- Methanol rinse
- Final rinse with distilled water
- Air dry and wrap in clean unused aluminum foil (shiny side out)

Mixing of soil samples for composites will be conducted using dedicated plastic spatulas. Dedicated sampling equipment will be used for this sampling event and thrown out after use.

4.4 Sample Acquisition

All sample vessels will be "level A" certified decontaminated containers supplied by a New York State Department of Health Certified Laboratory. Containers will be of appropriate volume and type according to the analysis to be performed. Those samples to be analyzed for volatile organic compounds will be placed in containers with Teflon lined caps.

Those samples requiring preservation to maintain their integrity will be placed in vessels containing the appropriate chemical preservative as prepared by the laboratory. After acquisition, samples will be cooled to 4°C. The number and type of containers and required preservatives are listed in the table below. Samples will be analyzed by a New York State Department of Health ELAP Certified Laboratory.

SAMPLING CONTAINERS, PRESERVATION AND HOLDING TIMES

PARAMETER	MATRIX	CONTAINER	PRESERVATION	HOLDING TIMES
TCL Volatiles	Aqueous	40 ml. VOA vial w/TFE lined septum cap	HCl to pH<2.0 4°C (2)	10 days
TCL Volatiles	Soils	4 oz. glass jar	4°C (2)	7 Days
TCL Semi-Volatiles	Aqueous	Amber glass w/TFE lined cap (1 liter)	4°C	5 days until extraction 40 days from extraction until analysis (1)
TCL Semi-Volatiles	Soils	Glass wide-mouth w/TFE lined septum cap/8 oz.	4°C	5 days until extraction 40 days from extraction until analysis (1)
TCL Pest/PCBs	Aqueous	Amber glass w/TFE lined cap (1 liter)	None	5 days until extraction 40 days from extraction until analysis (1)
TCL Pest/PCBs	Soils	Glass wide-mouth w/TFE lines septum cap/8 oz.	None	5 days until extraction 40 days from extraction until analysis (1)
TAL Metals	Aqueous	Polyethylene 1 qt.	HNO_3 to pH<2.0 (2)	Hg 28 days All other metals 6 months
TAL Metals	Soil	Polyethylene 1 qt. (250 ml for soil borings)	4°C	Hg 28 days All other metals 6 months

(1) Technical Times (time from sample collection until sample analysis) will be used to audit results.

(2) Acids will be procured from a chemical supplier, trace grade.

TCL Target Compound List

TAL Target Analyte List

4.5 Sample Documentation

To establish proper control, the following sample identification and chain of custody procedures will be followed.

4.5.1 Sample Identification

Sample identification will be executed by use of a sample tag, logbook, and manifest. Said documentation will provide the following information:

- Project Name
- Sample Field Number
- Sample Preservation
- Requested Analysis
- Date Sample Was Secured From Source Soil
- Time Sample Was Secured From Source Soil
- Person Who Secured Sample From Source Soil

4.5.2 Chain of Custody Procedures

Sample possession will be traceable from the time the samples are to be collected until they are received by the testing laboratory. A sample will be considered under custody if:

- It is in a person's possession,
- It was in a person's view, after being in possession,
- It was in locked storage, under a person's control; or
- It is in a designated area.

When transferring custody, the individuals relinquishing and receiving the samples will sign, date, and note the time on the Chain-of-Custody Form.

4.5.3 Laboratory- Custody Procedures

A designated sample custodian will accept custody of the shipped samples and will verify that the information on the sample tags matches that on the Chain-of-Custody Records. Pertinent information as to shipment, pick-up, courier, etc. will be entered in the "Remarks" section. The custodian will then enter the sample tag data into a bound logbook, which will be arranged by project code and station number.

The laboratory custodian will use the sample tag number, or assign a unique laboratory number to each sample tag, and ensure that all samples will be transferred to the proper analyst or stored in the appropriate source area.

The custodian will distribute samples to the appropriate analysts. Laboratory personnel will be responsible for the care and custody of samples, from the time they are received, until the sample is exhausted or returned to the custodian.

All identifying data sheets and laboratory records will be retained as part of the permanent documentation. Samples that are received by the laboratory will be retained until after analysis and quality assurance checks are completed.

All laboratory analysis will be performed by a NYSDOH Environmental Laboratory Approval Program (ELAP) certified lab. The laboratory will provide all sample containers. The laboratory will provide trip and lab blanks if requested.

5.0 OFF-SITE EXPOSURE ASSESSMENT

To adequately characterize the soils on the northern portion of the site, soil borings will be installed on the northern lot using a *Geoprobe*. If significant contamination is found at this parcel, the off-site exposure assessment will be conducted to determine if contamination exists beyond the proposed development area, and the potential for exposure to any such contamination.

If the off-site exposure assessment is required, it will consist of evaluation of soils from each boring for evidence of contamination. Soil samples will be collected every four feet in single use plastic sleeves, until refusal of the probe. The soils will be evaluated in the field by:

- Visual and olfactory methods, i.e. looking for discoloration and checking for unnatural odors and
- Screening each soil sample by use of a portable photo-ionization detector (PID). The PID will detect those samples with significant concentrations of volatile compounds, and will aid in determining which samples will be submitted for laboratory analysis.

Grab samples will be collected every four feet from each boring and will be screened with a PID for the presence of total volatile organics. One soil sample from each boring showing the highest PID reading, will be analyzed for VOC's, SVOC's, PCB's and priority pollutant metals according to applicable methodologies. If there is no PID reading, the deepest sample will be used for laboratory analysis. The soil samples will be transferred from the dedicated plastic sleeve of the *Geoprobe* spoon directly into sample containers utilizing a disposable plastic spatula. The sample containers will be placed in a cooler to maintain a constant temperature of 4°C and shipped to a NYSDOH ELAP-Certified Laboratory for analysis.

In addition to the soil characterization at the northern lot, the outfall location of the drainage pipe that ran under the former power plant will be located; using ground penetrating radar (GPR). A survey of appropriate nearby properties will be conducted to determine if any of the properties have private water supply wells.

6.0 SITE SPECIFIC PERSONNEL

Principal In Charge	Richard D. Galli, P.E. Galli Engineering, P.C. 734 Walt Whitman Road Suite 402A Melville, NY 11747	(631) 271-9292
Project Manager:	Ken Brooks, P.E. Galli Engineering, P.C. 734 Walt Whitman Road Suite 402A Melville, NY 11747	(631) 271-9292
Client Contact:	Bob Paley WCI Spectrum Communities 115 Stevens Avenue Valhalla, NY 10595	(914) 773-1200
Field Geologists:	Marc Califano Galli Engineering, P.C. 734 Walt Whitman Road Suite 402A Melville, NY 11747	(631) 271-9292
	Scott Davidow Galli Engineering, P.C. 734 Walt Whitman Road Suite 402A Melville, NY 11747	(631) 271-9292
Subcontractor:	TBD	

7.0 CITIZEN PARTICIPATION ACTIVITIES

In accordance with the approved Citizen Participation Plan (CPP), the following Citizen Participation activities associated with this Remedial Investigation Workplan will be implemented:

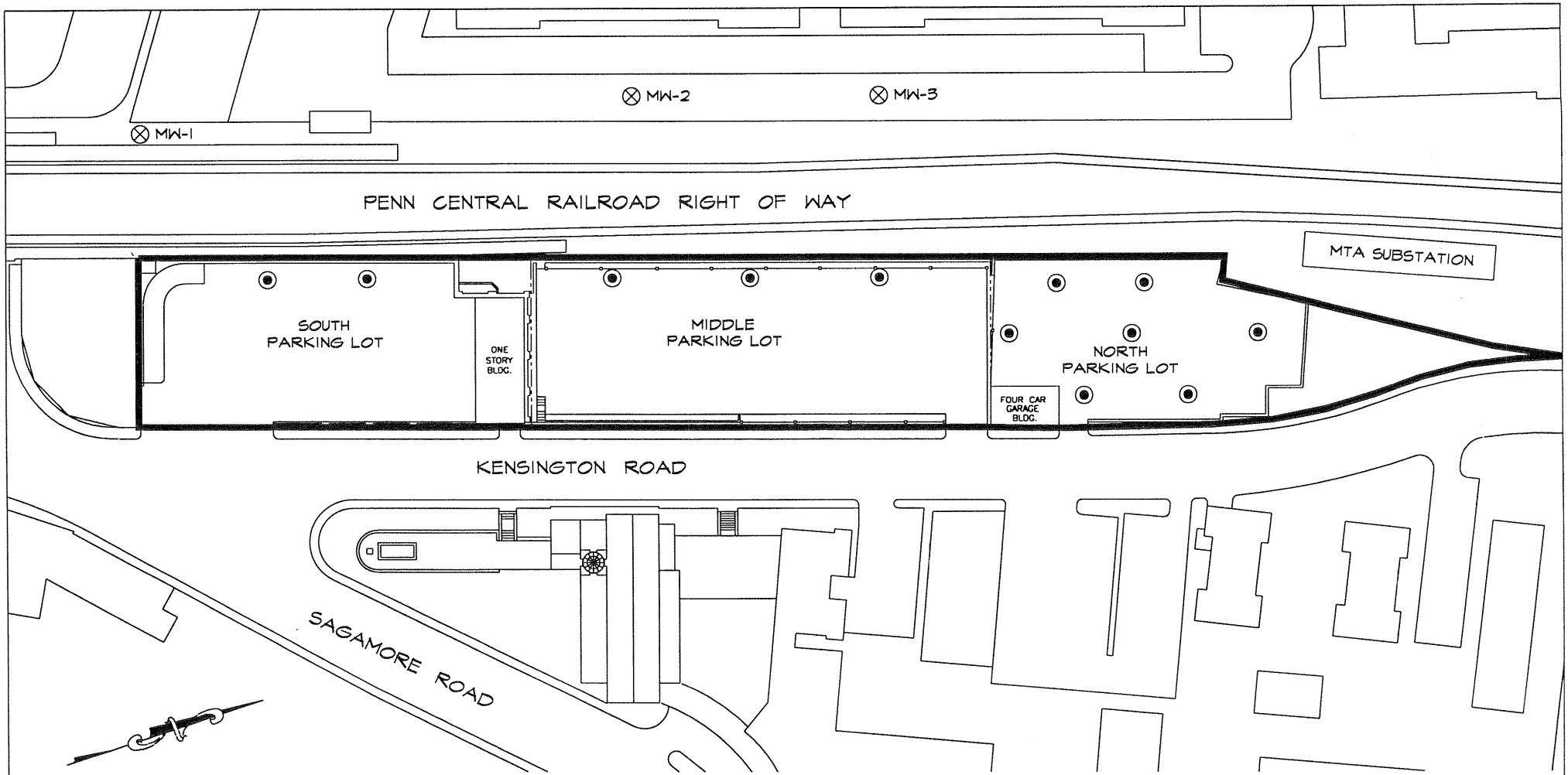
- Distribution of this Remedial Investigation Workplan, the Health and Safety Plan, the Citizen Participation Plan, and the sub-slab venting system design to the document repositories specified in the CPP
- Distribution of a Fact Sheet to the current Contact List in the CPP upon submittal of this Remedial Investigation Workplan
- Commencement of a 30-day comment period for the Draft Remedial Investigation Workplan (comment period to commence on or about July 26th, 2006)

8.0 POST REMEDIAL INVESTIGATION ACTIVITIES

Upon completion of remedial investigation activities, a Remedial Investigation Report will be prepared and submitted to the New York State Department of Environmental Conservation, the New York State Department of Health, the Westchester County Department of Health, and other document depositories in accordance with the Citizen Participation Plan. The report would likely include the following: A brief narrative description of project activities to date; site description and site map; summary of available previous soil and groundwater results; nature and extent of contamination; summary tables of analytical results; evaluation of results; conclusions and recommendations; and documentation (may include tables, photographs, PID readings and laboratory results). The actual content of the report and its acceptability to DEC will depend on conditions encountered in the field.

APPENDIX A

SITE PLAN WITH MONITORING WELL LOCATIONS



KEY

- LOT BOUNDARIES
- ⊗ MONITORING WELL
- ◉ SOIL BORING LOCATION

THREE CONTIGUOUS PARKING LOTS

5-27 KENSINGTON RD., BRONXVILLE, N.Y.

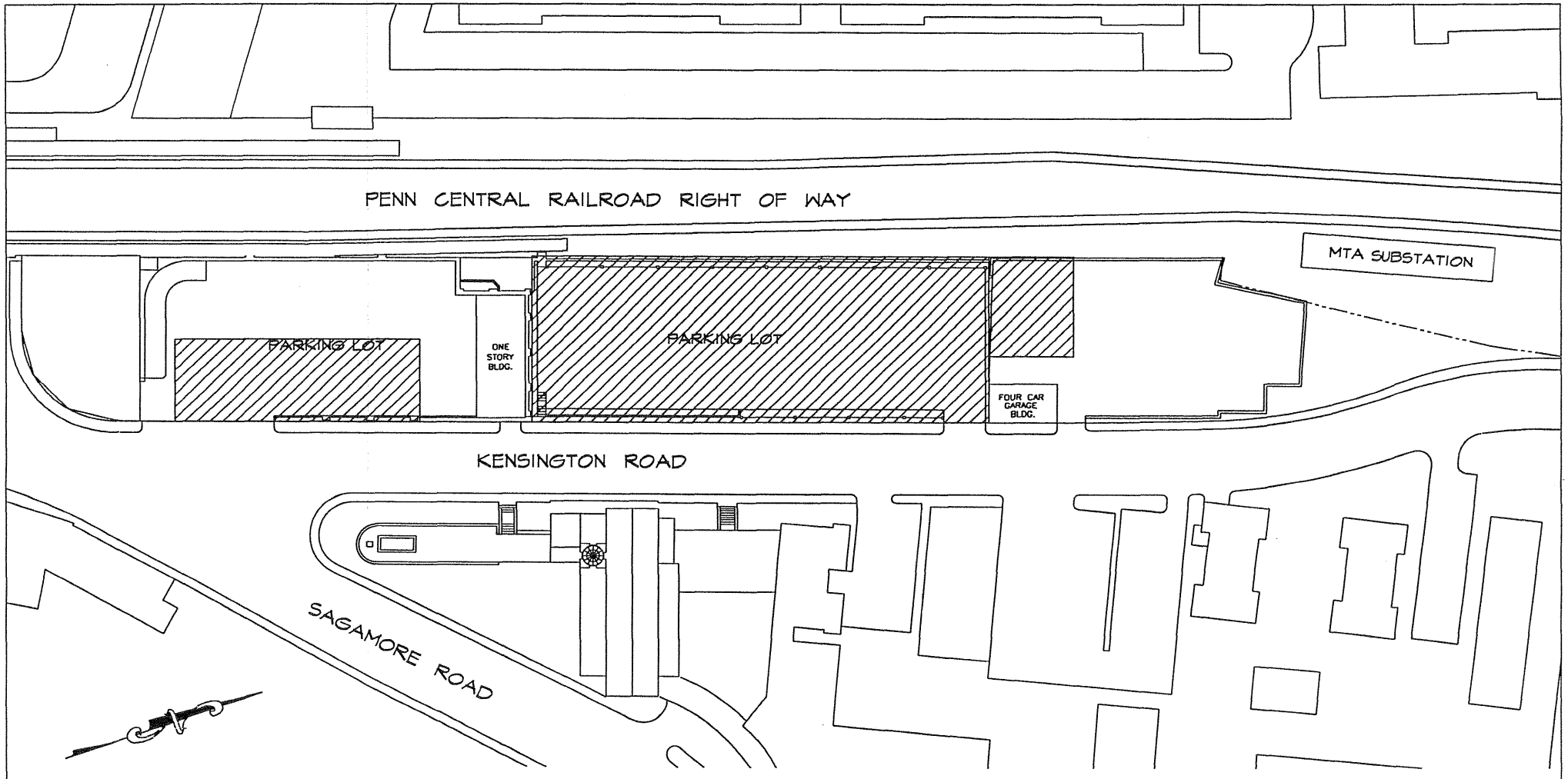
SITE PLAN WITH MONITORING WELL LOCATIONS

JOB NO.	0221-17-016
DRAWN	AXC
CHECKED	RDG
APPROVED	RDG
DATE	5-26-06
SCALE	1" =60'
FIGURE NO.	1

Galli engineering, P.C.
734 Walt Whitman Road, Suite 402A
Melville, New York 11747

APPENDIX B

SITE PLAN WITH CONTAMINATION OVERLAY



THREE CONTIGUOUS PARKING LOTS

3-27 KENSINGTON RD., BRONXVILLE, N.Y.

CONTAMINATION OVERLAY

JOB NO.	0221-17-011
DRAWN	AXC
CHECKED	RDG
APPROVED	RDG
DATE	5-31-05
SCALE	1" =60'
FIGURE NO.	

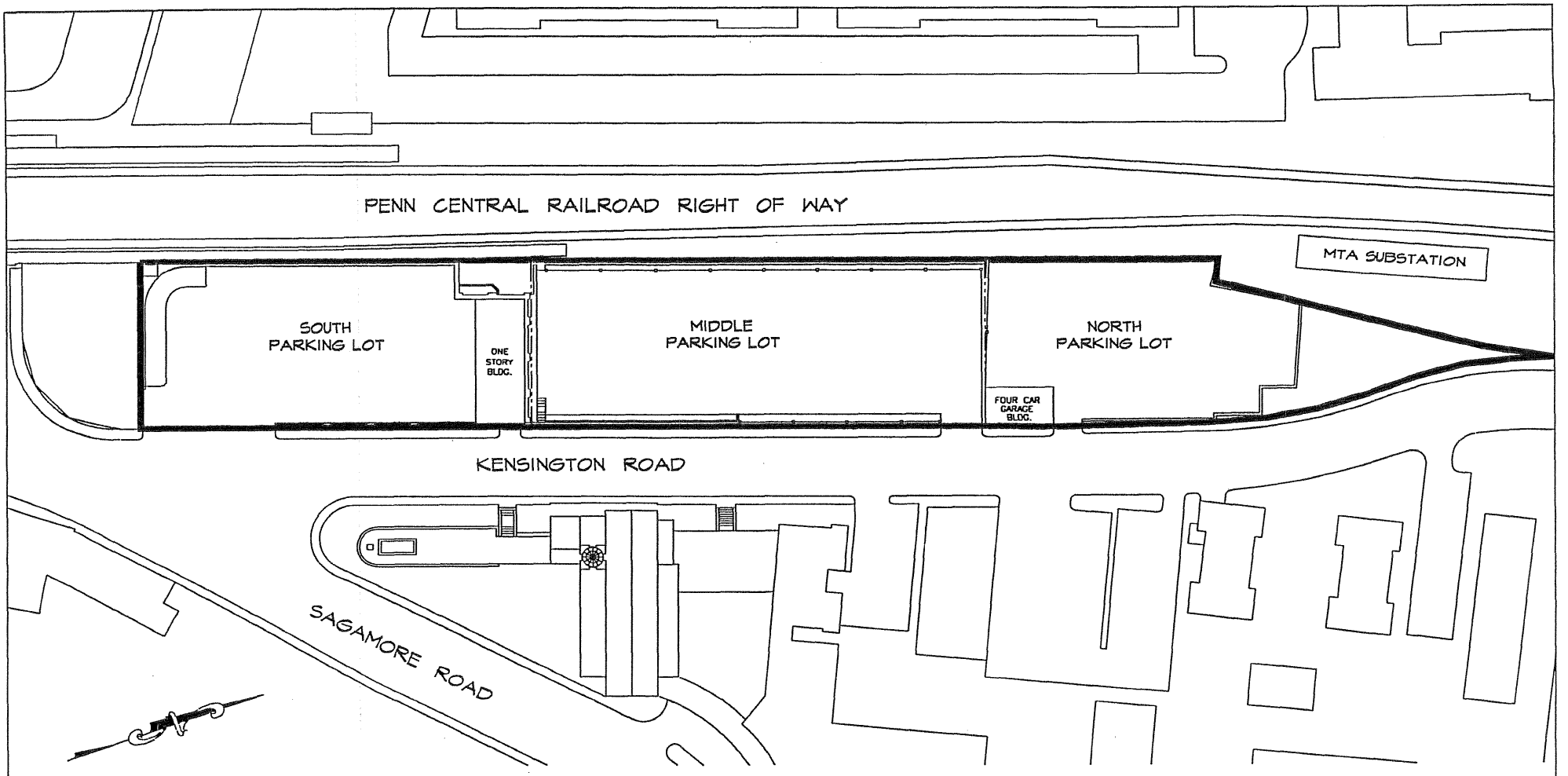
Galli engineering, P.C.
734 Walt Whitman Road, Suite 402A
Melville, New York 11747

APPENDIX C

SITE VICINITY MAP

USGS TOPOGRAPHIC QUAD

WETLANDS MAP



KEY

LOT BOUNDARIES

THREE CONTIGUOUS PARKING LOTS

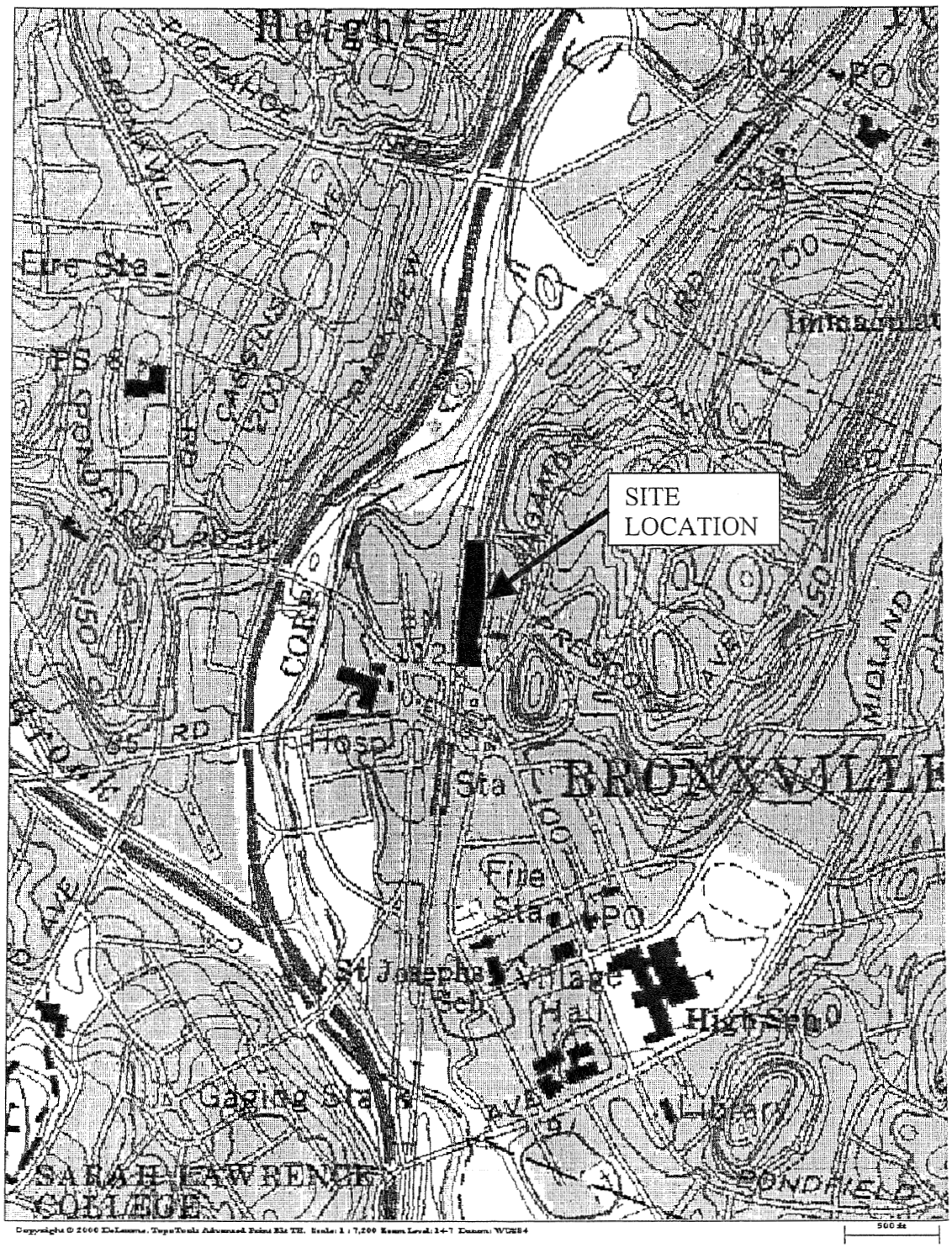
5–27 KENSINGTON RD., BRONXVILLE, N.Y.

SITE VICINITY MAP

JOB NO.	0221–17–016
DRAWN	AXC
CHECKED	RDG
APPROVED	RDG
DATE	5–17–06
SCALE	1" =60'
FIGURE NO.	2

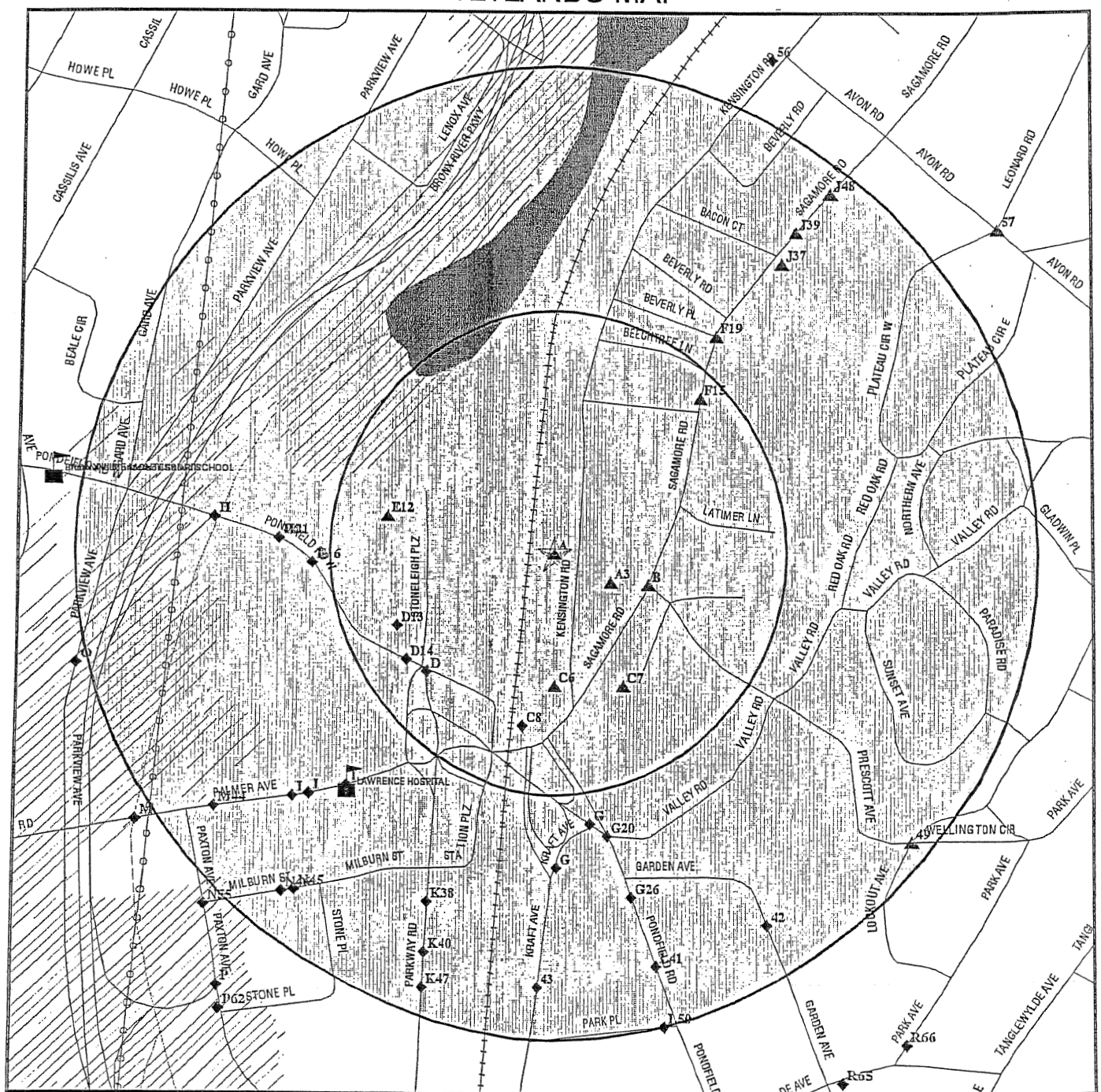
Galli engineering, P.C.
734 Walt Whitman Road, Suite 402A
Melville, New York 11747

USGS TOPOGRAPHIC MAP



5-27 Kensington Road
Bronxville, NY 10708

WETLANDS MAP



- ☆ Target Property
- ▲ Sites at elevations higher than or equal to the target property
- ◆ Sites at elevations lower than the target property
- Coal Gasification Sites
- Sensitive Receptors
- National Priority List Sites
- Landfill Sites
- Dept. Defense Sites
- Power transmission lines
- Oil & Gas pipelines
- 100-year flood zone
- 500-year flood zone
- Federal Wetlands

APPENDIX D

DATA USABILITY SUMMARY REPORT

DRAFT

DATA USABILITY SUMMARY REPORT

Applicant: **Spectrum Kensington, LLC ("Applicant")**
Site Name: **The Kensington ("site")**
Site Address: **5 - 27 Kensington Road, Bronxville, NY 10708**
Site County: **Westchester County**
Site Number: **C360081**

A significant volume of data has been generated over the last seventeen years as part of several Phase II Environmental Site Assessments prior to acceptance of the Site into the Brownfield Cleanup Program. These assessments were performed by Empire Soils Investigations, Inc. (ESI) in November, 1989; by Soil Mechanics Drilling Corporation in June, 1992; and by Galli Engineering in October and December, 2003. The need to remediate the site is based largely on the data collected and analyzed as part of these previous investigations.

Before any proposed remedial program can be considered acceptable, it will be necessary to show that the data are of sufficient quality and quantity to meet the stated data quality objectives.

Data Quality Objectives:

The data should be of sufficient quality and quantity to satisfy the following requirements: 1) to assess the nature and extent of contamination in on-site soils and groundwater and in off-site soils in the vicinity of the site and in groundwater downgradient of the site, and 2) to form the basis for the design of a remedial system properly protective of the public health.

1. Is the data package complete as defined under the requirements for the NYSDEC ASP Category B or USEPA CLP deliverables?

The number of samples and the parameters to be analyzed were selected in accordance with industry practice as defined in the American Society for Testing and Materials (ASTM) Standard: Guide for Environmental Site Assessments: Phase II Environmental Site Assessment Process (E 1903-97). Lab reports included copies of the Chain-of-Custody forms and case narratives and were completed as appropriate for the level of QA/QC at the time.

2. Have all holding times been met?

Samples collected by Galli Engineering were delivered and analyzed within the appropriate holding times. A review of the laboratory report sheets shows that all samples were delivered to the laboratory and were analyzed within the appropriate time limitations.

Laboratory results obtained from Spectrum Kensington, LLC (the "Applicant") did not reveal whether the holding times were met for the samples analyzed in 1989 and 1992.

3. Do all the QC data: blanks, instrument tunings, calibration standards, calibration verifications, surrogate recoveries, spike recoveries, replicate analyses, laboratory controls, field and trip blanks, and sample data fall within the protocol required limits and specifications?

Internal QC procedures were followed by the laboratory contracted by Galli Engineering, P.C. Laboratory results were reviewed and the analytical methods used by the laboratory were standard EPA methods for determining the various classes of compounds included in the analytical schedule. The laboratory reports included surrogate spike results, which were reviewed to determine whether any samples were outside of the applicable range. Results that were outside of the acceptable recovery percentage limits included compounds which were below quantitation limits. These compounds were qualified by the laboratory. No surrogates were outside their limits.

4. Have all of the data been generated using established and agreed-upon analytical protocols?

Soil and groundwater sampling was conducted under NYSDEC guidelines in accordance with standard EPA methods. Chain-of-Custody forms accompanied the samples to the laboratories and were reproduced in the sample reporting packages.

Laboratory analytical protocols have been developed by the EPA and are published in EPA SW-846 and the *Federal Register*. Analytical results measured in the field have been measured with standard instruments designed for field acquisition of data, calibrated as required, and operated by field technicians trained in their use.

The twelve soil samples collected from the subject property on October 25 and 28, 2003 were maintained in a secure refrigerator until hand delivery to American Analytical Laboratories, Inc., a New York State Certified Commercial Laboratory for analysis on October 29, 2003. These soil samples were analyzed for the presence of volatile organic compounds according to United States Environmental Protection Agency (US EPA) Method 8260; semi-volatile organic compounds (SVOCs) according to US EPA Method 8270; PCBs according to US EPA Method 8082; priority pollutant metals (except mercury) according to US EPA Method 6010; and mercury according to US EPA Method 7470/7471.

The ten soil samples collected from the subject property December 1, 2003 were maintained in a secure refrigerator until hand delivery to American Analytical Laboratories, Inc., a New York State Certified Commercial Laboratory for analysis on December 2, 2003. These soil samples were analyzed for full Toxicity Characteristic Leaching Procedure (TCLP) according to US EPA Methods SW8260B (SW1311) for TCLP VOCs; SW8270D (SW1311) for TCLP SVOCs; SW1311/6010B (SW1311) for TCLP arsenic, barium, cadmium, chromium, lead, selenium and silver; SW1311/7471B for TCLP mercury; SW8151A (SW1311) for TCLP herbicides; and SW8081B (SW1311) for TCLP pesticides.

The groundwater samples collected from the subject property on October 28, 2003 were maintained in a secure refrigerator until hand delivery to American Analytical

Laboratories, Inc., a New York State Certified Commercial Laboratory for analysis on October 29, 2003. The groundwater samples were analyzed for the presence of volatile organic compounds (VOCs) according to United States Environmental Protection Agency (US EPA) Method 624; semi-volatile organic compounds (SVOCs) according to US EPA Method 625; polychlorinated biphenyls (PCBs) according to US EPA method 608; and 8 RCRA metals (except mercury) according to US EPA Method SW6010B; and mercury according to US EPA Method SW7470A.

5. Does an evaluation of the raw data confirm the results provided in the data summary sheets and quality control verification forms?

The evaluation of the data provided in the laboratory reports adheres to the specified parameters listed on the Chain-of-Custody forms.

6. Have the correct data qualifiers been used?

The laboratory uses specific data reporting qualifiers for all samples. The sample results were reviewed and samples that showed results outside the acceptable range were noted and their reported results were checked to determine that the correct qualifiers were used in the reported values given by the laboratory.

Some soil samples carried the "J" qualifiers, indicating the analyte was detected below the quantitation limits.

Copies of the laboratory certifications are attached covering the analytes and testing dates referred to.

Conclusions:

Available data provide a clear picture of historic activity consistent with the use of the central portion of the site as a coal-based power plant. The earlier Phase II studies (1989 and 1992) were performed to a standard appropriate for Phase II Site Assessments. The fact that data were not collected according to a higher specification is mitigated by the fact that 2/3 of the soil on the site will be completely removed.

HEALTH AND SAFETY PLAN (HASP)

July, 2006

Site:

The Kensington
Section 11, Block 5, Lots 1, 6 and 16
Bronxville, New York 10708

Prepared for:

Spectrum Kensington LLC
115 Stevens Avenue
Valhalla, NY 10595

Prepared by:

Galli Engineering, P.C.
734 Walt Whitman Road - Suite 402A
Melville, New York 11747

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MSDS DEFINITIONS

TLV-TWA	**Threshold Limit Value – Time Weighted Average** – The time-weighted average concentration for a normal 8-hour work day and a 40-hour work week, to which nearly all workers may be repeatedly exposed without adverse effect.
PEL	**Permissible Exposure Limit** – Time-weighted average concentrations similar to (and in many cases derived from) the Threshold Limit Values.
REL	**Recommended Exposure Limit** – as defined by NIOSH similar to the Threshold Limit Values.
IDLH	**Immediately Dangerous to Life or Health** – Any atmospheric condition that poses an immediate threat to life, or which is likely to result in acute or immediate severe health effects. Oxygen deficiency is IDLH.
LEL	**Lower Explosive Limit** – The minimum concentration of vapor in air below which propagation of a flame will not occur in the presence of an ignition source.
UEL	**Upper Explosive Limit** – The maximum concentration of vapor in air above which propagation of a flame will not occur in the presence of an ignition source.
FP	**Flash Point** – The lowest temperature at which the vapor of a combustible liquid can be made to ignite in air.
VP	**Vapor Pressure** – The pressure characteristic at any given temperature of a vapor in equilibrium with its liquid or solid form, often expressed in millimeters of mercury (mm Hg).
Odor Threshold	A property displayed by a particular compound. Low detection indicates a physiological sensation due to molecular contact with the olfactory nervous system (based on 50% of the population).
IP	**Ionization Potential** – The energy required to form an ion by removal of a given electron from an atom.

CONTAMINANTS PROFILE

Chemical	Exposure Route	Symptoms of Overexposure
Arsenic	Inhalation Ingestion Skin Contact	• Stomach ache, nausea, vomiting, diarrhea. • Fatigue, abnormal heart rate. • Skin changes- redness and swelling.
Barium	Inhalation Ingestion	• Difficulty breathing. • Muscle weakness, abnormal heart rate. • Stomach irritation.
Cadmium	Inhalation Ingestion	• Stomach irritation, vomiting, diarrhea. • Lung damage.
Chromium	Inhalation Ingestion Skin Contact	• Nasal irritation and nosebleeds. • Upset stomach. • Skin ulcers, swelling and redness of skin.
Zinc	Inhalation Ingestion Skin Contact	• Stomach cramps, nausea, diarrhea. • "Metal Fume Fever". • Skin irritation.
Mercury	Inhalation Ingestion Skin Contact	• Lung damage, nausea, vomiting, diarrhea. • Increase in blood pressure and/or heart rate. • Skin rash, eye irritation.
Lead	Inhalation Ingestion Skin Contact	• Abdominal discomfort, nausea and/or constipation, diarrhea, metallic taste. • Weakness, muscle pains, irritability, headache. • Dizziness.

PAH's (Polycyclic Aromatic Hydrocarbons)	Inhalation Ingestion Skin Contact	• Risk of lung and skin cancer.
PCB's (Polychlorinated Biphenyls)	Inhalation Ingestion Skin Contact	• Rash on skin. • Liver damage.

EMERGENCY FIRST AID

1. Survey the situation. Do not endanger your own life. **DO NOT ENTER A CONFINED SPACE TO RESCUE SOMEONE WHO HAS BEEN OVERCOME UNLESS PROPERLY EQUIPPED AND A STANDBY PERSON IS PRESENT.**

2. Call 911 or the fire department **IMMEDIATELY**. Explain the physical injury, chemical exposure, fire or release.

3. Decontaminate the victim without delaying life-saving procedures.

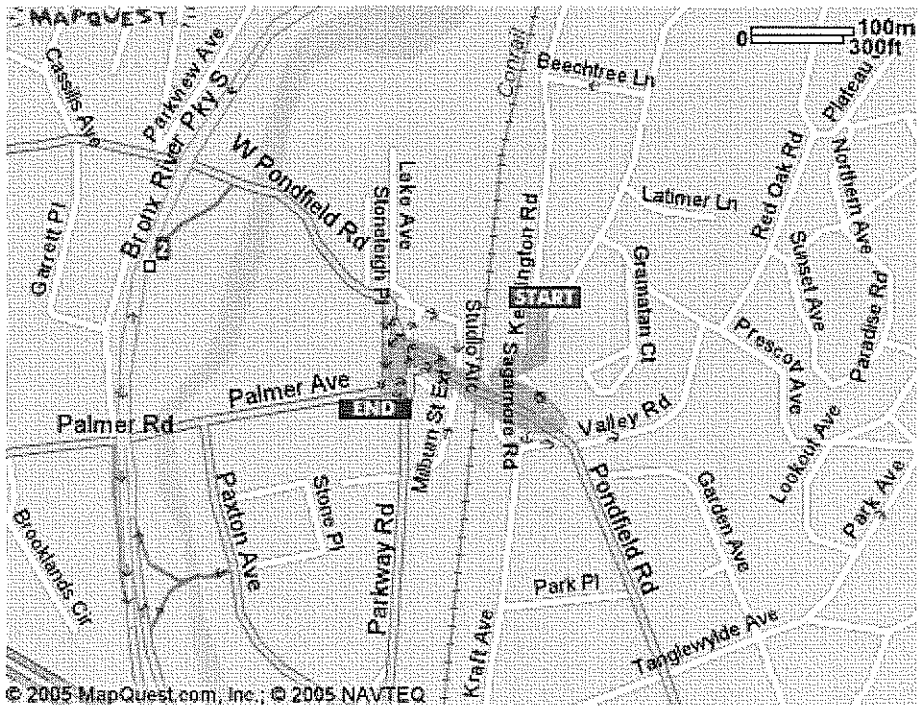
4. If the victim's condition doesn't appear to be critical, but seems to be more severe than minor cuts, trained Emergency Medical Services (EMS) personnel should transport he/she to the nearest hospital. Let the doctor assume the responsibility for determining the severity of the injury. If the condition is obviously serious, EMS must transport the victim.

5. Notify the Project Manager.

EMERGENCY FIRST AID PROCEDURES	
To Stop Bleeding	Cardiopulmonary Resuscitation (CPR) BY TRAINED PERSONS ONLY
1. Give medical statement.	1. Give medical statement.
2. Assure airway, breathing and circulation.	2. Arousal: Check for consciousness.
3. Use **DIRECT PRESSURE** over the wound with clean dressing or your hand (use nonpermeable gloves). Direct pressure will control most bleeding.	3. Open airway with chin-lift. 4. Look, listen and feel for breathing.
4. Bleeding from an artery or several injury sites may require **DIRECT PRESSURE** on a **PRESSURE POINT**. Use pressure points for 30-60 seconds to help control severe bleeding.	5. If breathing is absent, give 2 full rescue breaths. 6. Check the pulse for 5 to 10 seconds.
5. Continue primary care and seek medical aid as needed.	7. If pulse if present, continue rescue breathing: **1 breath every 5 seconds.**

HOSPITAL DIRECTIONS AND INFORMATION

HOSPITAL DIRECTIONS	HOSPITAL INFORMATION
Start out going South on Kensington Road toward Sagamore Road. Turn slight right onto Sagamore Road. Pass through 1 roundabout. Turn slight right onto Pondfield Road. Enter next roundabout and take 3rd exit onto Palmer Avenue. End at Lawrence Hospital Center 55 Palmer Avenue.	**NAME: Lawrence Hospital Center** **ADDRESS: 55 Palmer Avenue** **CITY, STATE: Bronxville, NY** **PHONE: 914-787-1000** **EMERGENCY ROOM: 914-787-1035**



EMERGENCY CONTACTS

Ambulance:	911	Project Manager:	(631) 271-9292 Ken Brooks
Fire:	911	Health/ Safety Rep:	(631) 271-9292 Marc Califano
Police:	911	Client Contact:	(914) 773-1200 Bob Paley

Poison Control: 1-800-222-1222

Hospital Name: Lawrence Hospital Center
Hospital Phone: 914-787-1000
Emergency Room: 914-787-1035

CHEMTREX 1-800-424-9300
National Response Center 1-800-424-8802
USEPA (24 Hour hotline) 1-800-424-9346

POLICE INFORMATION

Village of Bronxville Police Department

Telephone: Dial 911 914-337-0500

1.0 INTRODUCTION

Galli Engineering, P.C. has developed a Health and Safety Plan (HASP) for this remedial action in order to ensure that all site activities conform to an integrated and consistent approach which will minimize the danger to human health, the environment, equipment and property, and which will ensure compliance with safety, health and environmental regulations.

This document addresses items specified under various Federal, State, and Local regulations, as well as accepted safety standards. This document covers Galli Engineering employees, any subconsultants, employees of Spectrum Kensington LLC, contractors, any subcontractors, material and equipment vendors, and site visitors. It will be made available to all on-site personnel and visitors who may be exposed to hazardous conditions.

The purpose of this Health and Safety Plan (HASP) is to define procedures for identifying environmental risks and providing adequate protection from those risks during site work. All personnel on site must be informed of site emergency response procedures and any potential fire, explosion, health, or safety hazards associated with on-site activities. This HASP covers environmental risks associated with the site remediation being conducted on the site. Those risks include exposure to contaminants present in soil and groundwater; heat; cold; and heavy equipment operation. It does not address general construction safety issues as required by OSHA.

1.1 OBJECTIVE

The primary objective of this HASP is to ensure the well-being of all field personnel and the community surrounding this site during the cleanup of the site. In order to accomplish this, project staff and approved subcontractors shall acknowledge and adhere to the policies and procedures established herein.

Galli personnel have the authority to stop any work performed at this site if work is not performed in accordance with the requirements of this Health and Safety Plan, or to require any person acting in an unsafe manner to leave the site. This provision is granted as a condition of Galli Engineering's oversight of the project, and is granted without limitation. It is understood that failure to leave the site after request by the Project Manager (PM) or the Health and Safety Officer (HSO) may subject the offending person to disciplinary action, up to, and including arrest and criminal prosecution.

1.2 AMENDMENTS

Changes in the scope of work of this project and/or site conditions could result in the need for expanded or changed coverage in this HASP. In such a case, the HASP must be amended in writing on the Health and Safety Plan Amendment Sheet (Attachment A) and approved by the Project Manager and Health and Safety Officer. As these amendments become effective, the Health and Safety Officer will hold "tailgate meetings" with project personnel to ensure their familiarization with updated procedures.

2.0 HEALTH AND SAFETY PLAN CONTACTS

All team members will have experience in hazardous waste site operations commensurate with the field activities for which they are responsible. All team members have participated in a 40-hour hazardous waste training program in accordance with OSHA requirements 29 CFR Part 1910.

2.1 PROJECT PERSONNEL

The following Galli Engineering personnel are assigned to this project in the capacities indicated.

TABLE 2.1

GALLI ENGINEERING PERSONNEL

TITLE	NAME	TELEPHONE
Project Manager	Ken Brooks, P.E.	(631) 271-9292
Health and Safety Officer	Marc Califano	(631) 271-9292

Client Contact Information:

Client Name: Spectrum Kensington LLC
115 Stevens Avenue
Valhalla, NY 10595

Contact: Bob Paley
(914) 773-1200

2.2 PROJECT PERSONNEL - DUTIES

Galli Engineering, P.C. will oversee all phases of the remediation project on behalf of the client. The following management structure will be instituted for the purpose of successfully and safely completing this project.

2.2.1 PROJECT MANAGER

The Project Manager is ultimately responsible for ensuring that all project participants abide by the requirements set forth in this plan. He will oversee and direct field activities and be responsible for ensuring compliance with this plan. Specifically, the Project Manager will be responsible for implementing the project and obtaining any necessary personnel or resources for the completion of the project. Specific duties will include:

- coordinating the activities of all subcontractors, to include informing them of appropriate personal protective equipment requirements
- selecting a Health and Safety Officer and field personnel for the remedial work to be undertaken on the site
- providing authority and resources to ensure that the Health and Safety Officer is able to implement and manage safety procedures
- preparing reports and recommendations about the project to the client, oversight agencies, and affected Galli Engineering personnel
- ensuring that all persons allowed to enter the site (e.g., EPA, contractors, state officials, visitors) are made aware of the potential hazards associated with the substances known or suspected to be on site
- ensuring that the Health and Safety Officer is aware of all of the provisions of this HASP and is instructing all personnel on site about the safety practices and emergency procedures defined in the plan and
- ensuring that the Health and Safety Officer is making an effort to monitor site safety, and has designated a Field Team Leader to assist with the responsibility when necessary
- ensuring that the tasks assigned are being completed as planned and on schedule

2.2.2 HEALTH AND SAFETY OFFICER

The Health and Safety Officer (HSO) will be responsible for providing technical coordination for the health and safety program. The HSO will act in an advisory capacity reporting to the Project Manager as appropriate. He shall be responsible for the implementation of the HASP on site. Specific duties will include:

- monitoring the compliance of field personnel for the routine and proper use of the PPE that has been designated for each task
- stopping work on the site or changing work assignments or procedures if any operation threatens the health and safety of workers or the public
- monitoring personnel who enter and exit the site and all controlled access points
- reporting any signs of fatigue, work-related stress, or chemical exposures to the Project Manager
- dismissing field personnel from the site if their actions or negligence endangers themselves, co-workers, or the public, and reporting the same to the Project Manager
- reporting any accidents or violations of the HASP to the Project Manager, and documenting the same in the project records
- knowing emergency procedures, evacuation routes and the telephone numbers of the ambulance, local hospital, poison control center, fire and police departments
- coordinate upgrading and downgrading of PPE with the Project Manager and Health and Safety Officer, as necessary, due to changes in exposure levels, monitoring results, weather, and other site conditions
- perform air monitoring with approved instruments in accordance with requirements stated in this HASP
- approving the selection of the types of Personal Protective Equipment (PPE) to be used on site for specific tasks
- conducting air monitoring for compliance with all company health and safety policies

2.2.3 OTHER FIELD PERSONNEL

All field personnel shall be responsible for acting in compliance with all safety procedures outlined in the Health and Safety Plan. Any hazardous work situations or procedures shall be reported to the Health and Safety Officer so that corrective steps can be taken.

2.2.4 VISITORS

All site visitors will be made aware of the provisions of the HASP by a pre-entry briefing given by the Project's Management Staff. Visitors will be expected to comply with relevant OSHA requirements. Visitors will also be expected to provide their own PPE required by the HASP.

2.3 UTILITY INFORMATION

Galli Engineering representatives are responsible for contacting appropriate agencies prior to conducting on-site activities, when applicable. Where utilities may be present, the appropriate companies will be contacted sufficiently in advance so as not to interrupt work schedules.

Gas Company- Con Edison- 24 Hour Emergency Hotline 1-800-752-6633
Electric Company- Con Edison- 24 Hour Emergency Hotline 1-800-752-6633
Telephone Company- Verizon
Water Company- United Water of New Rochelle 914-632-6900
Other- As Applicable

3.0 HEALTH AND SAFETY RISKS

The hazards posed on this site are due to physical elements (falls, slips, electrocution, equipment failure and cave-in), exposure to contaminants in soil; heat and cold; or physical injury from mechanical equipment. Mechanical equipment used for excavating poses a risk due to moving parts and/or pinch hazards. In order to reduce these risks, operations will only be conducted in previously surveyed and designated areas.

The contaminants expected to be present are volatile organic compounds (VOC's), semi volatile organic compounds (SVOC's), and priority pollutant metals (PP Metals).

3.1 HEALTH AND SAFETY SUMMARY

The primary contaminants of concern include SVOC's and PP Metals. Modified Level D is the minimum acceptable level of protection for this site. For the purposes of this plan, Modified Level D PPE includes work clothing dictated by the weather, long sleeve shirt and pants, safety-toe shoes and hard hats. Where appropriate, gloves, eye protection, and chemical resistant suits will also be worn. High visibility vests will be worn when appropriate.

To minimize the risks from materials expected on site, environmental monitoring will be conducted throughout the investigation.

TABLE 3.1.1 ENVIRONMENTAL MONITORING			
Instrument	**Function**	**Measurement**	**Action**
Photoionization Detector (PID)	Measures total organic vapors	0-5 ppm	• Level D required
		5 ppm–25 ppm	• Stop work until levels drop below 5 ppm
		> 25 ppm	• Stop work and notify HSO
Oxygen/Combustible Gas Meter (O_2/LEL) **NOTE:** Combustible gas meter readings obtained in an oxygen deficient atmosphere will not be accurate, and are to be disregarded. Leave the area immediately.	Measures oxygen level (O_2) and lower explosive limit (% LEL)	O_2 19.5-22%	• Acceptable conditions – Continue normal activity
		O_2 <19.5%	• **Leave area immediately** • Notify PM and HSO if unable to achieve acceptable conditions
		O_2 >22%	• **Leave area immediately**: this atmosphere is extremely flammable • Notify PM and HSO
		LEL<10%	• Acceptable conditions – Continue normal activity
		LEL>10%	• **Leave area immediately** • Contact PM and HSO for guidance on venting and other safety measures
* NOTE: Instruments must be calibrated according to manufacturer's recommendations			

TABLE 3.1.2

HAZARD SUMMARY

JOB TASK	MINIMUM PPE	MONITORING FREQUENCY
Excavation Oversight	Modified Level D	Start-up of work, each 30 min.

3.2 SITE TASKS

The field tasks at this site (current and subsequent work stages) may include:

- Excavating and backfilling
- Installation of soil venting system
- Vapor screening

3.3 JOB TASK HAZARDS – ALL FIELD TASKS

The following hazards may be encountered during any of the tasks that may be carried out on site:

3.3.1 PHYSICAL HAZARDS

Physical hazards exist where heavy machinery (such as an excavator) is operating, where objects such as manhole cover may be opened, or from any field activity, that involves moving or lifting. Protection from physical hazards is best afforded by always being alert and aware of activities in one's area, warning others and by wearing hard hats, long sleeved clothing, steel-toed work boots and eye protection when appropriate. Workers will be informed of any potential trip and fall hazards during regular health and safety meetings. Whenever possible, trip and fall hazards will be eliminated or clearly identified with yellow caution tape or barricades.

3.3.2 ORGANIC VAPORS

The inhalation of volatile organic vapors during operations can pose a potential health hazard. Hazard reduction procedures include monitoring the ambient air with a PID and/or FID and use of Personal Protective Equipment. Workers should stand upwind of contamination sources whenever possible. In no event will any confined space entry be performed prior to monitoring the space for oxygen.

3.3.3 FLAMMABLE VAPORS

The Fire Department may be reached at 911. Presence of flammable vapors can pose a potential fire hazard as well as a health hazard. Hazard reduction procedures include monitoring the ambient air with an LEL meter. If the LEL reading exceeds 10%, leave the site immediately and contact the fire department, the Health and Safety Officer and the Project Manager. Type ABC Fire Extinguishers will be present on site at all times.

3.3.4 OXYGEN

Atmospheres that contain a level of oxygen less than 19.5% pose an immediate danger to life or health due to oxygen deficiency. If oxygen is less than 19.5%, do not enter the space. Atmospheres that contain greater than 23% pose extreme fire hazards. All personnel encountering atmospheres that contain more than 23% oxygen must evacuate the site immediately and notify the fire department.

3.4 CONFINED SPACE ENTRY PROCEDURES

All confined space entries will comply with OSHA 29 CFR 1910.146. A confined space is an area that presents special hazards to anyone working within. Storage tanks, subsurface vaults, and some basements and sheds are examples of confined spaces. Confined spaces are areas having the following characteristics:

1. Is large enough that a person may enter and work.
2. Is not designed for continuous occupancy and may:
    - contain or have the potential to contain a hazardous atmosphere
    - have the potential to engulf or entrap an occupant
    - contain other hazards
    - have unfavorable natural ventilation
3. Has limited means of entrance and exit. Examples:
    - tanks
    - silos
    - digesters
    - vaults (4 feet deep and deeper)
    - trenches (4 feet deep and deeper)
    - hoppers
    - pits
    - diked areas (may hold dense gases)
    - tunnels
    - cisterns
    - wells

All confined spaces will require permit entry as described below.

3.4.1 PERMIT PROGRAM

A permit will be required whenever a confined space needs to be entered. The permit form is presented in Attachment D. Elements of the permit include: the purpose for the entry, identity of the permit space, date and duration of entry, the names of authorized entrants and attendants, environmental monitoring required and the results of that monitoring, the type of protective equipment to be worn, measures to be taken to isolate

the space and the name of the person conducting, monitoring and authorizing the entry. Isolation of space involves controlling live energy through a "lock-out" and "tag-out" procedure; removing of flammable vapors to deprive potential fire through purging and displacement of oxygen to deprive a potential fire through the process of inerting.

3.4.2 CONFINED SPACE MONITORING

Monitoring will be continuous during the time the space is occupied. Entry will not be permitted (or will be discontinued) if the oxygen level is less than 19.5% or greater than 23%; if the LEL reaches 10%; if the PID reads above 20 ppm; or if toxic levels reach the Threshold Limit Value (TLV).

Organic, toxic, or combustible vapors may be trapped in a confined space resulting in exposure to any person entering the space. Anoxic conditions (a lack of oxygen) may also occur as oxygen is displaced or consumed. Prior to and during work in a confined space, the space must be monitored for the hazards described previously. Specifically, monitoring must determine:

- oxygen level
- combustible vapors (LEL)
- toxic vapors or dusts

3.4.3 ATTENDANT DUTIES

Prior to entry, at least one attendant will be designated for each person entering a confined space. These attendants will remain in constant visual contact with the entrants, looking for signs of exposure. They will have no other assigned duties except for environmental monitoring of the space. In no instance are they permitted to enter the space or leave their post.

3.4.4 NON-ENTRY RESCUE

Employees will not be permitted to enter confined spaces without appropriate rescue equipment. The entrant must don a retrieval harness to which a tether will be attached. As appropriate, the tether will be tied to a fixed object on the surface, or to a tripod. In the event that an entrant shows signs of exposure, the attendant will sound the alarm and begin non-entry rescue. After the entrant is rescued from the confined space, as a precaution, they will be transported to the hospital for evaluation.

3.5 OCCUPATIONAL NOISE

Workers will be protected from excessive noise exposure by means of equipment maintenance, noise monitoring, and hearing conservation programs that comply with 29 CFR 1910.95. Hearing protection will be required if the sound level equals or exceeds 85 decibels as a time weighted average on the A-weighted scale or if the sound level exceeds 140 decibels regardless of the duration of exposure. Sound level will be measured with a sound level meter during site activities. The decibel level will be measured using a slow response setting on the A-weighted scale. If required, hearing protection will be worn during work tasks involving heavy equipment, internal combustion engines, drilling rigs, or other sources of elevated noise levels.

3.6 THERMAL STRESS

3.6.1 HEAT STRESS

During warmer seasons, work may need to be conducted under conditions of excessive

heat. At these times, work schedules may be adjusted to cooler times of day and to allow workers time for rest and intake of fluids.

Heat stress can occur even in moderate temperatures and may result in any or all of the following:

1. Heat Rash: A result of continuous exposure to heat, humid air, stagnant air, or chafing clothes. Heat rash is uncomfortable and decreases the ability of the body to tolerate heat.
2. Heat Cramps: A result of the inadequate replacement of body electrolytes lost through perspiration. Signs of heat cramps include severe spasms and pain in the extremities and abdomen.
3. Heat Exhaustion: A result of increased stress on vital organs as they attempt to meet the body's cooling demands. Signs include shallow breathing; pale, cool and moist skin; profuse sweating; and dizziness.
4. Heat Stroke: A result of an overworked cooling system. Heat stroke is the most serious form of heat stress. Body surfaces must be cooled and medical attention must be obtained immediately to prevent severe injury or death. Signs include red, hot dry skin; absence of perspiration; nausea; dizziness and confusion; strong, rapid pulse; and coma.

Occurrence of heat stress depends on such factors as environmental conditions, clothing, workload, an on-site worker's physical condition and characteristics, and the type of PPE required for the work task. Some types of PPE are heavy, increase the body's expenditure of energy, and reduce the efficiency of the body's normal heat exchange mechanisms.

Heat stress may be of particular concern when the wet-bulb air temperature exceeds 70 °F. Depending on the degree and nature of possible heat stress to be encountered on site, the HSO will choose from the following heat stress control actions:

- Ensure that all rest periods are taken in a shaded rest area, if possible.
- Regulate rest periods, and ensure that workers will not be assigned other tasks during rest periods.
- Notify all workers of health hazards and the importance of adequate rest,

acclimatization, and proper diet; teach workers to recognize heat stress and to conduct first aid to prevent heat stress.

The following chart based on wet bulb temperature, contains general guidelines that can be used to pace hot-weather field work:

TABLE 3.6.1

HOT WEATHER WORK

Wet Bulb Temperature

	Degrees Fahrenheit (°F)		
Work-Rest Regimen	**Light Work**	**Moderate Work**	**Heavy Work**
Continuous Work	86	80	77
75 % Work – 25 % Rest, each hour	87	82	78
50 % Work – 50 % Rest, each hour	89	85	82
25 % Work – 75 % Rest, each hour	90	88	86

Source: Adapted from ACGIH, 1994

3.6.2 COLD STRESS

Cold stress may be of particular concern when a wind chill-adjusted temperature of 40 °F or less is expected. The following guidelines describe different forms of cold stress, conditions under which cold stress may occur, and preventive measures:

Personnel working outdoors in temperatures at or below freezing (or even higher temperatures) may be frostbitten. Working in extreme cold even for a short time may cause severe injury to the surface of the body or may result in profound generalized cooling, causing hypothermia and possibly death. Areas of the body that have a high surface area-to-volume ratio, such as ears, fingers, and toes, are most susceptible to frostbite. Local injury from cold is included in the generic term "frostbite." Frostbite symptoms can be categorized according to the following degrees of severity:

- Superficial frostbite causes the skin to have a waxy appearance and to be firm to the touch while the tissue underneath is resilient.
- Deep frostbite causes tissues to be cold, pale, and solid. This degree of frostbite is extremely serious.
- Systemic hypothermia manifests itself in five stages of symptoms:

    1) shivering;
    2) apathy, listlessness, sleepiness, and sometimes rapid cooling of the body to less than 95 °F;
    3) unconsciousness, glassy eyes, and slow respiration and pulse;
    4) freezing of the extremities; and
    5) death.

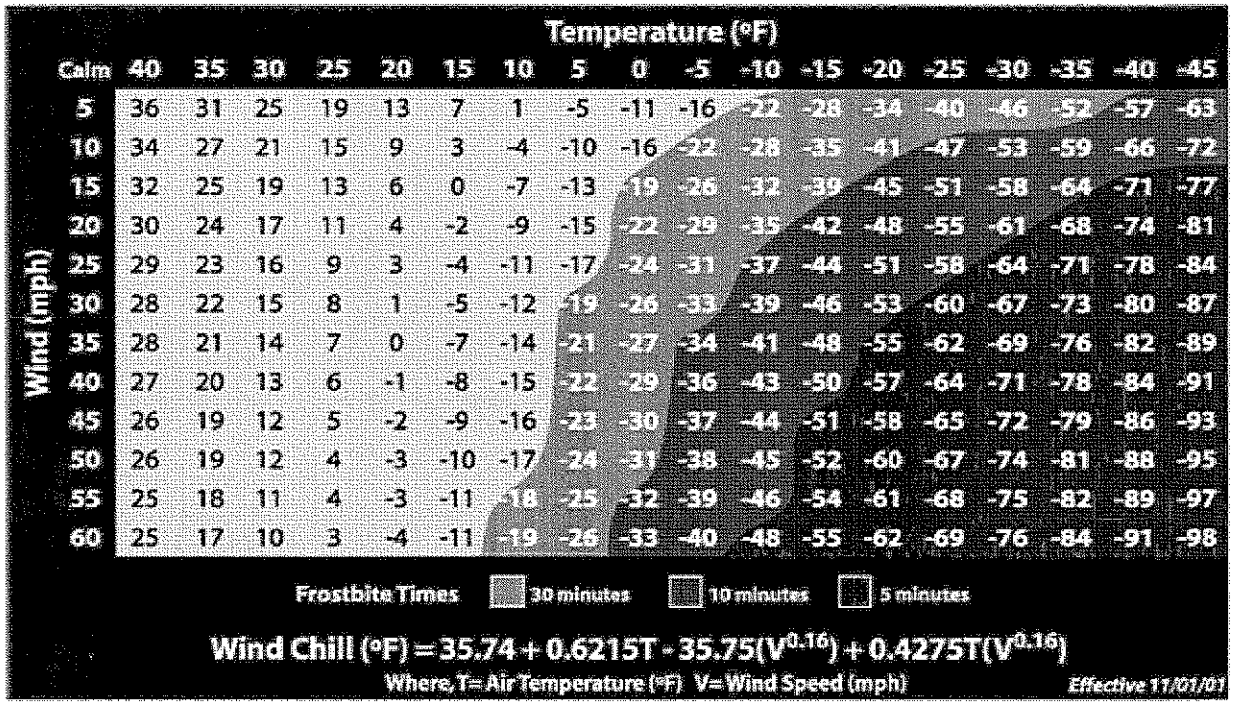
- Trench foot or immersion foot occurs when feet are kept cold and wet for an extended period of time. Feet become pale, cold, and possibly without pulse. During recovery, feet become red, hot, and swollen from excessive blood flow.

Ambient temperatures and wind velocity influence the development of a cold injury. Wind chill (the chilling effect of moving air) should be taken into consideration along with the air temperature when determining whether or not outdoor work is safe. Thermal socks, long cotton or thermal underwear, hard-hat liners, and other cold-weather gear can help prevent hypothermia. Blankets, warm drinks (other than caffeinated drinks), and warm rest areas are essential.

The following chart shows the wind chill factor for varying temperatures and wind speeds.

TABLE 3.6.2

COLD WEATHER WORK



Source: Adapted from National weather service, 2001

Note: *Wind Chill Temperature is only defined for temperatures at or below 50 degrees F and wind speeds above 3 mph. Bright sunshine may increase the wind chill temperature by 10 to 18 degrees F.*

4.0 TRAINING ASSIGNMENTS

All personnel conducting on-site activities must document training to the satisfaction of the HSO as follows:

- All personnel conducting site investigation shall have a minimum of three days of field experience under the direct supervision of a trained, experienced person.
- Employees conducting confined space activities must have completed training as required in 29 CFR 1910.146. Confined space attendants must be additionally familiar with non-entry rescue techniques. Training must be kept current with annual retraining.
- Employees involved in trenching operations must have completed training in trenching and shoring as per 29 CFR 1926.650. Training must be kept current with annual retraining.

Before on-site activities begin, a briefing will be presented by the HSO for all personnel who will participate in on-site activities. The following topics will be addressed during the briefing:

- Name of the HSO and the designated alternate
- Site history
- Hazardous chemicals that may be encountered during on-site activities
- Physical hazards that may be encountered on site
- Training requirements
- Levels of protection to be employed for work tasks
- Work tasks
- Environmental surveillance equipment in use
- Action levels and identification of situations requiring an upgrade or downgrade in levels of protection
- Site control measures, including site control zones, communications, and SWPs
- Emergency communication signals and codes
- Accident emergency procedures including:
    - Fire and explosion emergency procedures
    - Emergency telephone numbers
    - Emergency routes

Any other health and safety-related topics that may arise before on-site activities begin will also be discussed at the briefing.

Issues that arise during implementation of on-site activities will be addressed during "tailgate" safety meetings to be held daily, before the shift begins. Any changes in procedures or site-specific health and safety related matters will be addressed during these meetings.

5.0 PERSONNEL PROTECTIVE EQUIPMENT

PPE will be worn to protect field personnel from known or suspected physical hazards, and air and soil borne contamination. The levels of personal protection to be used for work tasks have been selected based on known or anticipated physical hazards, and concentrations of contaminants that may be encountered on site, and their chemical properties, toxicity, exposure routes, and contaminant matrices. The following sections describe levels of protection; protective equipment and clothing; limitations of protective clothing; the duration of work tasks; and respirator selection, use, and maintenance. Because minimal hazards are anticipated, all activities will initially be performed with a modified "Level D" protection.

5.1 LEVELS OF PROTECTION

Personnel will wear protective equipment when site activities involve known or suspected atmospheric contamination; when vapors, gases, or particulates may be generated by site activities; or when direct contact with skin-affecting substances may occur.

Levels of protection and necessary components for each are classified under four categories according to the degrees of protection afforded:

- Level D: This level of PPE is worn as a work uniform, not in any area with respiratory or skin hazards. This level provides minimal protection against chemical hazards.
- Level C: This level of PPE will not be used on this project unless warranted by site conditions.
- Levels B and A involve protective suits and supplied air and will not be used on this site.

5.2 PROTECTIVE EQUIPMENT AND CLOTHING

The following general levels of protection and the associated PPE ensembles have been selected for use by field personnel during field activities. The PPE used for a specific job will be selected for its protection from the anticipated contaminants. Because the overall anticipated hazard level is low, initial field work will be performed using "Level D" protection. Based upon the collection of additional soil samples and subsequent testing, there may be a need to upgrade the level of protection. If the site conditions or the results of air monitoring performed during on-site activities warrant "Level C" protection, all field personnel will withdraw from the site, immediately notify the HSO, and wait for further instructions. A description of equipment and clothing required for "Level D" protection is provided below.

Protective clothing shall be furnished for on-site personnel consisting of:

Modified Level D Equipment:

(* refers to optional equipment, if applicable)

Work clothing as dictated by weather
Pants and shirt
Gloves*
Hardhat
Safety glasses*
Safety shoes or boots; chemical-resistant, steel toe and shank
Outer, disposable, chemical resistant boots*
Face shield*

Upgrade as necessary to Level C when air monitoring Action Levels are exceeded.

Level C Equipment:

(* refers to optional equipment, if applicable)

Full-face or half-mask air purifying, canister-equipped respirator (NIOSH approved)
Hooded chemical-resistant clothing
Coveralls*
Gloves, inner, chemical-resistant

Gloves, outer, chemical-resistant
Safety boots; chemical-resistant, steel toe and shank
Disposable outer, chemical-resistant boot covers*
Hardhat
Escape air mask*
Face shield*
2 way radios (worn under outside protective clothing)*

All prescription eyeglasses in use on the Site shall be safety glasses. Prescription lens inserts shall be provided for full face respirators.

Footwear used on-site shall be steel-toed, steel shank safety shoes or boots, with chemical resistant soles.

All on-site personnel shall wear a hardhat when engaging in construction or excavation activities.

All personnel protective equipment worn on-site shall be decontaminated or properly disposed of at the end of the work day. The HSM is responsible for ensuring all reusable personnel protective equipment is decontaminated and sanitized before being reissued.

It is the responsibility of a contractor to provide respirators for their employees. Respirators shall be individually assigned and not interchanged between workers.

Cartridges, canisters and filters shall be changed daily or upon breakthrough, whichever occurs first. A procedure for assuring periodic cleaning, maintenance and change-out of filters shall be provided by the Contractor.

Modified Level D shall be the minimum level of protection set for all primary operations performed at the Site, unless an upgrade is required in accordance with the provisions set forth in the Air Monitoring program.

6.0 ENVIRONMENTAL MONITORING

Air monitoring will be periodically performed to protect field personnel and the public against exposure to airborne hazardous substances and to determine appropriate levels of PPE for work tasks. The following sections discuss initial air monitoring, daily air monitoring, monitoring parameters, use and maintenance of survey equipment, heat stress monitoring, and cold stress monitoring.

6.1 INITIAL MONITORING

Initial monitoring of the work area will be performed prior to site work. This testing will determine background levels, and determine if any immediate hazards exist. Monitoring will be performed using real-time field survey instrumentation, including a PID, an oxygen level meter, and an LEL meter.

6.2 DAILY MONITORING

Air monitoring will be performed during all site activities. This type of monitoring will be performed as a minimum requirement when the following situations arise:

- Daily at all locations where work will occur.
- At all active excavation points.
- When work begins on a different portion of the site.
- When contaminants other than those previously identified are encountered.
- When a different type of operation is initiated.
- When workers experience physical difficulties.

Required survey instrumentation, sampling procedures, and monitoring procedures are specified below. Sampling methods will be subject to periodic review by the HSO.

6.3 USE AND MAINTENANCE OF SURVEY EQUIPMENT

All personnel using field survey equipment will be familiar with its operation and limitations. Maintenance and calibration will be performed in accordance with manufacturer guidelines by a designated individual familiar with the devices. Repairs, maintenance, and routine calibration of these devices will be recorded in an equipment maintenance logbook that will be signed by the service technician. The equipment maintenance logbook for each instrument will be kept in that instrument's case.

The Health and Safety Officer will be responsible for ensuring that survey equipment is kept clean, fully charged, and ready for use.

7.0 COMMUNITY AIR MONITORING PLAN

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

Due to the nature of known contaminants at the site, real-time air monitoring for volatile organic compounds (VOC's) and particulates levels at the perimeter of the exclusion zone or work area will be necessary.

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

Periodic monitoring for VOC's will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from monitoring wells. "Periodic" monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well bailing/purging, and taking a reading prior to leaving

a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

VOC Monitoring, Response Levels and Actions

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

- If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.
- If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or

residential/commercial structure, whichever is less – but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

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

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

Particulate Monitoring, Response Levels and Actions

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

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

suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150/mcg/m^3 of the upwind level and in preventing visible dust migration.

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

8.0 SITE CONTROL

The site is not available to the public. No special site control measures need to be implemented beyond the existing fence. All visitors will have had to obtain an escort before entering the property.

8.1 SITE CONTROL MEASURES

To protect members of the general public as well as workers, access to the site will be restricted to authorized personnel. Any visitors to the area must present proper identification and be authorized to be on site by the HSO. Visitors must comply with all provisions of this HASP. The HSO will identify work areas that visitors or personnel are authorized to enter and will enforce site control measures.

8.2 COMMUNICATIONS

The following hand signals will be employed by site personnel in emergency situations or when verbal communication is difficult.

TABLE 7.2

HAND SIGNALS

SIGNAL	DEFINITION
Hands clutching throat	Out of air or cannot breathe
Hands on top of head	Need assistance
Thumbs up	Okay, I am all right, or I understand
Thumbs down	No or negative
Arms waving upright	Send backup support
Gripping partner's wrist	Exit area immediately

8.3 SAFE WORK PRACTICES

SWP requirements for site activities include the following:

- Basic equipment includes but is not limited to the following: first aid kit, portable eyewash, and ABC extinguishers.
- All personnel will be required to wash their hands and faces before eating, drinking, smoking, or applying cosmetics.
- Containers will be moved only with the proper equipment and will be secured to prevent dropping or loss of control during transport.
- Smoking, matches and lighters will not be permitted in confined spaces or within 75 feet of any flammable or explosive materials.
- Site personnel will not work alone, and will observe each other for signs of toxic exposure and heat or cold stress. Indications of adverse effects include but are not limited to the following:

    - Changes in complexion and skin discoloration
    - Changes in coordination
    - Changes in demeanor
    - Excessive salivation and papillary response
    - Changes in speech patterns

Site personnel will inform each other of non-visual effects of illness, such as the following:

- Headache
- Dizziness
- Nausea
- Blurred vision
- Cramps
- Irritation of eyes, skin, or the respiratory tract

8.3.1 USE OF HEAVY EQUIPMENT

Truck-mounted heavy equipment and field trucks are among the types of equipment that may be used during site investigation. Heavy equipment can present a substantial hazard to workers. General requirements for motor vehicles and material-handling equipment are provided in the Construction Industry Standards, 29 CFR 1926, Subpart O. Any or all of

the following precautions will be followed when heavy equipment is in use:

- Heavy equipment will be inspected by the operator before each work shift. The Health and Safety Officer will ensure compliance with this precaution.
- Chains, hoists, slings and wire rope will be inspected daily for signs of wear, kinking, corrosion, or other damage.
- Equipment operators will be instructed to report any abnormalities, such as equipment failure, oozing liquids and unusual odors to their supervisors or the HSO.
- Only qualified and licensed personnel will operate heavy equipment.
- Hard hats and steel-toed boots will be worn at all times around heavy equipment.
- Workers will not assume that the equipment operator is keeping track of their exact location. Workers will never walk directly behind or to the side of heavy equipment without the operator's knowledge.
- Workers will maintain visual contact with equipment operators at all times.
- When an operator must maneuver equipment in tight quarters, the presence of a second person will be required to ensure adequate clearance. If much backing is required, two ground guides will be used: one in the direction the equipment is moving, and the other in the operator's normal field of vision to relay signals.
- Hand-signal communications will be established when verbal communication is difficult. One person per work team will be designated to give hand signals to equipment operators.
- Equipment with an obstructed rear view must have an audible alarm that sounds when the equipment is moving in reverse (unless a spotter guides the operator).
- Parking brakes will be kept engaged when equipment is not in use.
- Blades, buckets, dump bodies, and other hydraulic systems will be kept fully lowered when equipment is not in use.
- Equipment cabs will be kept free of all nonessential and loose items.
- Seat belts must be present in all vehicles having rollover protective structures (ROPS).
- With certain exceptions, all material-handling equipment will be provided with ROPS.
- Material-handling equipment that lacks a ROPS will not be operated on a grade unless the grade can safely accommodate the equipment involved.
- Only chains, hoists, straps, and other equipment that safely aids transport of heavy materials will be used.
- Tools will be stored in clean, secure areas to prevent damage, loss, or theft.
- Workers will not use equipment that they are not familiar with. This precaution applies to heavy as well as light equipment.
- Loose-fitting clothing and loose, long hair will be prohibited around moving machinery.
- Workers will make sure that no underground or overhead power lines, sewer lines, gas lines, or telephone lines present a hazard in the work area.
- All personnel who are not essential to work activities will be kept out of the work area.
- Workers will be aware of their footing at all times.
- Workers will remain alert at all times.

- Any equipment that is defective will be immediately taken out of service.

Access within an "established work zone" radius of any on-site operation is prohibited to all but Galli Engineering, P.C. field personnel and approved subcontractors. Adequate safety instruction signs shall be placed in areas where admittance is restricted due to a hazardous environment.

9.0 DECONTAMINATION PROCEDURES

All operations conducted at this site should be considered as having the potential to contaminate personnel and equipment. To prevent the transfer of any contamination to vehicles, administrative areas and personnel, the following procedures must be followed.

All areas with excavations or where investigation work is being conducted will be considered contaminated until proven otherwise. These areas will be designated with barrier tape, cones, and barricades as appropriate, and will be considered the "hot zone." Decontamination will occur in an adjacent "support zone" with suitable protection of uncontaminated areas. Items taken into the "hot zone" will be thoroughly decontaminated or disposed of as contaminated waste.

9.1 EQUIPMENT DECONTAMINATION

Heavy equipment such as backhoes will be rinsed clean with water to remove visible soil.

10.0 CONTINGENCY PLANNING

It is possible that new work could reveal the presence of additional contamination beyond that already delineated. In such a case, the person discovering the contamination (probably by smell or by observing stained soil) shall immediately notify the Health and Safety Officer and Galli Engineering to determine if new or additional remedial actions may be necessary. Do not perform any further work in an area outside the defined work area. The site must not be re-entered until back-up help, monitoring equipment and/or personal protective equipment is on hand and re-entry is authorized by appropriate project personnel.

10.1 EMERGENCY RESPONSE

The HSO will be notified of any on-site emergencies and will be responsible for ensuring that appropriate emergency procedures are followed. First aid equipment is located on-site. In the event of an accident or emergency situation, immediate action must be taken by the first person to recognize the event. That person, or his designee, must notify the Health and Safety Officer about the situation immediately after emergency procedures are implemented.

10.2 PERSONAL INJURY

If an injury occurs, the HSO will be notified immediately. Appropriate first aid will be administered and, if necessary, the injured individual will be transported to the designated medical facility. If the injury is life threatening or involves several persons, the Health and Safety Officer will notify the hospital via telephone, giving available details of the accident and injuries sustained. If the injury does not affect the safety or performance of site personnel, operations may continue. The individual contractor on his OSHA 200 Log of Occupational Injuries and Illnesses and on the Accident Investigation Form must document the injury.

ATTACHMENT A

HEALTH AND SAFETY PLAN AMENDMENT SHEET

This section will be used to provide additional or updated information as site conditions or approved conditions warrant.

HEALTH AND SAFETY PLAN AMENDMENT SHEET

Project Name:

Project Number:

Location:

Changes in field activities or hazards:

Proposed Amendment:

Proposed by: _____ Date

Approved by: _____ Date

Project Manager: _____ Date

Declined by: _____ Date

Amendment Number:

Amendment Effective Date:

ATTACHMENT B

ACCIDENT INVESTIGATION FORM

ACCIDENT INVESTIGATION FORM

TO: Project Manager DATE: _____

FROM: _____ CONTRACTOR: _____

PROJECT: _____ ACTIVITY: _____

NAME: _____ EMPLOYEE: _____

Location of incident: _____

Brief description of accident: _____

_____

Cause of incident: _____

_____

_____

Medical treatment received: _____

_____

_____

Physician's recommendations: _____

_____

_____

_____

Date Returned to work: _____

Action taken:

ATTACHMENT C

Monitoring

DAILY LOGS

DAILY LOG

Date: _____ Prepared By: _____

Environmental Sampling Results:

PARAMETER	TIME	SAMPLE LOCATION	RESULT

Signed: _____

ATTACHMENT D

CONFINED SPACE ENTRY PERMIT

Confined Space Entry Permit			
Location and description of confined space: Reason for entry: Permit issued to: Supervisor's Name: Attendant's name: Permit issuer's name:			
% oxygen:	% lower explosive limit	ppm CO:	H2S:
Requirements:			
Emergency Rescuer	yes	no	
Continuous Gas Monitor	yes	no	
Barrier for ground openings	yes	no	
Warning signs	yes	no	
Safety Harness with life line	yes	no	
Tripod/Hoist/Pulley	yes	no	
Access (ladders/other)	yes	no	
Eye protection	yes	no	
Respiratory protection	yes	no	
Continuous Ventilation	yes	no	
Body Protection	yes	no	
Hand Protection	yes	no	
Foot Protection	yes	no	
Weather Protection	yes	no	
Ground Fault Circuit	yes	no	
Interrupters	yes	no	
Lockout of Hazardous Energy	yes	no	

ATTACHMENT E

VAPOR MONITORING FORM

VAPOR MONITORING FORM

Project Name:

Project Number:

Contaminants:

Date	Time	Ionization Detector Reading		Explosimeter Reading		Radiation Monitor Reading Mr/hr	Location	Purpose	Initials
		FID	PID	%LEL	& O_2				

ATTACHMENT F

NOISE MONITORING FORM

FACILITY:

DATE: TIME:

SETTING	SOUND		
	ELAPSED TIME		
	1 MINUTE	2 MINUTES	3 MINUTES
	dBA	dBA	dBA
SPL			
MAX			
MIN			
LEQ			

SETTING	VIBRATION			
	ELAPSED TIME/DISPLACEMENT			
	1 MINUTE		2 MINUTES	
	dBA	DISP (in.)	dBA	DISP (in.)
SPL				
MAX				
MIN				
LEQ				