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SUMMARY REPORT

OF

SOIL REMEDIATION ACTIVITIES

Performed on the

"General Switch" Property

located at
20 Industrial Place
in the
City of Middletown
Orange County, New York

Volume 1 of 2

Submitted: September 23, 1999
Revised: June 2002
Revised: April 2004

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ESI File Number: LM97145.40R

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The undersigned has reviewed this Report and certifies to Laurwal Holding Corporation that the information provided in this document is accurate as of the date of issuance by this office.

Any and all questions or comments, including requests for additional information, should be submitted to the undersigned.

Paul H. Ciminello
President

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1.0 INTRODUCTION

1.1 Purpose

This Summary Report of Soil Remediation Activities (Report) summarizes all field work performed by Ecosystems Strategies, Inc. (ESI) on specified dates on the property known as the General Switch Site ("Site") located at the intersection of Highland Avenue and Industrial Place in the City of Middletown, Orange County, New York.

The work summarized in this Report was performed to address the presence of tetra-or perchloroethylene (PCE) on the Site. Field work objectives are identified in the Remedial Workplan for General Switch Site (Workplan) prepared by ESI, dated January 15, 1998 and later revised on June 5, 1998. Specific objectives are outlined in Section 2.1, below.

The purpose of this Report is to document all investigative and remedial activities performed on specified portions of the Site. This Report describes all soil excavation, field work methodology and soil sampling procedures; includes discussions of the resulting analytical data from collected soil samples; and provides conclusions and recommendations drawn from the field work and analytical data.

1.2 Limitations

This written analysis is a summary of field work activities conducted on specified portions of the property located at 20 Industrial Place in the City of Middletown, Orange County, New York and is not relevant to other portions of this property or any other property. It is a representation of those portions of the property analyzed as of the respective dates of field work. This Report cannot be held accountable for activities or events resulting in contamination after the dates of field work.

Services summarized in this Report were performed in accordance with generally accepted practices and protocols established by the New York State Department of Environmental Conservation (NYSDEC) and the United States Environmental Protection Agency (USEPA).

1.3 Site Location and Description

The subject property is an irregularly shaped, approximately 5-acre parcel known as the General Switch Site located on the southern side of Industrial Place. The portions of the property referenced, as the "Site" are located in the vicinity of the approximately 40,000-square foot General Switch building.

Two areas of concern have been identified on the Site. These two areas have been designated the northern "hot spot" and the southern "hot spot". The northern hot spot is located to the north of the existing building, proximal to a northern exit to the building. The southern hot spot is located to the south of the building in a parking area adjoining the westernmost truck freight loading dock. A Field Work Map indicating the location of these two areas and other relevant site features is provided in Appendix A of this Report. A map depicting the location of the subject property is provided in Appendix A of this Report.

1.3.1 Site Geology and Hydrogeology

A site-specific investigation of site hydrogeology and soil types was conducted by Jacobs and Shakti and reported in their Draft Partial Site Characterization Report (Characterization Report) dated March 29, 1993.

According to Jacobs and Shakti, two soil types of glacial till comprise subsurface soils. A layer of orange-brown glacial till is located near the top of the soil profile. Below the till is a layer of gray clay characterized by fractured shale fragments located over fractured shale bedrock. Jacobs and Shakti state that the till acts as a confining layer and that no true water table aquifer is present in the shallow till soils at the site. Established permeability ranges for these soils are from 1.3×10^{-7} cm/sec to 6.4×10^{-7} cm/sec. Falling head and constant head permeability tests were performed. Additionally, bedrock and shale studies were conducted.

1.3.2 Site Topography

Information on the subject property's topography was obtained from the review of the United States Geological Survey (USGS) Topographic Map of the Middletown, New York Quadrangle (dated 1969 and photorevised in 1976) and field observations made by this office. A copy of the USGS Topographic Map with the subject property indicated is included in Appendix A of this Report.

According to the above-referenced topographic map and observations made during the site inspection, the topography of the area in which the subject property is located has a gentle downward slope to the east. The topography of the subject property has surface elevations ranging from approximately 600 to 620 feet above mean sea level (msl).

According to observations made during field work activities, the topography of the subject property is sloped from northwest (Highland Avenue) to southwest (Industrial Place). On-site soils signify that fill was imported to level the property prior to construction of the on-site structure. The lowest property elevation is near the southern property edge adjacent to the north side of Industrial Street. A five to 15-foot elevation is apparent between the highest and lowest elevations on-site.

1.4 Previous Environmental Reports

This section is provided as context for the soil remedial activities described in this Report. Remedial activities were deemed necessary based upon information obtained from prior investigative work conducted by Jacobs Environmental, Inc. ("Jacobs") and Shakti Consultants, Inc. ("Shakti") (reported in March of 1993), Lawler, Matusky & Skelly Engineers, LLP ("Lawler") (reported in January of 1998), and United States Environmental Protection Agency (USEPA) documents, including a Consent Decree based on a Complaint dated December 11, 1987. Prior investigations indicated the presence of PCE in soil and groundwater as a result of discharges resulting from historical manufacturing processes.

Documents consulted during composition of the Workplan included but are not limited to the above-referenced Jacobs and Shakti Characterization Report, the Lawler Groundwater Remedial Design Work Plan, and the Consent Decree 87 Civ. 8789 (RJW) issued by the United States District Court for the Southern District of New York. A magnetometric survey of the property, although not available to this office, was conducted by Fred C. Hart Associates in 1984. Subsequently, in 1985 physical soil testing was conducted by Hart Associates.

According to a review of these reports, manufacturing activities at General Switch included the production of electrical switches, circuit breakers, and panel boards. The manufacturing process included the use of perchloroethylene (PCE).

In 1983, PCE and TCE were identified in groundwater samples collected from adjoining and surrounding properties. As the result of this release, an investigation was conducted which included a hydrogeologic investigation conducted by Jacobs and Shakti. Findings presented in the documents prepared by Jacobs and Shakti and reviewed by this office revealed the presence

of hazardous substances, including PCE and trace concentrations of tetrachloroethylene and trichloroethane, in on-site soils and groundwater. A review of documentation provided by the current property owner to this office indicated that groundwater samples collected from on-site and off-site wells were contaminated with PCE and TCE. Additionally, soil samples collected from two specific locations, designated the northern and southern hot spots, were contaminated with these contaminants.

After review of available documents and consultation with the property owner, an Environmental Remediation Workplan dated January 15, 1998 (subsequently revised on June 5,1998) was prepared by ESI. This Workplan was approved by the USEPA on July 14, 1998.

2.0 SUBSURFACE INVESTIGATION

2.1 Specified Objectives

ESI conducted remedial activities on specified days between September 21, 1998 and September 1, 1999. The work described for this Report was conducted on specific portions of the subject property for the following purposes:

- To excavate and remove off-site PCE-contaminated soil in accordance with stipulations in the Consent Decree and USEPA regulations;
- To document the post-excavation integrity of remaining on-site soils;
- To suggest, if appropriate, further investigative and/or remedial options regarding identified subsurface or surface contamination; and

This Report was prepared to document all field work activities and resulting analytical data and to provide conclusions and recommendations pertaining to the subsurface investigation.

Field work conducted to achieve these objectives included soil screening, stockpiling and removal of soils from the northern and southern hot spots located on the Site, installation of a passive venting system, and confirmatory sampling of remaining on-site soils.

2.2 Methodology

2.2.1 Site Preparation Services

Prior to the initiation of field work, a request for a complete utility markout of the subject property was submitted by ESI, as required by the New York State Department of Labor. Confirmation of underground utility locations was secured, and a field check of the utility markout was conducted prior to excavation and removal of soil. Hot spots and staging areas for stockpiling soils were clearly demarcated prior to the initiation of field work.

2.2.2 Field Work Methodology

General Remedial Strategy

The remediation of the two hot spots was conducted in the following general manner:

- Excavated soils exhibiting field indications of contamination as determined by screening with a photo-ionization detector (PID) (see below, Section 2.3.2) were stockpiled on plastic for laboratory analysis to determine the proper method of disposal;
- Field laboratory data and/or screening results were utilized to document the approximate concentrations of PCE in soils for the purpose of determining the lateral and vertical extent to which sufficient excavation had occurred for the removal of existing PCE-contaminated soil;
- Sampling and laboratory analysis for PCE of excavated soils for proposed on-site reuse in accordance with the sampling procedures detailed in the Workplan. Subgrade soils with documented PCE levels less than 12 parts per million (ppm) was considered documentation of sufficient soil removal and site integrity; and

- Soils that had been excavated and were proposed for on-site re-use were defined as soils with documented levels of PCE below 12 parts per million. These soils were stockpiled, and their eligibility for on-site re-use was determined; however, actual re-use of these soils did not occur as PCE levels in these soils exceeded 12 ppm in most cases.

Soil Excavation

Soil excavation was conducted on the Site by Luzon Environmental Services (Luzon) using a CAT E70 standard backhoe, a Komatsu PC220 LC with a maximum extension of 22 feet below surface grade, and a Case 9030B excavator. All excavation was conducted under the supervision of ESI personnel.

Soil Corings

Areas not accessible with equipment used for excavation, specifically the area beneath the foundation footing adjoining the northern hot spot, were sampled using a manual sampling spoon. Manual soil corings conducted on April 26 and 27, 1999 and September 1, 1999, were extended by ESI personnel using a hand-held, direct push sampling spoon equipped with a slide hammer. The sampling spoon was equipped with 1½ -inch outer diameter disposable acetate sleeves to prevent the cross-contamination of soil samples. Soil corings were extended in areas inaccessible with standard equipment utilized for soil excavation.

Field Logs

An assessment of subsurface soil characteristics, including soil type, the presence of foreign materials, field indications of contamination (e.g., unusual coloration patterns or odors), and instrument indications of contamination [i.e., PID readings] was made by ESI personnel during the soil excavation. ESI personnel maintained field logs documenting the physical characteristics of the encountered soil, PID readings, and any field indications of contamination for all encountered material. Relevant information from ESI logs for each area is summarized in Section 2.3, below.

Field Screening

Soils were screened using a PID calibrated to 100 ppm-ge isobutylene in air. A representative sample of soil was collected in a plastic receptacle and sealed. The PID probe was then inserted into the bag, and the resulting reading was recorded in the field log. One screening sample was collected per five cubic yards of soil.

Screening results were utilized in determining the extent of contamination present at the location. Samples not indicating evidence of contamination were potentially acceptable for re-use on-site.

Northern Hot Spot Excavation Procedure

Soils in the northern hot spot area were generally excavated in two-foot lifts. Prior data indicated contamination from the surface downward to a depth of approximately eight feet below surface grade (bsg). This information indicated that the first four feet of soils could be directly transported to the northern hot spot stockpiling location (see stockpiling procedure below). After the top four feet of contaminated soils were removed, removal continued on a cell by cell basis.

Cells were established in approximately 15- by 20-foot sections, beginning with the eastern portion of the hot spot. The first cell in the eastern portion was excavated to the appropriate depth, at which point another cell would begin. As the excavation progressed, each of the previous cells would remain open pending laboratory characterization of remaining soils (see confirmatory sampling procedure below).

Perforated piping (3" diameter) and a vent were installed at the northern hot spot and intended for use as a passive venting system. During excavation, the perforated piping was laid approximately four feet below surface grade with a solid pipe extending above the roofline. At installation, the pipe was capped pending possible connection to a blower for active remediation or as a possible passive vent. The system, however, was never activated, and the piping and vent were removed during the Phase II excavation of the area.

Areas of the excavation designated to remain open during non-work hours were properly covered with wood framing and six-millimeter plastic to prevent stormwater intrusion. Orange plastic safety fence was secured around the perimeter of these excavation areas.

Southern Hot Spot Excavation Procedure

Soils in the southern hot spot area were excavated in two- to four-foot lifts. PCE contamination at high levels was identified in deeper soils. The depth at which contamination was encountered indicated that soils above the ten-foot depth were potentially suitable for re-use on-site. Pending laboratory characterization, these soils were separately stockpiled on-site. Soils below the ten-foot depth were placed in a designated stockpile for off-site disposal. Field screening was conducted on all soils, as indicated above.

Areas of the excavation that were designated to remain open during non-work hours were properly covered with wood framing and six-millimeter plastic to prevent stormwater intrusion. Orange plastic safety fence was secured around the perimeter of these excavation areas.

Stockpiling

Based on previous laboratory data indicating PCE contamination, excavated soils were stockpiled on double-layered six-millimeter plastic sheeting with two-foot overlap and ten feet of plastic extended beyond the outer edge of the stockpiling area. Prior to laying out plastic sheeting, the stockpiled areas were properly graded and sloped to prevent contaminant migration attributable to run-off. After daily activity, stockpiled areas were covered with one layer of 6-mil plastic sheeting.

Four distinct stockpiling areas were established on-site. The locations of the stockpiled areas are depicted on the Field Work Map located in Appendix A of this Report. Two soil stockpiling areas were established to accept excavated contaminated soil from the northern hot spot. Stockpiling area SP-N1, located approximately 70 feet north of the on-site building, contained soils from the northern hot spot known to be contaminated with levels of PCE warranting off-site disposal. This area was prepared to accept a maximum of 600 cubic yards of excavated soil. Soils potentially re-usable on-site were stockpiled in area SP-N2. This area was located approximately 60 feet west of stockpiled soil area SP-N1.

Two stockpiling areas were established to accept contaminated soils from the southern hot spot. Stockpiling area SP-S1 was designated for soils from the southern hot spot contaminated with levels of PCE warranting off-site disposal. This area was prepared to accept approximately 300 cubic yards of soil and was located approximately 80 feet south of the on-site building. Area SP-S2 was designated for soils from the southern hot spot potentially suitable for re-use on-site and was located approximately 30 feet east of soil pile SP-S1.

Contaminated soil excavated during Site remedial activities conducted between September 21, 1998 and October 30, 1998 was removed from the Site in December 1998. Additional PCE contaminated soil was excavated on September 1, 1999, and removed from the Site in December 1991.

Backfilling and Compacting

Each of the excavations was backfilled to surface grade with clean fill delivered to the Site by Dick's Concrete Company and placed in the excavation by Luzon using a CAT front loader. Approximately 264 tons of clean fill material were delivered to the Site for re-grading of the northern and southern hot spots.

On-site soils excavated from the southern hot spot were returned to the southern hot spot excavation on September 29, 1998 in consideration for modifying the remedial approach to include in-situ remedial strategies for the soil. Prior to re-interment, the vertical and lateral extent of the soil was defined with a demarcation layer (i.e., orange snow fencing). However, as per EPA directives, these soils were re-excavated on October 21, 1998 in conjunction with the excavation of additional soils. All excavated soils were removed from the site, as discussed in Section 2.3.3, below.

2.2.3 Sampling Methodology

Sample Collection Procedures

All soil samples were collected in a manner consistent with NYSDEC sample collection protocols. Decontaminated stainless steel trowels and dedicated gloves were used at each sample location to place the material into jars pre-cleaned at the laboratory. Prior to and after the collection of each material sample, the sample collection instrument was decontaminated to avoid cross-contamination between samples. Decontamination procedures were consistent with established USEPA and NYSDEC protocols, as outlined below:

- soapy water rinse
- de-ionized water rinse
- methanol rinse
- nitric acid rinse (10% solution)
- air drying
- de-ionized water rinse

After sample collection, the sample containers were placed in a cooler prior to transport to the laboratory. The soil samples were transported via courier to one of three New York-certified laboratories – Severn Trent Laboratories, (Certification Number 10142), Hampton-Clarke, Inc. Veritech Laboratories (Certification Number 11408), or York Analytical Laboratories (Certification Number 10854) -- for chemical analyses. Appropriate chain of custody procedures were followed.

Notations were made regarding the sampled materials' physical characteristics (e.g., color, odor, viscosity). At each sample location and for each sample type (soil, liquid, and sludge), a sufficient volume of material was collected for the known required analyses, and for any potential additional analyses.

Confirmatory Sampling

The total number of samples collected was determined based upon the soils proposed to remain on-site and the extent of the excavation area. A minimum of one base sample was collected for every 250 square feet of excavation, and one wall sample was collected for every 25 linear feet of excavation wall. Samples were analyzed for the presence or absence of volatile organic compounds (VOCs) by USEPA Method 8010.

Stockpiled Soil Sampling

Composite samples were taken from stockpiled soils designated for off-site disposition. The samples were analyzed for characterization and proper disposal. Two samples were submitted per contaminated soil pile. Each sample was analyzed for Total and Toxicity Characteristics Leachate Procedure (TCLP) for VOCs by USEPA method 8010 as required by the soil disposal facilities.

All stockpiled soils were removed from the Site; no stockpiled soils were re-used on the Site. Initially, consideration had been given to re-using soils with PCE concentrations below the action level (12 ppm), but this plan was abandoned as being to costly to segregate the soil.

Stockpiled soil samples were analyzed to determine proper characterization for off-site disposal. Stockpiled soil samples are notated with an "SP" sample prefix in the laboratory data. Further details pertaining to the disposition of stockpiled soils are located in Section 2.3.3.

2.3 Field Work Observations

Soil encountered on the site during excavation activities generally consisted of an upper one-foot layer of organic material and silt. Underlying soils consisted of medium brown, medium-grained sand with traces of silt and sand with varying degrees of grey staining and PCE odor. Fractured shale was encountered at 10 to 12 feet bsg in portions of the northern excavation. A topographic map of the site location and surrounding area is included in Appendix A of this Report. Specific sample locations and excavation maps by date of field work conducted are also located in Appendix A.

2.3.1 Northern Hot Spot

The following tables and observations document site conditions and chronicle field work activities conducted at the northern hot spot of the Site. Summary tables indicating post excavation sampling data for Phase I and Phase II of excavation are located in Appendix B of this Report.

As stated above, remedial activity at the northern "hot spot" was conducted in two phases (Phase I and Phase II) because laboratory data generated at the close of Phase I documented the continued presence of PCE at levels exceeding the 12-ppm action level. These exceedances were concentrated on the southern wall of the excavation area, warranting re-excavation of the cells so that soils under the footing of the building could be removed.

This section of the Report describes the field work conducted during each phase at the northern and southern "hot spots".

2.3.1.1 Phase I Excavation

September 21, 1998

On September 21, 1998, excavation within the northern hot spot was begun. The excavation was extended to a total depth of 7.5 to 8 feet. Samples were collected from the base and walls of the excavation and submitted for analysis. Groundwater was observed pooling in portion of the excavation. No sheen was observed on this groundwater.

Table 1: Observations - Phase I Northern Excavation - September 21, 1998

LOCATION	DEPTH	SOIL CHARACTERISTICS	PID (ppm/cge)	FIELD OBSERVATIONS
Below concrete step in the vicinity of cell #1	Surface - 2' bsg	Not applicable	0	No evidence of contamination
Cell #1	Surface - 2' bsg	Not applicable	200 - 600	Slight PCE odor
	2 - 3'	Dark gray, wet clay	200 - 800 soils 1,000 base	Strong PCE odor and staining
	3 - 3.5'	Med. to dark brown with areas of staining	200 - 800	Strong PCE odor and staining
	4'	Soil strained gray, moist	650	
	5.5 - 6'	Medium to dark brown with staining	600	Strong PCE odor and staining
				PCE odor and staining

September 23, 1998

On September 23, 1998, excavation was continued at the northern hot spot. Any standing water that had collected in the pit as a result of weather conditions was managed within the excavation area and no waste water was generated. Initial PID readings were taken in the excavation. Results are indicated below. Excavation work then commenced extending the excavation outward from its previous location.

At the conclusion of excavation activities, soil samples were collected from the base of the excavation. Two samples of contaminated stockpiled soil containing metallic shavings from the southern wall of Cell #1 were also collected.

Confirmatory samples from the base of the excavation exceeded the Site-specific cleanup level of 12 ppm. The presence of groundwater precluded additional excavation.

Table 2: Observations - Phase I - Northern Excavation - September 23, 1998

LOCATION	DEPTH	SOIL CHARACTERISTICS	PID (ppm/cge)	FIELD OBSERVATIONS
CELL #1				
Existing base	8'	Same	600-700	PCE odor
Excavation	8 - 11'	Same	300-400	PCE odor
New base	11'	Same	20 - 450 (most ≈100)	Slight PCE odor
Stockpiled soil from southern wall of excavation	Stockpiled soil	Metallic shavings	0	No odor

September 24, 1998

On September 24, 1998, excavation of Cell #1 was completed, excavation of Cell #2 was completed, and excavation of Cell #3 was begun. Excavation of Cell #1 revealed the presence of a four-inch outfall pipe (clay drain piping) extending from under the former area of the concrete step from the corner of the building westward approximately 5 to 6 feet. The clay piping was removed from the excavated area. At this location (southeast corner), shavings and contaminated soil exhibiting the highest readings in the excavation (1,000 + ppm) were encountered.

Further excavation of soil along the eastern wall of Cell #1 revealed the presence of contaminated soil that appeared to be seeping from the adjoining eastern portion of the structure. This area was in the vicinity of the employee break room, electrical utility room and compressor room. All accessible contaminated soil was removed and stockpiled.

Table 3: Observations - Phase I - Northern Excavation - September 24, 1998

LOCATION	DEPTH	SOIL CHARACTERISTICS	PID (ppm/cge)	FIELD OBSERVATIONS
CELL #1				
South and east walls	Surface - 4' bsg	Same	600	Strong PCE odor
Northeastern corner	5'	Stained gray, very damp	50 - 100	Strong PCE odor
Southeastern corner	5	Stained gray, very damp	1,000 +	Strong PCE odor
CELL #2				
West	2'	layer (2-3" wide) of black moist silt soil containing metal shavings extending west	400 - 600	PCE odor
North wall, approx. 5-7 feet from the fence	0 - 8'	Slight PCE odor	<40	Minimal odor
Base	9'	Moist soil	400 - 600	PCE odor
South wall	8' - footings	same	300 - 500	PCE odor
CELL #3				
Central and southern walls	5 - 6'	Gray-colored damp soil	300 - 500	PCE odor
Northern wall	5 - 6'	No evidence of PCE	7 - 25	No odor
Western wall	5 - 10'	Grayish damp soil	200	Slight odor

September 25, 1998

On September 25, 1998 excavation of Cell #3 was completed.

The northern and western walls of Cell #3 were field-screened with the PID. PID readings taken from soils present on the northern wall were between 0 and 10 ppm and the western wall registered readings between 0 and 35 ppm. The cell was backfilled to four feet from grade,

compacted, and refilled in two-foot intervals. The total excavation area measured 11 feet wide, 45 feet long and 9 -11.5 feet deep at maximum depth.

2.3.1.2 Phase II Excavation

Laboratory data obtained from samples collected during the excavation activities conducted on September 24 and 25, 1998 (see Table 1, Appendix B) documented the continued presence of PCE above the stipulated Site cleanup level of 12 ppm. Additional excavation activity (Phase II-northern hot spot) to remove PCE-contaminated soils from under the on-site structure was scheduled for the spring of 1999.

April 26 and 27, 1999

On April 26, 1999, the Site was prepared for additional field work to document concentrations of contamination remaining on-site beneath the foundation of the on-site structure. Excavation began in Cell #4 at the 60-foot location and was extended 11.5 feet adjoining the northern wall of the on-site structure. Soil encountered at and below the foundation footing consisted of medium brown soil (very compacted) with boulders up to 2.5' diameter. Soil was very wet with no odors detected.

Soil coring operations were performed using a hand-held, direct push sampling spoon equipped with a slide hammer. Sampling was conducted to collect soil samples from beneath the footings at the six- and nine-foot depths wherever possible. Hand coring procedures were hampered by the presence of boulders in soils. Two samples were obtained, one from each the five- and nine-foot depths, respectively.

Similar methodology was undertaken in Cell #3. Groundwater was encountered at two feet bsg. Fill material was water saturated, presumably from precipitation. Soils were excavated and samples collected where refusal was not met. PCE odor was observed in both samples collected from Cell #3. PID readings ranged from 0 to 60 ppm. Soils in Cell #3 consisted of medium brown sand and silt with intermixed medium-grain sand. Soils appeared to be tightly packed. Two samples were obtained, one from the five-foot depth and one from the nine-foot depth.

Cell #5 was extended approximately 25 feet west of the 60-foot location to determine the presence or absence of contamination in this location. Soil encountered was medium brown sand with traces of brown silt intermixed with cobbles up to 4" in diameter. Groundwater was encountered at approximately 10 - 12 feet bsg. A sample of material was obtained from the nine-foot depth.

September 1, 1999

On September 1, 1999, additional excavation was undertaken (in accordance with the Revised Workplan) to remove PCE-contaminated soils from the vicinity of the foundation footings in the northern hot spot area. This work had been delayed to permit seasonally high water to drain so that soils under the footings of the building would be dry.

Additional soils were removed from approximately two feet beneath the structural footings in Cells 2 and 3. Additional soil removal from the eastern portion of Cell 1 was not practical due to concerns about undermining the building. Approximately 10-15 cubic yards of soil were excavated and stockpiled on-site pending the receipt of analytical data and classification of soils for off-site disposal. Stockpile samples and confirmatory samples were obtained and submitted for laboratory analysis to document the integrity of remaining soils beneath the foundation. This additional soil was subsequently removed from the Site.

2.3.2 Southern Hot Spot

The following tables and observations document site conditions and chronicle field work activities conducted at the southern hot spot of the Site. Summary tables indicating post excavation sampling data for Phase I and Phase II of excavation are located in Appendix B of this Report.

2.3.2.1 Phase I Excavation

September 29, 1998

Test pits were extended to determine the lateral extent of contamination in soils present in the vicinity of the southern hot spot. A Southern Hot Spot Map illustrating features of the excavation is located in Appendix A of this Report. Observations noted during test pit excavation are indicated in Table 4, below.

Field indications (shallow subsurface PID readings) contradicted previous reports submitted to this office in which contamination was stated to extend from the ten-foot depth downward. Shallow subsurface PID readings of 450-600 ppm indicated that contamination extends from the surface to a depth of greater than 10 feet.

As the excavation progressed, unstable excavation walls prevented the extension of this excavation to depths greater than 12 feet below surface grade. Excavated soils exhibited PID readings between 200 and 400 ppm.

As excavation progressed, it became apparent that the quantity of contaminated soil present in the southern hot spot was greater than previous calculated (previous calculations of soil volume were based on findings in previous environmental reports provided to this office). The USEPA was contacted regarding the greatly increased extent of contamination, soil samples were collected and the Site secured. Excavation was halted pending further discussion with the USEPA regarding remedial methodology including the potential implementation of a soil vapor extraction system to treat impacted soils *in-situ*.

Table 4: Observations - Southern Excavation - September 29, 1998

LOCATION	DEPTH	SOIL CHARACTERISTICS	PID (ppm/cge)	FIELD OBSERVATIONS
Five feet south of the western overhead door	6'	Very moist	450	Strong PCE odor
Stockpiled soil	Composite	Very moist	200 - 450	Strong PCE odor
Excavated soil - Base	10'	Fill material from 10 feet upward	200 - 400	Strong PCE odor
Base	12'	Large boulder encountered surrounded by reddish-brown, highly-compacted soil with cobbles. No groundwater or bedrock. Excavation cave-ins.	200 - 400	Strong PCE odor

October 21, 1998

An alternative remedial methodology was not recommended by the USEPA. Therefore, excavation of the southern hot spot continued. The odor of PCE was present at the excavation, particularly to the east (downwind of the excavation). PID readings ranged from 300 - 3,000, with readings predominantly at the lower end of the range. The excavation was widened to the south and extended to a depth of approximately 10 to 12 feet below surface grade. A sewage odor was

noted at the east and south walls of the excavation. The final excavation measured 20 feet (east to west) by 24 feet (north to south). Five confirmatory samples were collected and submitted to the laboratory for analysis.

2.3.2.2 Phase II Excavation

November 19 - 20, 1998

After preliminary laboratory results of samples collected on October 21, 1998 documented the continued presence of PCE in soil, excavation was re-initiated. The excavation was cleaned of caved-in soils that had collapsed since the last excavation. A boulder located at the 12-foot depth was moved. Post-removal vapors registered 153 ppm in the breathing zone. Soil beneath the boulder level appeared clean. Samples were collected. PID readings at sample locations were less than 58 ppm. Excavation continued extending the excavation vertically to the north, west, and south. Soils below approximately six feet deep continued to show evidence of contamination. An additional 50 to 70 cubic yards of soil were excavated and stockpiled.

Backfilling and compacting activities began on the afternoon of November 19, 1998 and were completed on November 20, 1998.

2.3.3 Stockpiled Soil Removal

Removal of approximately 200 cubic yards of stockpiled soil from the northern hot spot was initiated on December 21, 1998. A total of approximately 400 cubic yards of material from both the northern and southern hot spots was removed from the Site during the weeks of December 21st and December 28th, 1998. The soil was loaded onto trucks by Luzon and delivered to the Environmental Quality (EQ) facility in Michigan for disposal as hazardous waste by Page ETC, Inc. Additional removal of approximately 88 cubic yards of soil commenced the week of January 4, 1999.

PCE-contaminated soil stockpiled on the Site during remedial activities conducted on September 1, 1999 (northern hot spot) was removed from the site on December 2, 1999 and transported to the Environmental Quality (EQ) facility in Michigan. Waste manifests document the total weight of removed soil to be 18.89 tons (see Appendix D).

2.4 Laboratory Analysis and Findings

2.4.1 Terminology

Action Levels

The term "action level," as defined in this Report, refers to the concentration of a particular contaminant above which remedial actions are considered more likely. The overall objective of setting action levels is to assess the integrity of on-site soils relative to conditions that are likely to present a threat to public health, given the existing and probable future uses of the site. On-site soils with contaminant levels exceeding these action levels are considered more likely to warrant remediation. No independent risk assessment was performed as part of this investigation. The Site specific action level for PCE and its metabolites were established in the approved workplan to be 12 ppm.

Sample Identification

Sample identification for the analyses indicates the location of sample, phase of work undertaken, and in some cases both the lateral and the vertical depth from which the sample was obtained.

Various sample identification methods were utilized throughout the various excavations. Samples documented by cell number (i.e., C1-E-8) are indicative of samples obtained from the northern excavation. Samples documented as southern (e.g., S-S-10') are indicative of samples obtained from the southern excavation. Samples noted with an II before them (e.g., II-S-BC-14-A) were obtained from the southern excavation during the second excavation phase which commenced on November 19, 1998.

2.4.2 Analysis

During the excavations described above, multiple confirmatory subsurface soil samples were collected from each excavation. Samples were taken from each of the excavation walls and the base of the excavation. The purpose of these samples was to confirm adequate extent of excavation (PCE levels below 12 ppm - site specific action level). Trip blanks and field blanks were also utilized for quality assurance purposes. All samples were analyzed for the presence of VOCs utilizing USEPA Method 8010. Stockpiled soils were also analyzed for specific off-site disposal parameters required by the disposal facility.

2.4.3 Findings

Northern Hot Spot

Analytical data Tables 1 and 2, located in Appendix B of this Report summarizes laboratory results for excavation activity in the northern hot spot. Complete laboratory data are included in Appendix C.

Samples from the walls and base of northern excavation Cell #1 were submitted to Veritech on September 21 and September 24, 1998. Additionally, samples obtained from Cells #1 and #2 were also submitted to Veritech. PCE was detected in each of the cells at levels above the established action level for this Site of 12 ppm. Trichloroethene and Cis-1,2-Dichloroethene were also detected in Cell #1.

Excavation was expanded on April 27, 1999 to include Cells 3, 4, and 5. Samples were submitted to York Analytical Laboratories, Inc. for analysis. Analysis of soil samples [C-3-SW-6' (2'), C-3-SW-B6' (2.5'), C4-SW-5' (0-6"), C4-SW-9' (0-6"), and C5-SW-9' (2')] indicated the presence of TCE at the southern wall of Cell 3 at levels exceeding the Site action level. Detected levels showed a significant drop in the contamination level in Cell 3. The September 1998 excavation documented a PCE level of 9,300 mg/kg at the southern wall of Cell 3 as compared to a PCE level of 420 mg/kg after the April 1999 excavation.

Further excavation in the direction of the contamination was not initially determined to be feasible due to the presence of the foundation of the on-site structure. However, further excavation was recommended by the USEPA to reduce contamination remaining in the vicinity of the foundation.

Additional excavation commenced on September 1, 1999 in accordance with the USEPA recommendation. Samples submitted to York Laboratories for analysis [C-2 (6') S-1, C-2 (6') S-2, C-3 (5') S, C-3 (7') S, and C-4 (6') S-1] indicated the presence of PCE at levels below the Site action level of 12 ppm. Laboratory analysis of samples of stockpiled soils indicated PCE at levels indicative of a non-hazardous waste disposal classification.

Southern Hot Spot

Following excavation activities performed on the southern hot spot on October 21, 1998, samples from the walls and base of the excavation were submitted to Veritech for VOC analysis utilizing USEPA Method Additionally, samples obtained from Cells #1 and #2 were also submitted to

Veritech. TCE was detected in samples S-S-10', S-B-12', and S-N-10' at levels above the established action level for this Site of 12 ppm. Cis-1,2-Dichloroethene was detected in sample S-B-12', but the level of .60 was an estimated value.

The excavation was expanded on November 19-20, 1998. Nine samples were submitted to Severn Trent Laboratories ("STL") for VOC analysis. PCE was detected in each of the samples submitted for analysis. Of the nine samples, five indicated the presence of PCE at levels exceeding the site action level of 12 ppm. PCE was detected at 15 ppm in sample II-S-BC-14A, at 37 ppm in sample II-S-N-10, at 50 ppm in sample II-S-WNW-10, at 70 ppm in sample II-SWSWB-10, and at 46 ppm in sample II-SW-5-6. Total-1,2-Dichloroethene was also detected in samples II-S-BC-14B (1.9 ppm) and II-S-WNW-10 (2.1 ppm).

Analytical data tables, summarizing these results, are provided in Appendix B of this Report. Complete laboratory data are included as Appendix C.

3.0 CONCLUSIONS AND RECOMMENDATIONS

This office has completed the services summarized in Section 2.0 for the specified portion of the property known as the General Switch Site located at the intersection of Highland Avenue and Industrial Place in the City of Middletown, Orange County, New York. Between September 21, 1998 and September 1, 1999, ESI personnel excavated PCE-contaminated soils at two locations on the Site, designated the northern and southern hot spots. Confirmatory samples from the base and walls of each excavation were taken to determine the need for additional excavation and to document the presence or absence of contamination in remaining soils. Samples of stockpiled soils were also obtained for characterization and off-site disposal.

Based on the services provided and data generated, the following conclusions and recommendations (in **bold**) have been made.

1. *Northern Hot Spot*

   Soils were removed in September 1998, April 1999, and September 1999, with post-excavation sampling conducted after each field activity. Data document a total of 220 cubic yards of PCE-contaminated soil has been excavated and removed from the site, in accordance with the USEPA-approved Workplan. Soil samples of remaining soils of PCE below 12 ppm (site-specific clean-up standard) in all samples except for soils in Cell 1. For all other cells, post-excavation samples were below 7.2 ppm. Additional removal of soils in Cell 1 may threaten the structural integrity of the building and, therefore, is not considered appropriate.

   No further soil removal is recommended.

   Contamination remains in on-site soils that are present below the water level and are, therefore, inaccessible.

   No further soil removal is recommended. Observations and groundwater data should be used to determine the need for and extent of future remedial actions.

2. *Southern Hot Spot*

   Approximately 260 cubic yards of PCE-contaminated soil were excavated from the southern excavation area. Upon completion of soil excavation activities, confirmatory samples were collected from the base and walls of the excavation. A review of laboratory data indicates that PCE remains in portions of the excavation at levels exceeding the site specific clean-up standard. Specifically, the area of the excavation adjoining the southern side of the on-site building (soil samples designated II-S-N-10 and II-S-WNW-10) contains levels of PCE warranting remediation. However, given the presence of the on-site building in this area and the nature of the release of PCE in this area (most likely originating from a surface spill), it is unlikely that PCE contamination extends any significant distance beneath the on-site building.

   No further investigation or remediation of the subject property is recommended for the following reasons:

   - **The source of the identified soil contamination was identified and removed;**
   - **The area of greatest contamination was excavated and removed (post remediation soil sampling documents only minor residual contamination); and,**
   - **Remaining soil contamination is not likely to pose a threat to the future utility of the Site.**

3. Laboratory analysis of excavated and stockpiled soils indicated that these materials would require handling as hazardous waste. Laboratory data for soil stockpiles were provided to the waste haulers. A total of approximately 503 cubic yards of soil was removed from the Site and disposed of at a properly licensed facility.

No further investigation is recommended.