Department of Environmental Conservation

Division of Environmental Remediation

Record of Decision

Lubricant Packaging Site
Operable Unit No. 1
City of Middletown, Orange County, New York
Site Number 3-36-034

March 2004

New York State Department of Environmental Conservation
GEORGE E. PATAKI, *Governor* ERIN M. CROTTY, *Commissioner*

DECLARATION STATEMENT - RECORD OF DECISION

Lubricant Packaging Inactive Hazardous Waste Disposal Site
Operable Unit No. 1
City of Middletown, Orange County New York
Site No. 3-36-034

Statement of Purpose and Basis

The Record of Decision (ROD) presents the selected remedy for the Lubricant Packaging site, a Class 2 inactive hazardous waste disposal site. The selected remedial program was chosen in accordance with the New York State Environmental Conservation Law and is not inconsistent with the National Oil and Hazardous Substances Pollution Contingency Plan of March 8, 1990 (40CFR300), as amended.

This decision is based on the Administrative Record of the New York State Department of Environmental Conservation (NYSDEC) for the Lubricant Packaging inactive hazardous waste disposal site, and the public's input to the Proposed Remedial Action Plan (PRAP) presented by the NYSDEC. A listing of the documents included as a part of the Administrative Record is included in Appendix B of the ROD.

Assessment of the Site

Actual or threatened releases of hazardous waste constituents from this site, if not addressed by implementing the response action selected in this ROD, presents a current or potential significant threat to public health and/or the environment.

Description of Selected Remedy

Based on the results of the Remedial Investigation and Feasibility Study (RI/FS) for the Lubricant Packaging site and the criteria identified for evaluation of alternatives, the NYSDEC has selected Dual-Phase Extraction. The components of the remedy are as follows:

- A remedial design program to provide the details necessary for the construction, operation, maintenance, and monitoring of the remedial program.
- Installation of a dual-phase extraction (DPE) system to remediate the on-site soil and groundwater throughout the site and under the site building.
- Indoor air, ambient air, sub-slab soil gas, and soil sampling.
- Annual sub-slab soil gas sampling.

- Development of a soils management plan to address residual contaminated soils and require an annual certification by the property owner that the institutional and engineering controls remain in place and effective.

- Establishment of an institutional control in the form of an environmental easement that would require compliance with the approved soils management plan, restrict use of the property to commercial/industrial, and restrict the use of groundwater as a source of potable or process water without necessary water quality treatment as determined by the Orange County Department of Health.

- The operation of the components of the remedy would continue until the remedial objectives have been achieved or until the NYSDEC determines that continued operation is technically impracticable or not feasible.

New York State Department of Health Acceptance

The New York State Department of Health (NYSDOH) concurs that the remedy selected for this site is protective of human health.

Declaration

The selected remedy is protective of human health and the environment, complies with State and Federal requirements that are legally applicable or relevant and appropriate to the remedial action to the extent practicable, and is cost effective. This remedy utilizes permanent solutions and alternative treatment or resource recovery technologies, to the maximum extent practicable, and satisfies the preference for remedies that reduce toxicity, mobility, or volume as a principal element.

MAR 10 2004

Date

Dale A. Desnoyers, Director
Division of Environmental Remediation

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RECORD OF DECISION

Lubricant Packaging Site
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SECTION 1: SUMMARY OF THE RECORD OF DECISION

The New York State Department of Environmental Conservation (NYSDEC), in consultation with the New York State Department of Health (NYSDOH), has selected this remedy for the Lubricant Packaging Site, Operable Unit 1, on-site soil contamination. The presence of hazardous waste has created significant threats to human health and/or the environment that are addressed by this remedy. As more fully described in Sections 3 and 5 of this document, spills of degreasing solvents during the historical storage, transfer and use of the solvents at the site have resulted in the disposal of hazardous wastes, including volatile organic compounds (VOCs). These wastes have contaminated the soil and groundwater at the site. These disposal activities have resulted in:

- a significant threat to human health associated with exposure to soil and groundwater.
- a significant environmental threat associated with the impacts of contaminants to the groundwater.
- a potential threat to human health associated with impacts of contaminants to indoor air.

To eliminate or mitigate these threats, the NYSDEC has selected the following remedy:

A remedial design program to provide the details necessary for the construction, operation, maintenance, and monitoring of the remedial program.

- Installation of a dual-phase extraction (DPE) system to remediate the on-site soil and groundwater throughout the site and under the site building.
- Indoor air, ambient air, sub-slab soil gas, and soil sampling.
- Annual sub-slab soil gas sampling.
- Development of a soils management plan to address residual contaminated soils and require an annual certification by the property owner that the institutional and engineering controls remain in place and effective.

- Establishment of an institutional control in the form of an environmental easement that would require compliance with the approved soils management plan, restrict use of the property to commercial/industrial, and restrict the use of groundwater as a source of potable or process water without necessary water quality treatment as determined by the Orange County Department of Health.

- The operation of the components of the remedy would continue until the remedial objectives have been achieved or until the NYSDEC determines that continued operation is technically impracticable or not feasible.

The selected remedy, discussed in detail in Section 8, is intended to attain the remediation goals identified for this site in Section 6, in conformity with applicable standards, criteria, and guidance (SCGs).

SECTION 2: SITE LOCATION AND DESCRIPTION

The Lubricant Packaging Inactive Hazardous Waste Disposal Site is located on Industrial Place, just off Highland Avenue Extension, in an industrial park on the northern border between the City of Middletown and the Town of Wallkill in Orange County. State Route 17M/302 is located approximately ½ mile west of the site.

The site is approximately 1 acre in size and contains a 7000-square foot building. The site is located in an industrial area supplied by municipal water. Other industrial and commercial establishments surround the site to the north, west, and south. Railroad tracks border the site to the east.

Located directly west of the site, across Industrial Park Road, is the Highland Ave/General Switch site, Site No. 336025 in the Registry of Inactive Hazardous Waste Disposal Sites in New York (the Registry). The General Switch site is being investigated under a consent order with the United States Environmental Protection Agency (USEPA) as the Wallkill Waterwells Site and is proceeding under oversight by the USEPA.

There are no perennial surface waters on the site. A small, seasonal wetland area is located across Industrial Place on the General Switch property to the west, and an intermittent wetland and a stream channel are located east of the site on the other side of the railroad tracks. A location map and site map are attached as Figures 1 and 2.

Operable Unit (OU) No. 1, which is the subject of this PRAP, consists of the contaminated soil at the site, around and under the building. An operable unit represents a portion of the site remedy that, for technical or administrative reasons, can be addressed separately to eliminate or mitigate a release, threat of release, or exposure pathway resulting from the site contamination.

The remaining operable unit, OU 2, for this site is the groundwater impacted by the contamination in the site soils. This will be addressed separately since the groundwater at the site is also being affected by the General Switch site. Therefore, the groundwater needs to be

remediated in conjunction with the groundwater remediation at General Switch in order to successfully remediate both groundwater plumes.

SECTION 3: SITE HISTORY

3.1: Operational/Disposal History

Prior to the development of the industrial park, the site was used as a railroad repair and supply yard and a coal depot. The Lubricant Packaging property was developed as part of the Industrial Park in 1962. The original business was F&W Bearing, whose activities consisted of degreasing and relubrication of metal ball bearings. Fresh degreasing solvents were received by the facility by drum or off-loaded from tanker trucks into bulk storage tanks located behind the building. Spent solvents were stored in drums and shipped off site for recycling or disposal. Spills and poor handling practices resulted in the release of the chlorinated solvents, which are a hazardous waste.

In 1972, the business was sold, becoming Lubricant Packaging and Supply Company, and the predominant business activities were the sale and packaging of lubricants. From the late 1970s to 1987, outdoor storage of drummed solvent products was a common practice of Lubricant Packaging. Drums were stored throughout the site. In 1987, an inspection conducted by the NYSDEC revealed several hundred drums of hazardous waste and storage tanks of listed hazardous waste were on site without proper permits. Many of the drums were leaking. Drums of waste were removed in 1987 and again in 1990.

In 1986, the business was sold to SOS Fuels, Inc and in 1987, the business was moved to a different location in the City of Middletown. Since 1987, the building has been leased to several businesses and is currently leased by a manufacturer of medical supplies.

3.2: Remedial History

In 1987, the NYSDEC first listed the site as a Class 2a site in the Registry. Class 2a is a temporary classification assigned to a site that has inadequate and/or insufficient data for inclusion in any of the other classifications.

Based on the 1987 inspection by the NYSDEC and subsequent listing of the site as a Class 2a site, a Phase II Investigation was completed in 1994. The Phase II revealed soil contamination at several "hot spots" throughout the site and groundwater contamination. The contamination found was primarily 1,1,1-trichloroethane (TCA).

In 1995, as a result of the Phase II, the NYSDEC listed the site as a Class 2 site in the Registry. A Class 2 site is a site where hazardous waste presents a significant threat to the public health or the environment and action is required.

SECTION 4: ENFORCEMENT STATUS

Potentially Responsible Parties (PRPs) are those who may be legally liable for contamination at a site. This may include past or present owners and operators, waste generators, and haulers.

The NYSDEC and George Saines, Inc., the property owner, entered into a Consent Order on March 31, 2000. The Order obligates the responsible parties to implement a RI/FS. Upon issuance of the ROD, the NYSDEC will approach the PRP to implement the selected remedy under an Order on Consent.

SECTION 5: SITE CONTAMINATION

A remedial investigation/feasibility study (RI/FS) has been conducted to evaluate the alternatives for addressing the significant threats to human health and the environment.

5.1: Summary of the Remedial Investigation

The purpose of the RI was to define the nature and extent of any contamination resulting from previous activities at the site.

The RI was conducted between April 2001 and June 2002. The field activities and findings of the investigation are described in the June 2002 RI report entitled "Remedial Investigation Report".

The following activities were conducted during the RI:

- Research of historical information.
- Soil gas survey to locate VOC-contaminated soils and possible vapor exposure pathways.
- Installation of fourteen soil borings and one monitoring well for analysis of soils and groundwater as well as physical properties of soil and hydrogeologic conditions.
- Sampling of five new and existing monitoring wells on-site and one off-site well.
- A survey of public and private water supply wells in the area around the site.
- Collection of one surface water sample.
- Collection of two aquatic sediment samples.

To determine whether the soil and groundwater contain contamination at levels of concern, data from the investigation were compared to the following SCGs:

- Groundwater, drinking water, and surface water SCGs are based on NYSDEC "Ambient Water Quality Standards and Guidance Values" and Part 5 of the New York State Sanitary Code.

- Soil SCGs are based on the NYSDEC "Technical and Administrative Guidance Memorandum (TAGM) 4046; Determination of Soil Cleanup Objectives and Cleanup Levels".

- Sediment SCGs are based on the NYSDEC "Technical Guidance for Screening Contaminated Sediments."

Based on the RI results, in comparison to the SCGs and potential public health and environmental exposure routes, certain media and areas of the site require remediation. These are summarized below. More complete information can be found in the RI report.

5.1.1: Site Geology and Hydrogeology

The surficial material at the site has been disturbed due to building and/or past railroad activities. Therefore, the majority of material on-site is fill. The fill material generally consists of crushed shale, reworked glacial till, coal cinders, and demolition/construction debris.

A bedrock outcrop is located approximately 200 feet northeast of the site. Bedrock on the site ranges from 15 feet below ground surface (bgs) at the southern end of the site to less than 5 feet bgs at the northern end of the site.

The groundwater at the site flows to the southeast. Groundwater elevation ranges from 8 to 15 feet bgs. The groundwater seasonally fluctuates, and during the high groundwater condition in the spring, the groundwater elevation ranges from 2 to 10 feet bgs.

Surface water features that exist in the vicinity of the site include a seasonal wetland area located west (upgradient) of the site on the General Switch Property, and an intermittent wetland and unnamed stream channel located east of the existing railroad track (downgradient). The unnamed stream channel is locally known as Draper Run. Surface water from the site and surrounding area within the Industrial Park drains into Draper Run which empties into Monhagen Brook, a tributary to the Wallkill River.

5.1.2: Nature of Contamination

As described in the RI report, many soil and groundwater samples were collected to characterize the nature and extent of contamination. As summarized in Table 1, the main categories of contaminants that exceed their SCGs are volatile organic compounds (VOCs).

The VOCs of concern are 1,1,1-TCA, and its breakdown products including 1,1-dichloroethane (1,1-DCA) and chloroethane.

5.1.3: Extent of Contamination

This section describes the findings of the investigation for all environmental media investigated.

Chemical concentrations are reported in parts per billion (ppb) for water, parts per million (ppm) for soil and sediment, and micrograms per cubic meter ($\mu g/m^3$) for air samples. For comparison purposes, where applicable, SCGs are provided for each medium.

Table 1 summarizes the degree of contamination for the contaminants of concern in soil, groundwater, sediment, surface water, and soil gas and compares the data with the SCGs for the site. The following are the media that were investigated and a summary of the findings of the investigation.

Subsurface Soil

During the Phase II Investigation, a total of 8 soil samples were collected. Six of the samples were collected from test pits completed across the site, and the remaining 2 soil samples were collected from the installation of monitoring wells LMW-3 and LMW-4. The samples were collected at depths ranging from 1 ft to 11 ft bgs. 1,1,1-TCA was detected in all of the samples at concentrations ranging from 0.004 ppm at 6 ft to 14 ppm at 8 ft. Tetrachloroethene (PCE) was detected at a maximum concentration of 1.1 ppm at a depth of 8 ft and total petroleum hydrocarbons (TPH) were detected at a maximum of 4,175 ppm at a depth of 1 ft.

A subsurface soil investigation was conducted as part of the RI to assess the nature and extent of VOC contamination found during the Phase II Investigation. A total of 18 soil samples were collected during the RI from 14 soil borings. One sample was collected from each boring with an additional sample collected if an elevated head space reading was detected using a photoionization dectector (PID). Samples were collected at depths ranging from 3.5 feet bgs to 13 feet bgs.

The soil samples were analyzed for VOCs. The main contaminant of concern, 1,1,1-TCA, was detected in 3 of 18 samples, with concentrations ranging from non-detect (ND) to 0.16 ppm. The SCG for 1,1,1-TCA is 0.8 ppm. Other compounds detected during the RI include PCE, trichloroethene (TCE), ethyl benzene, and xylene with maximum concentrations of 0.046 ppm, 0.026 ppm, 0.02 ppm, and 0.65 ppm, respectively. The SCGs for these compounds are 1.4 ppm, 0.7 ppm, 5.5 ppm, and 1.2 ppm, respectively.

Figure 3 shows the location of the soil sampling in both the Phase II and RI.

Sediments

As part of the RI, two sediment samples were collected from the Draper Run stream channel to determine if site runoff is impacting the stream. One sample was collected in the channel up gradient of the site and one sample was collected down gradient of the site. The samples were analyzed for VOCs. No VOC contamination was detected in either sample.

Figure 4 shows the locations of the sediment samples.

Groundwater

A total of 5 groundwater monitoring wells have been installed at the Lubricant Packaging site. Four wells were installed during the Phase II Investigation. Of the four wells installed during the Phase II, three of the wells (LMW-2, LMW-3, and LMW-4) are installed into shallow bedrock to a total depth of 15 ft, 17 ft, and 16.5 ft, respectively. LMW-1 is an overburden well, installed to a total depth of 17 ft. One deep bedrock monitoring well, LMW-5, was installed during the RI to a total depth of 45 ft. The locations of the monitoring wells are shown in Figure 5, which includes a sixth well on the General Switch site used to establish up gradient groundwater quality.

Sampling during the Phase II Investigation showed levels of 1,1,1-TCA in all the wells (LMW-1, LMW-2, LMW-3 and LMW-4). Concentrations of 1,1,1-TCA ranged from 1300 ppb in LMW-4 to 2600 ppb in LMW-3. Levels of PCE were detected at a range of ND in LMW-1 to 1900 ppb in LMW-2.

Sampling during the RI showed elevated levels of VOCs in all five wells. Sampling of the overburden well, LMW-1, detected VOCs with 1,1,1-TCA at the highest concentration of 200 ppb and 1,1-DCA at 100 ppb. 1,1,1-TCA was the only contaminant detected in the deep bedrock well, LMW-5, at 21 ppb. Samples from the three shallow bedrock wells showed elevated levels of several VOCs. The VOCs detected most frequently and at the highest concentrations include 1,1,1-TCA ranging from ND to 420 ppb; 1,1-DCA ranging from ND to 150 ppb; PCE ranging from ND to 53 ppb; cis-1,2-DCE ranging from ND to 450 ppb; chloroethane ranging from ND to 200 ppb; and carbon tetrachloride ranging from ND to 430 ppb. The SCGs for each of these compounds is 5 ppb. Other VOCs detected include TCE, 1,1-dichloroethene (1,1-DCE), vinyl chloride, dibromochloromethane, and chlorobenzene.

The highest concentration of VOCs has been detected in the shallow bedrock groundwater. Based on a comparison of sampling results from the Phase II and the RI, the concentrations of VOCs seem to be decreasing with time.

As stated previously, the site is located down gradient of the General Switch site. It appears that contamination from General Switch may be impacting the groundwater at the Lubricant Packaging site. The contaminant of concern at the General Switch site is PCE, and the extent of the contamination has not yet been defined. The remediation of the groundwater (OU 2) at the Lubricant Packaging site will occur after, or in conjunction with, the remediation at the General Switch site after the investigation there is completed.

Surface Water

One surface water sample was collected from Draper Run. The location of the sample within the stream was down gradient of the site to determine whether site drainage is affecting the surface water in the stream. 1,1,1-TCA was detected in the sample at 1.6 ppb, which is below the SCG

of 5 ppb, but does indicate a potential discharge of groundwater to the stream. Figure 4 shows the location of the surface water sample.

Soil Gas

Six soil gas samples were collected from under the floor slab in the building. Elevated levels of 1,1,1-TCA and its associated breakdown products were detected in the soil gas.

Levels of 1,1,1-TCA detected range from 21 $\mu g/m^3$ to 3000 $\mu g/m^3$. Other compounds detected include 1,1-DCA at concentrations ranging from ND to 200 $\mu g/m^3$, PCE at ND to 3 $\mu g/m^3$, TCE ranging from 2 to 110 $\mu g/m^3$, and 1,1-DCE ranging from ND to 19 $\mu g/m^3$. Figure 6 shows the locations of the soil gas samples.

5.2: Interim Remedial Measures

There were no IRMs performed at this site during the RI/FS.

5.3: Summary of Human Exposure Pathways:

This section describes the types of human exposures that may present added health risks to persons at or around the site. A more detailed discussion of the human exposure pathways can be found in Section 3.4 and Appendix F of the RI report.

An exposure pathway describes the means by which an individual may be exposed to contaminants originating from a site. An exposure pathway has five elements: (1) a contaminant source, (2) contaminant release and transport mechanism, (3) a point of exposure, (4) a route of exposure, and (5) a receptor population.

The source of contamination is the location where contaminants were released to the environment (any waste disposal area or point of discharge). Contaminant release and transport mechanisms carry contaminants from the source to a point where people may be exposed. The exposure point is a location where actual or potential human contact with a contaminated medium may occur. The route of exposure is the manner in which a contaminant actually enters or contacts the body (e.g., ingestion, inhalation, or direct contact). The receptor population is the people who are, or may be, exposed to contaminants at a point of exposure.

An exposure pathway is complete when all five elements of an exposure pathway are documented. An exposure pathway is considered a potential pathway when one or more of the elements currently does not exist, but could in the future.

Under the current land use at the site, two groups of potential receptors could be exposed to site contamination in soil and groundwater:

- Site employees
- Construction workers

Site employees may be exposed to contamination through inhalation if soil gas migrates into the existing building and impacts indoor air. During excavation work, construction workers could come in direct contact with contaminated soil and groundwater, potentially resulting in dermal exposures or exposure through the inhalation of soil particles or vapors released from groundwater.

Depending on future land use conditions at the site, three groups of potential receptors could be exposed to contamination present in soil and groundwater:

- Future residents
- Site employees
- Construction workers

Future residents and construction workers could come in direct contact with contaminated soil and groundwater if excavation work is conducted on the site. Inhalation of soil particles or vapors released from groundwater may also occur as a result of excavation. Future residents and site employees may be exposed to contaminants if soil gas migrates into any current or future on-site structures and impacts indoor air.

5.4: Summary of Environmental Impacts

This section summarizes the existing and potential future environmental impacts presented by the site. Environmental impacts include existing and potential future exposure pathways to fish and wildlife receptors, as well as damage to natural resources such as aquifers and wetlands.

Sediment samples from the stream channel receiving drainage from the site did not contain elevated levels of contaminants; therefore, a viable exposure pathway to fish and wildlife receptors is not present. Although a low level of 1,1,1-TCA was detected in the surface water sample from the stream channel, the concentration was not at a level high enough to negatively impact receptors.

SECTION 6: SUMMARY OF THE REMEDIATION GOALS

Goals for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375-1.10. At a minimum, the remedy selected must eliminate or mitigate all significant threats to public health and/or the environment presented by the hazardous waste disposed at the site through the proper application of scientific and engineering principles.

The remediation goals for this site are to eliminate or reduce to the extent practicable:

- exposures of persons at or around the site to VOCs in soil and groundwater.
- the release of contaminants from soil into groundwater that may create exceedances of groundwater quality standards

- the release of contaminants from soil under the building into the indoor air through soil gas.

Further, the remediation goals for the site include attaining to the extent practicable:

- off-site groundwater quality standards
- on-site soil levels in TAGM 4046.

SECTION 7: SUMMARY OF THE EVALUATION OF ALTERNATIVES

The selected remedy must be protective of human health and the environment, be cost-effective, comply with other statutory requirements, and utilize permanent solutions, alternative technologies, or resource recovery technologies to the maximum extent practicable. Potential remedial alternatives for the Lubricant Packaging site were identified, screened, and evaluated in the May 2003 FS report entitled "Feasibility Study Report" which is available at the document repositories mentioned previously.

A summary of the remedial alternatives that were considered for this site are discussed below. The present worth represents the amount of money invested in the current year that would be sufficient to cover all present and future costs associated with the alternative. This enables the costs of remedial alternatives to be compared on a common basis.

7.1: Description of Remedial Alternatives

The potential remedies are intended to address the contaminated soil at the site. Contaminated groundwater will be addressed as Operable Unit 2 after, or in conjunction with, the groundwater remediation at the General Switch site.

Alternative 1: No Action

The No Action Alternative is evaluated as a procedural requirement and as a basis for comparison. It requires continued monitoring only, allowing the site to remain in an unremediated state. This alternative would leave the site in its present condition and would not provide any additional protection to human health or the environment.

Alternative #2: Soil Excavation and Off-Site Disposal

Present Worth: *$600,000*
Capital Cost: *$600,000*
Annual OM&M:
(Years 1-5): *$0*
(Years 5-30): *$0*

Alternative 2 would include excavation of selected areas of the site and off-site disposal of the soil at a permitted disposal facility. The areas to excavate would include the "hot spots"

identified by sampling in the Phase II Investigation for a total of approximately 1,800 cubic yards of material.

Post-excavation samples would be collected approximately every 1,000 square feet and analyzed for VOCs. If sample results do not meet the SCGs for the site, additional excavation would be performed and new confirmatory samples collected. This process would be performed until the confirmatory sampling results meet site specific SCGs.

After excavation and confirmatory sampling of each area, clean backfill from elsewhere on the site or off-site would be placed into the excavation area to bring the excavation to grade. On-site soil to be used would be sampled prior to backfilling. The areas would be regraded and seeded to prevent erosion.

This alternative would take approximately 6 months to complete. The total cost of this alternative would depend on the disposal requirements. It is expected that the majority of the material could be disposed of as nonhazardous waste.

A sub-slab depressurization system would be installed in the building as part of this Alternative in order to mitigate potential indoor air impacts.

A soils management plan would be developed to address residual contaminated soils that may be excavated from the site during future redevelopment or work under the building. The plan would require soil characterization and, where applicable, disposal/reuse in accordance with NYSDEC regulations.

Implementation of an institutional control in the form of an environmental easement, that would (a) require compliance with the approved soils management plan, (b) limit the use and development of the property to commercial or industrial uses only, (c) restrict use of groundwater as a source of potable or process water without necessary water quality treatment as determined by the Orange County Department of Health, and (d) require the property owner to complete and submit to the NYSDEC an annual certification until the NYSDEC notifies the property owner in writing that this certification is no longer needed. This submittal would contain certification that the institutional controls and engineering controls put in place, pursuant to the Record of Decision, are still in place, have not been altered, and are still effective.

Alternative #3: Phytoremediation

Present Worth: *$290,000*
Capital Cost: *$235,000*
Annual OM&M:
(Years 1-6): *$15,000*

Alternative 3 would consist of implementation of phytoremediation throughout the site. Poplar trees, possibly mixed with other types of trees, would be planted at a density of approximately 1 tree per 100 square feet. These trees would biodegrade the VOCs, thereby remediating the soil.

Poplar trees would be chosen since they have been shown to be effective for VOCs. The poplar root system extends down to approximately 15 feet bgs. The contamination at the site is between 1 ft and 15 ft bgs, within the root zone. Current data on the phytoremediation process indicates that VOCs are biodegraded by plant metabolism.

The remedial process would be expected to take at least 6 years. Every 2 years, the soil would be analyzed for VOCs to determine the effectiveness of the phytoremediation. The fate of the trees after remediation would be determined during the remedial design and on the analytical data collected in the monitoring period.

A sub-slab depressurization system would be installed in the building as part of this Alternative in order to mitigate potential indoor air impacts.

A soils management plan would be developed to address residual contaminated soils that may be excavated from the site during future redevelopment or from work under the building. The plan would require soil characterization and, where applicable, disposal/reuse in accordance with NYSDEC regulations. This also would be required by the institutional control and included in the annual certification.

Institutional controls would be implemented in the form of an environmental easement similar to Alternative 2.

Alternative #4: Dual-phase Extraction

Present Worth: *$607,000*
Capital Cost: *$318,000*
Annual OM&M:
(Years 1-3): *$61,000*

Alternative 4 would include installation of dual-phase extraction wells to remove VOCs in the source area soil throughout the site and under the building, which are the source of the groundwater contamination. The dual-phase extraction (DPE) system provides for soil vapor extraction (SVE) for treatment of soils in the unsaturated zone and extraction of groundwater in the saturated soil zone for treatment in an on-site system. The wells would be dual-phase extraction wells since the groundwater elevation is seasonally high at the site, and SVE would not be practical alone. It is estimated that at least 7dual-phase wells would be installed throughout the site, with 2 or 3 of the 7 wells located within the building. The exact number of wells would depend on a pilot test, performed during the design, to determine the radius of influence of the wells. Approximate DPE well locations are shown on Figure 7.

The dual-phase extraction system would act to lower the groundwater elevation, thereby exposing the contaminated soil to be remediated with SVE. In a dual-phase extraction system, the soil gas and groundwater are conveyed from the extraction well to the surface in separate conduits. The groundwater is pumped by a submersible pump within the well casing to an above ground treatment system. Soil gas is simultaneously extracted by applying a vacuum at the well head. The extracted gas is conveyed to a gas-liquid separator prior to gas phase treatment.

Treatment of the vapor would be performed by vapor phase carbon and the groundwater would be treated by liquid phase carbon. A shed would be located outside of the building and would house the blower, air treatment system, water treatment system, and system controls.

It is estimated that the dual-phase extraction system would operate until remedial objectives were met or until it was no longer feasible to operate. Remedial objectives would be TAGM levels for soils. The system would be operated until the NYSDEC determines it would no longer be feasible to operate. The groundwater treatment aspect of the remedy would be necessary in order to utilize SVE. Although the shallow groundwater would be treated with this remedy, the primary goal is treatment of the soil. The full scale treatment of the groundwater would be addressed at a later time in conjunction with the cleanup at the General Switch site as OU 2.

The extraction wells within the building would act to mitigate potential indoor air issues. Indoor air sampling with sub-slab soil gas sampling would be conducted prior to installation of the DPE system to determine if indoor air has been impacted. In addition, sub-slab soil gas sampling would be collected annually in order to measure the success of the remedy under the building.

A soils management plan would be developed to address residual contaminated soils that may be excavated from the site during future redevelopment or under the building. The plan would require soil characterization and, where applicable, disposal/reuse in accordance with NYSDEC regulations. This also would be required by the institutional control and included in the annual certification.

Institutional controls would be implemented in the form of an environmental easement similar to Alternative 2. While a sub-slab mitigation system would not be installed in the building as part of this Alternative, at the completion of the DPE treatment, an evaluation of the need to mitigate potential indoor air impacts would be completed.

7.2 Evaluation of Remedial Alternatives

The criteria to which potential remedial alternatives are compared are defined in 6 NYCRR Part 375, which governs the remediation of inactive hazardous waste disposal sites in New York State. A detailed discussion of the evaluation criteria and comparative analysis is included in the FS report.

The first two evaluation criteria are termed "threshold criteria" and must be satisfied in order for an alternative to be considered for selection.

1. Protection of Human Health and the Environment. This criterion is an overall evaluation of each alternative's ability to protect public health and the environment.

2. Compliance with New York State Standards, Criteria, and Guidance (SCGs). Compliance with SCGs addresses whether or not a remedy will meet applicable environmental laws, regulations, standards, and guidance.

The next five "primary balancing criteria" are used to compare the positive and negative aspects of each of the remedial strategies.

3. Short-term Effectiveness. The potential short-term adverse impacts of the remedial action upon the community, the workers, and the environment during the construction and/or implementation are evaluated. The length of time needed to achieve the remedial objectives is also estimated and compared against the other alternatives.

4. Long-term Effectiveness and Permanence. This criterion evaluates the long-term effectiveness of the remedial alternatives after implementation. If wastes or treated residuals remain on-site after the selected remedy has been implemented, the following items are evaluated: (1) the magnitude of the remaining risks, (2) the adequacy of the engineering and/or institutional controls intended to limit the risk, and (3) the reliability of these controls.

5. Reduction of Toxicity, Mobility or Volume. Preference is given to alternatives that permanently and significantly reduce the toxicity, mobility, or volume of the wastes at the site.

6. Implementability. The technical and administrative feasibility of implementing each alternative is evaluated. Technical feasibility includes the difficulties associated with the construction of the remedy and the ability to monitor its effectiveness. For administrative feasibility, the availability of the necessary personnel and materials is evaluated along with potential difficulties in obtaining specific operating approvals, access for construction, institutional controls, and so forth.

7. Cost-Effectiveness. Capital costs and operation, maintenance, and monitoring costs are estimated for each alternative and compared on a present worth basis. Although cost-effectiveness is the last balancing criterion evaluated, where two or more alternatives have met the requirements of the other criteria, it can be used as the basis for the final decision. The costs for each alternative are presented in Table 2.

This final criterion is considered a "modifying criterion" and is taken into account after evaluating those above. It is evaluated after public comments on the Proposed Remedial Action Plan have been received.

8. Community Acceptance - Concerns of the community regarding the RI/FS reports and the PRAP have been evaluated. The responsiveness summary (Appendix A) presents the public comments received and the manner in which the NYSDEC addressed the concerns raised.

Several comments were received pertaining to why the selected remedy was chosen. These comments are addressed in the Responsiveness Summary in Appendix A.

SECTION 8: SUMMARY OF THE SELECTED REMEDY

Based on the Administrative Record (Appendix B) and the discussion presented below, the NYSDEC has selected Alternative 4, dual-phase extraction, as the remedy for this site. This remedial program includes the installation of a DPE system which consists of SVE for soil treatment and extraction and treatment of shallow groundwater.

The selected remedy is based on the results of the RI and the evaluation of alternatives presented in the FS. Alternative 4 is being proposed because, as described below, it satisfies the threshold criteria and provides the best balance of the primary balancing criteria described in Section 7.2. It would achieve the remediation goals for the site by treating the soil contamination throughout the site and under the building.

With the exception of the No Action alternative, Alternative 1, each of the alternatives would comply with the threshold criteria. In addition, all alternatives are similar with respect to the majority of the balancing criteria. Because Alternatives 2, 3, and 4 satisfy the threshold criteria, the five balancing criteria are particularly important in selecting a final remedy for the site. However, Alterative 4 is the only alternative that would treat soil contamination under the building.

Alternatives 2 (excavation and removal), 3 (phytoremediation), and 4 (DPE) all have short-term impacts which would be easily controlled. The time needed to achieve the remediation goals would be longest for Alternative 3 and shortest for Alternative 2.

Achieving long-term effectiveness would be best accomplished by treatment of the contaminated soils. Alternatives 2 and 4 are favorable because they would result in the removal of the soil source, Alternative 2 by excavation and Alternative 4 by treatment. However, with Alternative 2, all of the contamination may not be addressed since it is based on sampling results and consists of excavation of discrete locations. Alternative 4 would treat the entire site, including under the building. Alternatives 2 and 3 would not treat soils under the building. Alternative 3's long-term effectiveness is also in question since phytoremediation has a limited history of use.

Alternative 4 would be favorable in that it is readily implementable. Alternatives 2 and 3 are also implementable, although Alternative 2 would cause the most disruption to the site and Alternative 3 has very limited data to support its effectiveness.

Alternative 2, excavation and removal, would reduce the mobility of the waste on-site. Approximately 1800 cubic yards of material would be removed. Alternatives 3 and 4 would reduce the mobility and volume of contaminants by treatment. Alternative 4 has been shown to be more effective than Alternative 3 with the site contaminants of concern.

The present worth cost of the alternatives varies from $290,000 for Alternative 3 to $607,000 for Alternative 4. Although phytoremediation (Alternative 3) would be less expensive than excavation (Alternative 2) or DPE treatment (Alternative 4), it is not a proven technology. Only limited full scale applications of phytoremediation have been completed and the technology has had inconsistent results. Alternative 4 would be favorable because it would be a permanent

remedy that would eliminate the continuing source of groundwater contamination at the site and would be reasonably cost-effective. Excavation and removal (Alternative 2) would be the most costly remedy and would not guarantee removal of all sources at the site.

The estimated present worth cost to implement the remedy is $607,000. The cost to construct the remedy is estimated to be $318,000 and the estimated average annual operation, maintenance, and monitoring costs for 3 years is $61,000.

The elements of the selected remedy are as follows:

1. A remedial design program, including pilot tests, to provide the details necessary for the construction, operation, maintenance, and monitoring of the remedial program.

2. Installation of a dual-phase extraction (DPE) system throughout the site and under the building. The system will include a blower, dual-phase extraction wells, underground piping connecting the blower to the extraction wells, a vapor treatment system, a groundwater treatment system, and required system controls.

3. Indoor air sampling, sub-slab soil gas sampling, and soil sampling prior to installation of the remedy to determine baseline impacts to indoor air. Indoor air sampling will be conducted annually if the initial sampling results indicate a potential impact on indoor air quality.

4. Annual sub-slab soil gas sampling to determine the effectiveness of the remedy under the building. Additional sampling will also be required if groundwater or soil contamination remains when it is determined that the DPE system may be discontinued (see 8 below).

5. Development of a soils management plan to address residual contaminated soils that may be excavated from the site during future redevelopment. The plan will require soil characterization and, where applicable, disposal/reuse in accordance with NYSDEC regulations.

6. The property owner will provide an annual certification, prepared and submitted by a professional engineer or environmental professional acceptable to the Department, that will certify that the institutional controls and engineering controls put in place are unchanged from the previous certification and nothing has occurred that would impair the ability of the control to protect public health or the environment or constitute a violation or failure to comply with any operation and maintenance or soil management plan.

7. Imposition of an institutional control in form of an environmental easement that will (a) require compliance with the approved soils management plan, (b) limit the use and development of the property to commercial or industrial uses only, (c) restrict use of groundwater as a source of potable or process water without necessary water quality

treatment as determined by the Orange County Department of Health, and (d) require the property owner to complete and submit to the NYSDEC an annual certification.

8. The operation of the components of the remedy will continue until the remedial objectives have been achieved or until the NYSDEC determines that continued operation is technically impracticable or not feasible. At the time of this determination, a work plan will be developed to perform a post-remediation evaluation of the effectiveness of the DPE system in eliminating potential exposure from sub-slab impacts. Once the system is shut down, this evaluation of sub-slab vapor will be completed. If the evaluation indicates that contamination remains, mitigation will be necessary through a depressurization system. The DPE system under the building could be modified for this purpose.

SECTION 9: HIGHLIGHTS OF COMMUNITY PARTICIPATION

As part of the remedial investigation process, a number of Citizen Participation activities were undertaken to inform and educate the public about conditions at the site and the potential remedial alternatives. The following public participation activities were conducted for the site:

- Repositories for documents pertaining to the site were established.
- A public contact list, which included nearby property owners, elected officials, local media, and other interested parties, was established.
- In April 2001, a Fact Sheet was mailed announcing the availability of the RI Work Plan and describing the activities to be completed during the RI.
- In January 2004, a Fact Sheet was mailed announcing the availability of the PRAP and the public meeting.
- A public meeting was held on January 13, 2004 to present and receive comment on the PRAP.
- A responsiveness summary (Appendix A) was prepared to address the comments received during the public comment period for the PRAP.

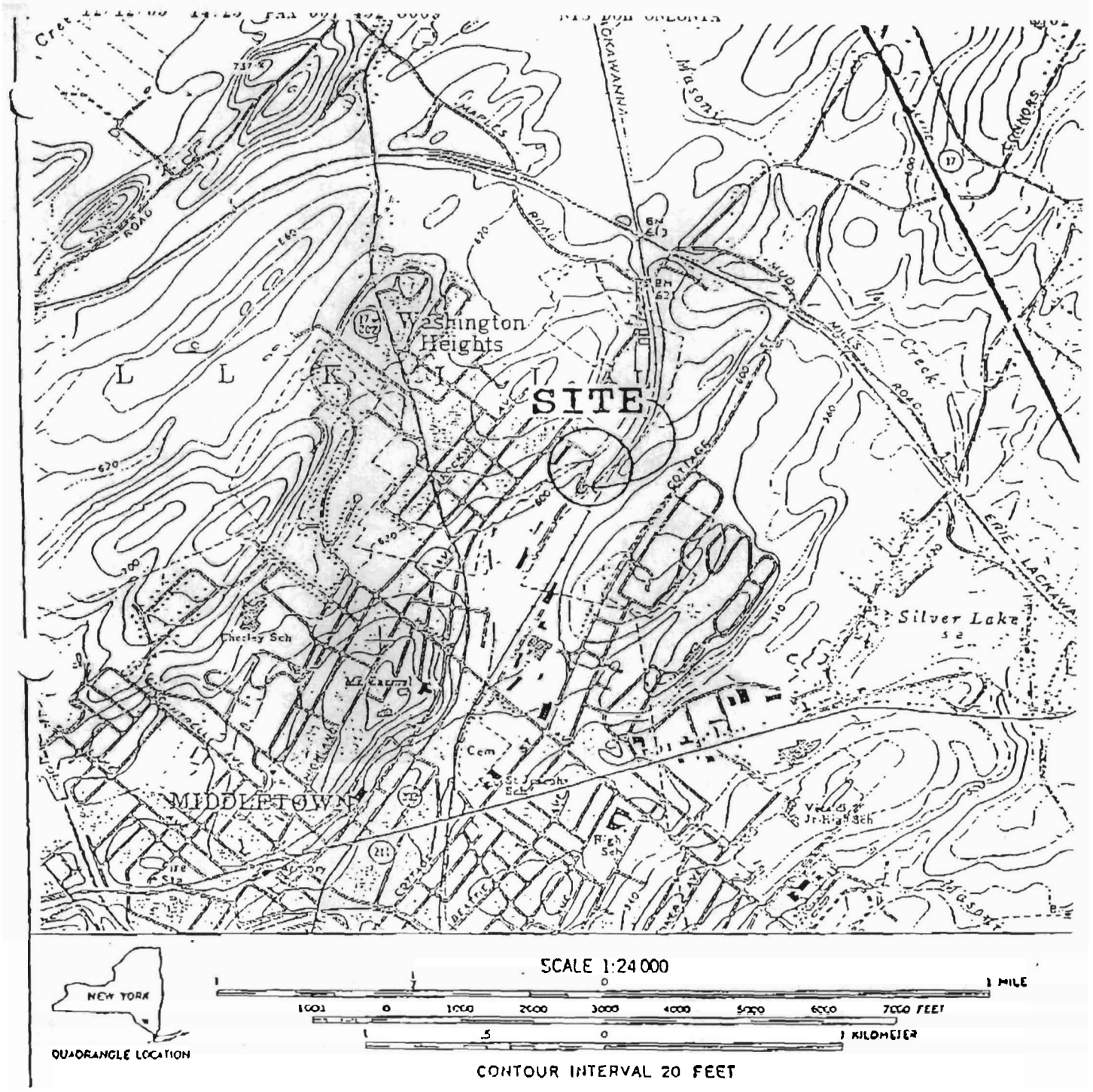


Figure 1
LPS Site Location Map
From Middletown, NY USGS Quad

SAINES ENVIRONMENTAL SERVICES

620 Seventh Street
Marietta, OH 45750

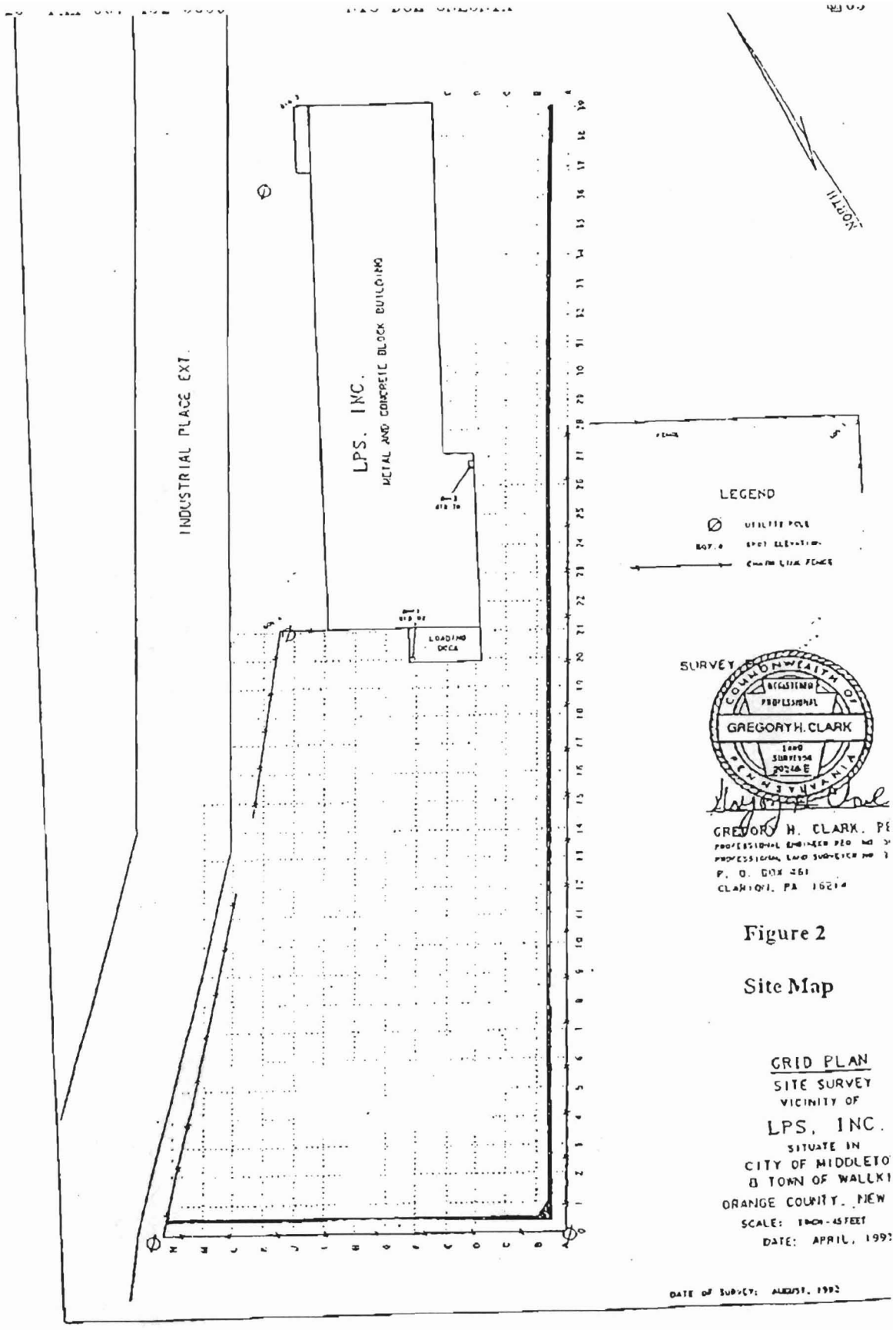


Figure 2

Site Map

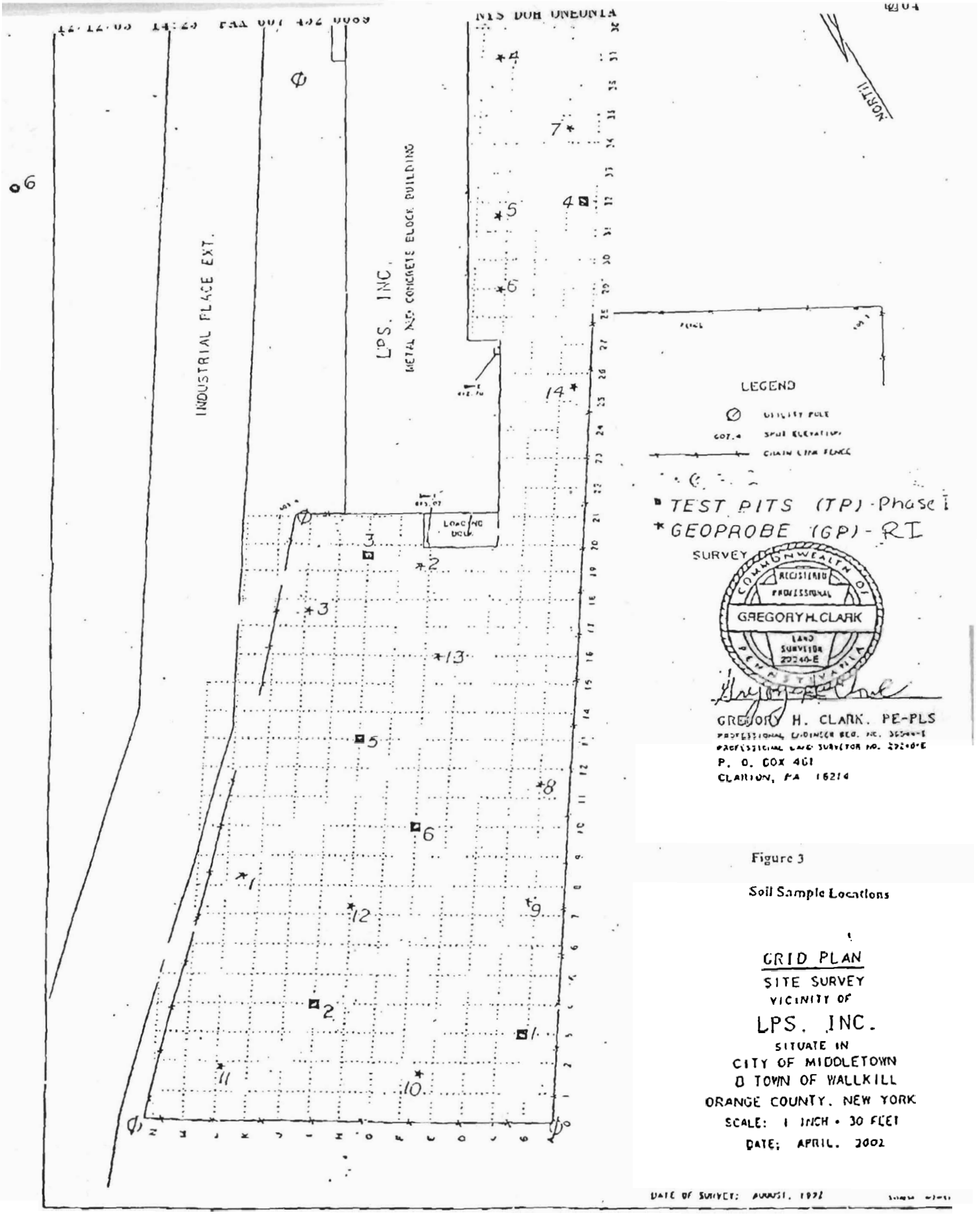


Figure 3

Soil Sample Locations

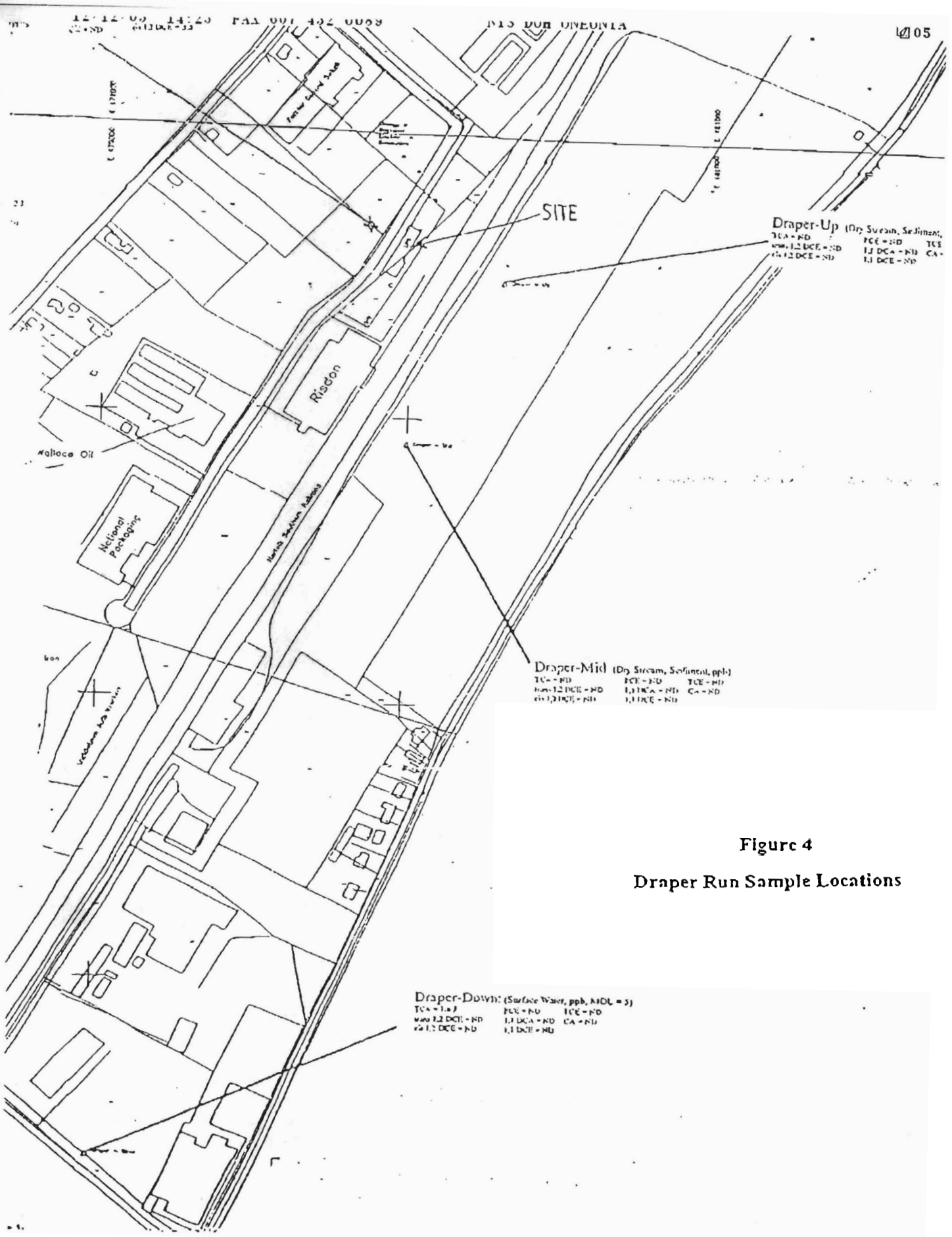


Figure 4

Draper Run Sample Locations

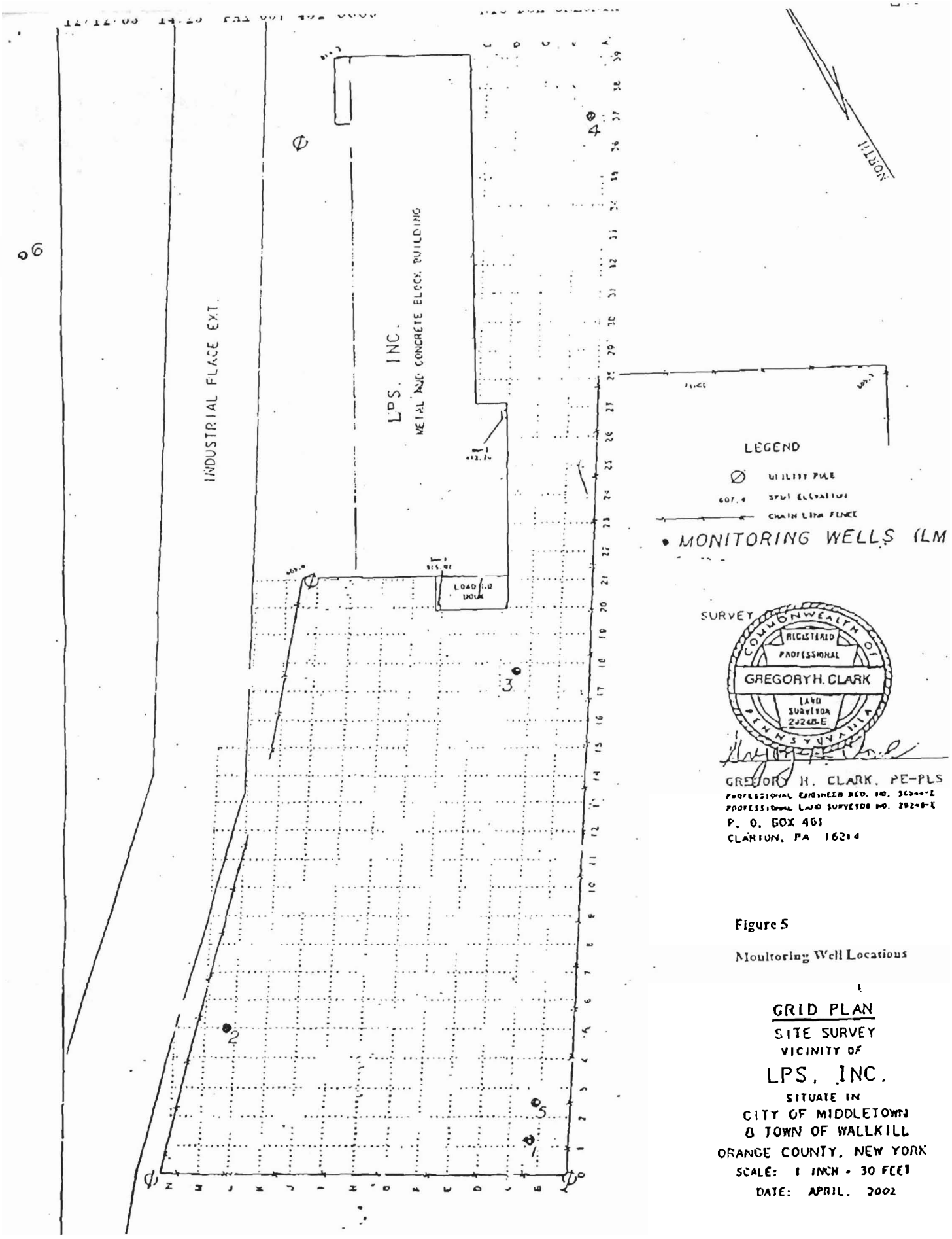


Figure 5

Monitoring Well Locations

GRID PLAN

SITE SURVEY

VICINITY OF

LPS, INC.

SITUATE IN

CITY OF MIDDLETOWN

& TOWN OF WALLKILL

ORANGE COUNTY, NEW YORK

SCALE: 1 INCH = 30 FEET

DATE: APRIL, 2002

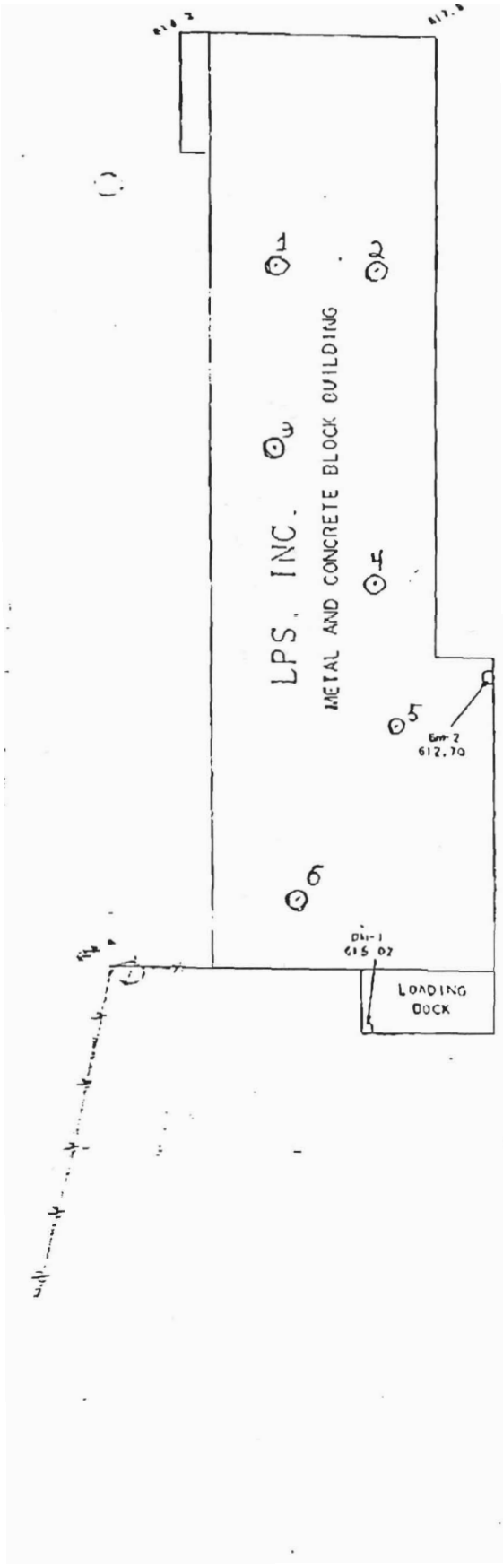
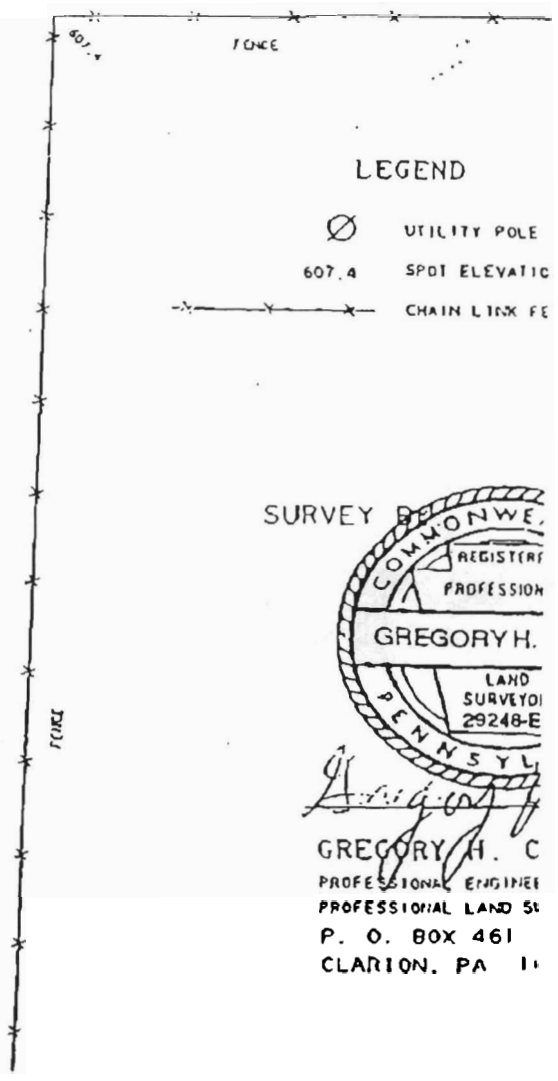


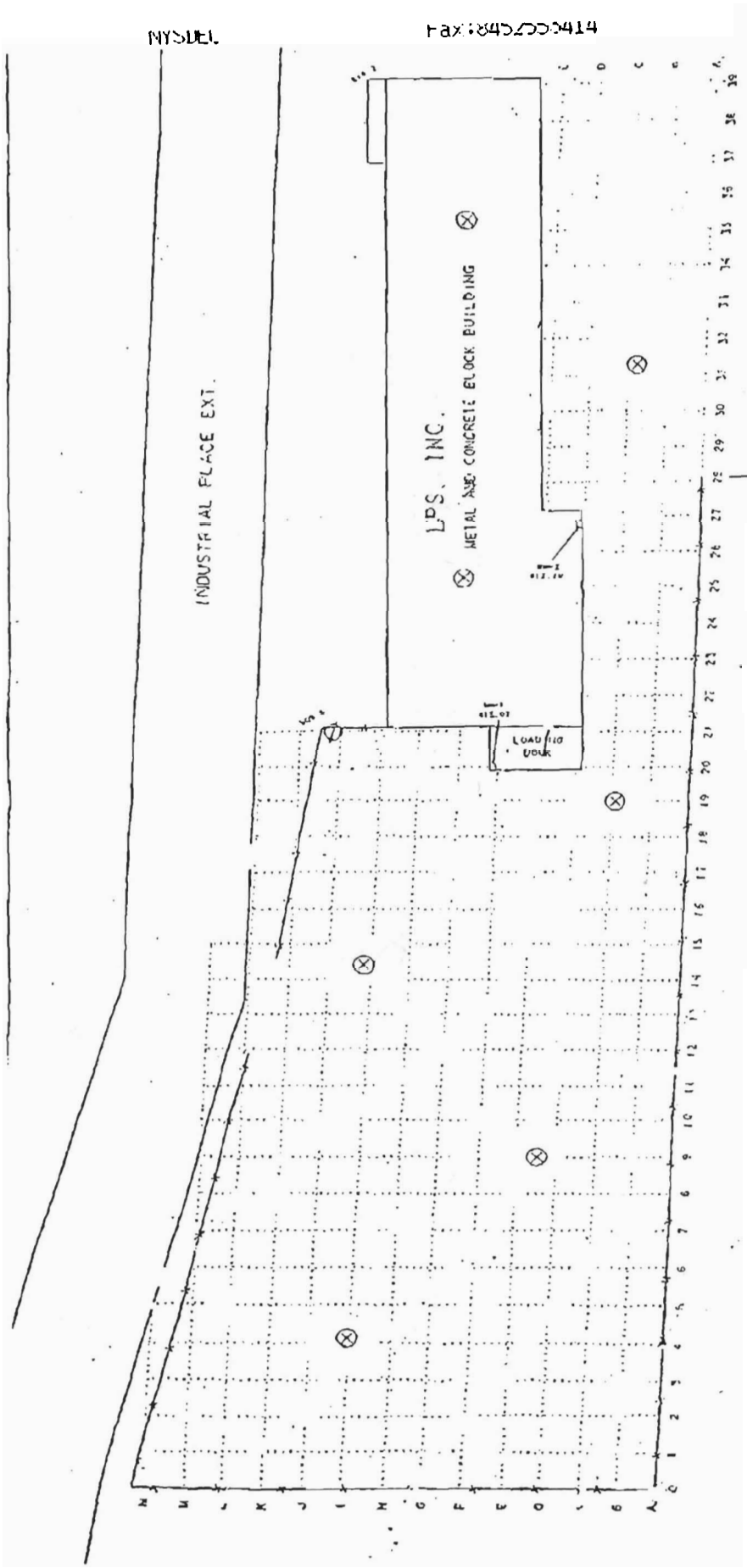
Figure 6

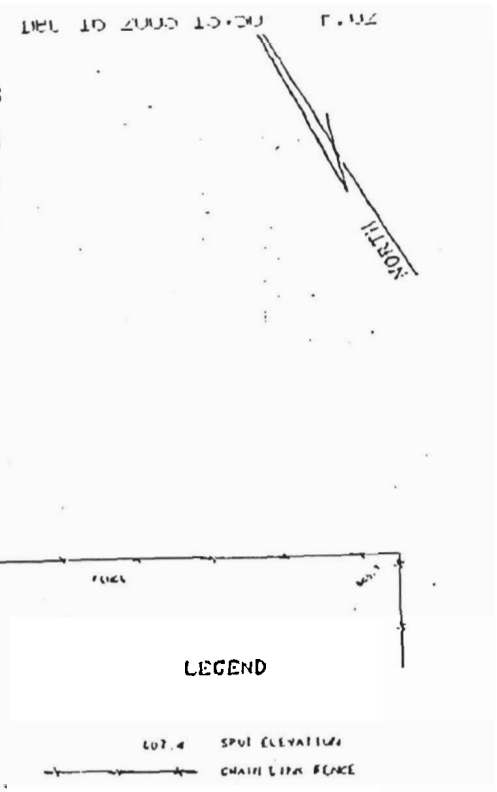
Soil Gas Sample Locations

Sub-Slab Soil Gas Investigation
LPS Site, Middletown, NY
March 29, 2003

⊙ sub-slab soil gas hole #







SURVEY
COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
GREGORY H. CLARK
LAND SURVEYOR
22240-E

GREGORY H. CLARK, PE-PLS
PROFESSIONAL ENGINEER REG. NO. 36444-E
PROFESSIONAL LAND SURVEYOR NO. 22240-E
P. O. BOX 461
CLARION, PA 16214

Figure 7

Approximate DPE Well Locations

GRID PLAN
SITE SURVEY
VICINITY OF
LPS, INC.
SITUATE IN
CITY OF MIDDLETOWN
& TOWN OF WALLKILL
ORANGE COUNTY, NEW YORK
SCALE: 1 INCH = 30 FEET
DATE: APRIL, 2002

TABLE 1
Nature and Extent of Contamination
August 1993, April 2001 - June 2002

SUBSURFACE SOIL	Contaminants of Concern	Concentration Range Detected (ppm)[a]	SCG[b] (ppm)[a]	Frequency of Exceeding SCG
Volatile Organic Compounds (VOCs) August 1993	1,1,1-trichloroethane	0.004 - 14	0.8	3 of 8
	tetracholoethene	ND - 1.1	1.4	0 of 8
	total petroleum hydrocarbons	29 - 4175		8 of 8
Volatile Organic Compounds (VOCs) April 2001 - June 2002	1,1,1-trichloroethane	ND - 0.16	0.8	0 of 18
	tetracholoethene	ND - 0.046	1.4	0 of 18
	tricholorethene	ND - 0.026	0.7	0 of 18
	ethyl benzene	ND - 0.020	5.5	0 of 18
	xylene	ND - 0.65	1.2	0 of 18

GROUNDWATER	Contaminants of Concern	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)[a]	Frequency of Exceeding SCG
Volatile Organic Compounds (VOCs) August 1993	1,1,1-trichloroethane	1300 - 2600	5	4 of 4
	tetrachloroethene	ND - 1900	5	3 of 4
Volatile Organic Compounds (VOCs) April 2001 - June 2002	1,1,1-trichloroethane	ND - 420	5	7 of 8
	1,1-dichloroethane	ND-150	5	6 of 8
	tetrachloroethene	ND-53	5	2 of 8
	tricholorethene	ND-85	5	6 of 8
	1,1-dichloroethene	ND-60	5	5 of 8
	cis-1,2-dichloroethene	ND-450	5	5 of 8
	vinyl chloride	ND-14	2	1 of 8
	chloroethane	ND-200	5	5 of 8
	carbon tetrachloride	ND-430	5	5 of 8
	dibromochloromethane	ND-55	50	2 of 8
	chlorobenzene	ND-6.2	5	1 of 8

SOIL GAS	Contaminants of Concern	Concentration Range Detected ($\mu g/m^3$)[a]	SCG[b, d] ($\mu g/m^3$)[a]	Frequency of Exceeding SCG
Volatile Organic Compounds (VOCs)	1,1,1-trichloroethane	21 - 3000		
	1,1-dichloroethane	ND - 200		
	tetrachloroethene	ND - 3		
	tricholorethene	2 - 110		
	1,1-dichloroethene	ND - 19		

[a] ppb = parts per billion, which is equivalent to micrograms per liter, ug/L, in water;
ppm = parts per million, which is equivalent to milligrams per kilogram, mg/kg, in soil;
ug/m^3 = micrograms per cubic meter

[b] SCG = standards, criteria, and guidance values;

[c] LEL = Lowest Effects Level and SEL = Severe Effects Level. A sediment is considered to be contaminated if either of these criteria is exceeded. If both criteria are exceeded, the sediment is severely impacted. If only the LEL is exceeded, the impact is considered to be moderate.

[d] New York State does not currently have an SCG for soil vapor. The evaluation of current or potential impacts to indoor air from sub-slab soil vapor is conducted on an individual site basis using site-specific and background data. Cleanup determinations consider both current and potential future-use scenarios of the site.

Table # 2
Remedial Alternative Costs

Remedial Alternative	Capital Cost	Annual OM&M	Total Present Worth
No Action	$0	$0	$0
Excavation and Off-Site Disposal	$600,000	$0	$600,000
Phytoremediation	$235,000	$15,000	$290,000
Soil Vapor Extraction	$318,000	$61,000	$607,000

APPENDIX A

Responsiveness Summary

RESPONSIVENESS SUMMARY

Lubricant Packaging Site
Operable Unit No. 1
City of Middletown, Orange County, New York
Site No. 3-36-034

The Proposed Remedial Action Plan (PRAP) for the Lubricant Packaging site was prepared by the New York State Department of Environmental Conservation (NYSDEC) in consultation with the New York State Department of Health (NYSDOH) and was issued to the document repositories on December 22, 2003. The PRAP outlined the remedial measure proposed for the contaminated soil at the Lubricant Packaging site.

The release of the PRAP was announced by sending a notice to the public contact list, informing the public of the opportunity to comment on the proposed remedy.

A public meeting was held on January 13, 2004, which included a presentation of the Remedial Investigation (RI) and the Feasibility Study (FS) as well as a discussion of the proposed remedy. The meeting provided an opportunity for citizens to discuss their concerns, ask questions, and comment on the proposed remedy. These comments have become part of the Administrative Record for this site. The public comment period for the PRAP ended on February 3, 2004.

This responsiveness summary responds to all questions and comments concerning the PRAP that were raised during the public comment period. The following are the comments received with the NYSDEC's responses:

COMMENT 1: Is there a map showing the plumes from Lubricant Packaging and General Switch?

RESPONSE 1: A plume map does not yet exist for the General Switch site. The USEPA is leading the investigation and remediation of the General Switch site. The groundwater investigation is ongoing and the plume is being delineated. A plume map will be developed as part of the investigation. There is currently no plume map for the Lubricant Packaging Site. However, one may be generated when the contaminated groundwater which may be migrating from the site is addressed by the Operable Unit 2 investigation.

Mr. Steven J. Saines submitted a comment letter dated January 28, 2004, with the following comments relative to the PRAP:

COMMENT 2: Because alternative 4 [Dual Phase Extraction (DPE) Remedy] requires the pumping and treatment of ground water beneath the LPS site, the NYSDEC preferred remedy will increase the transport of TCE contaminated ground water from the adjacent General Switch site to the LPS site. Please address why NYSDEC would propose increasing General Switch impacts which will require additional treatment in the future?

RESPONSE 2: The monitoring wells between the General Switch site and Lubricant Packaging site will be sampled to assess any increase in contaminant flow towards the Lubricant Packaging site during the operation of the DPE system. The DPE is designed to treat contamination in the groundwater in the shallow saturated zone and the soil in the unsaturated zone, including that created by lowering of the groundwater table locally around the DPE points. The change in groundwater flow pattern and transport of contaminants at the General Switch site and its immediate vicinity are expected to be minimal. The purpose of the groundwater pumping is to lower the groundwater level enough to implement SVE, not to substantially alter the aquifer. The nature of contamination at the General Switch site is different from that on the Lubricant packaging site. General Switch will be held responsible for cleaning up its contaminants both on and off-site. Actions by the EPA are underway to investigate and delineate the plume at the General Switch site. A decision on remediation at the site will follow.

COMMENT 3: The PRAP Table 1 portrays soil contamination by 1,1,1-TCA which exceeds New York's SCGs (standard, criteria and guidance values). Only 3 of 26 soil samples exceed SCGs. All three of these soil samples were collected in 1993 during the Phase II Investigation. Please explain why NYSDEC would select a complicated and more costly soil remediation strategy to address 3 areas of the property which exceeded SCGs more than 10 years ago?

RESPONSE 3: All areas of the site were not sampled and groundwater levels of contamination are not continuously decreasing. This indicates that a source still exists, which will be addressed by the DPE remedy. A limited number of samples were collected during the RI and not all Phase II areas were resampled. Regarding the remedies not included in the PRAP, it was determined that the other alternatives stated in the FS were not technically feasible for the given site conditions. The FS was conducted specifically to address the contamination identified. The purpose of the FS is to identify, screen, and evaluate potential remedies. Based on that evaluation, DPE emerged as the most appropriate remedy for this site, considering the nature and extent of the contamination and the site specific conditions (i.e., site geology and hydrogeology).

COMMENT 4: The PRAP Table 1 indicates one of the six vapor sample points exceeds SCGs for 1,1,1 Trichloroethane (TCA) and 1,1 dichloroethane (DCA). However, based on the soil gas screening tables published in USEPA's Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (November, 2002), the LPS sub-slab soil gas results are extremely safe. The USEPA tables suggest TCA concentrations in sub-slab soil gas samples greater than 1,100,000 ug/m^3 are unsafe in industrial settings; for DCA concentrations in the same type of sample and setting, concentrations greater than 250,000 ug/m^3 are unsafe. Please explain why NYSDEC/ NYSDOH SCGs for TCA (800 ug/m^3) and DCA (200 ug/m^3) are more than 1,000 times lower (more stringent) than those published by the USEPA?

RESPONSE 4: A footnote was omitted for the soil gas data in Table 1 presented in the LPS PRAP, which has been added as footnote (d) to Table 1 in the ROD. New York State does not currently have SCGs for soil vapor. The evaluation of current or potential impacts to indoor air from sub-slab soil vapor is conducted on an individual site basis using site-specific and background data. Cleanup determinations consider both current and potential future-use scenarios of the site. Furthermore, the previous evaluation of sub-slab vapor contaminant levels at the LPS site was not conducted using the currently accepted sub-slab sampling protocol. To address this, sub-slab vapor samples, indoor air samples, and ambient air samples will be collected simultaneously as part of the remedial action to provide the necessary information to properly evaluate the potential for sub-slab vapor impacts to indoor air.

COMMENT 5: Given the fact that NYSDEC repeatedly refers to the significant threats to human health and/or the environment posed by the LPS site, but does not discuss these risks within the context of the potential receptor population, I request that NYSDEC attach a Public Health Statement for 1,1,1-Trichloroethane (TCA) to the PRAP. I am enclosing a copy of a statement for TCA prepared for lay audiences by the US Department of Health and Human Services. A statement like this will allow the public (potential receptors) access to accurate and specific information about the risks posed to them by the past spillage of TCA at the LPS site.

RESPONSE 5: Because some of the standards discussed in the Public Health Statement are federal standards and not state standards, the NYSDEC will not attach the statement to the PRAP. However, because the statement was attached to your comment letter, the statement will become part of the administrative record for the ROD, which is available for review at the repositories located at the reference desk of the Middletown Thrall

Library, the City Clerk at the Middletown City Hall, and the NYSDEC in New Paltz, NY.

COMMENT 6: On page 2 of the PRAP, NYSDEC references the first Feasibility Study (FS), dated November, 2002. As per NYSDEC requirements, a revised FS was completed in May, 2003. Please correct this error.

RESPONSE 6: It is noted that this was an error, in the PRAP; however, this section is not included in the ROD.

COMMENT 7: On page 3 of the PRAP, LPS would like to again note for the record that it still disagrees with some of NYSDEC's description of the LPS site in 1987. PRAP and NYSDEC records (e.g., Site Fact Sheet) state that "several hundred drums of hazardous waste and storage tanks of listed hazardous waste were on site without proper permits. Many of the drums were leaking. Drums of waste were removed in 1987 and again in 1990." LPS acknowledges that non-hazardous waste oil and grease drums, among which contained drums of spent degreasing solvents, were present on the site. These containers were all removed from the site in 1987.

RESPONSE 7: The historical description of the site was obtained from NYSDEC records of inspections at the time that the drums were discovered. Copies of these documents are available to the public by submitting a FOIL request.

COMMENT 8: On page 4 of the PRAP, and elsewhere in NYSDEC documents (e.g., Fact Sheet), George Saines is referred to as the potentially responsible party (PRP) and property owner. George Saines has never owned the LPS property and has not entered any consent orders with NYSDEC. Only consent orders between the Lubricant Packaging and Supply Co., Inc. and with George Saines, Inc. (GSI) have been completed with NYSDEC in the past. Please correct the errors on page 4 of the PRAP, page 2 of the Fact Sheet and in other related state documents.

RESPONSE 8: This has been corrected in the ROD.

COMMENT 9: On page 8 of the PRAP, I would like to note that the May 2003 FS did not use the 30 year time frame to evaluate present worth costs for alternatives. Time requirement estimates were made for each remedial alternative using USEPA references and professional judgement. Because no explanation was included in the PRAP (or any other documents shared with me) of how NYSDEC arrived at its costs, how does the 30 year baseline convention alter the cost comparisons in the FS and the PRAP?

RESPONSE 9: The language referring to the 30-year period is standard language in most PRAPs since this is the default period for alternative evaluation used for NPL and NYS Superfund sites, however it did not apply in this instance. The years of operation are listed with the corresponding costs in the PRAP. The standard language has been removed from the ROD.

COMMENT 10: Starting on page 8, the PRAP gives a summary of the remedial alternatives evaluated in the May 2003 FS report. However, the PRAP does not mention 3 of the 8 remedial alternatives evaluated in the FS which address soil remediation options.

RESPONSE 10: The NYSDEC chooses which alternatives it will evaluate in the PRAP based on our assessment of the technical feasibility. Certain remedial alternatives were omitted from the PRAP because the NYSDEC did not consider them technically sound and our experience has shown they would not work with the site conditions at the LPS site. The NYSDEC chooses the best alternatives to evaluate and often, but not always, bases this on the FS prepared by the PRP's consultant. However, the NYSDEC may also develop other alternatives that the NYSDEC determines to be appropriate for remediation of the site not included in the FS. Sections 7 and 8 of the PRAP summarized the decisions that led to the recommended remedial action and the reasons for choosing or rejecting each alternative that is chosen for evaluation in the PRAP.

COMMENT 11: With respect to the remedies omitted from discussion in the PRAP, the FS also evaluated (and rated and scored) two combination remedies - remedies consisting of a combination of the 8 remedies evaluated in the FS. These combinations were also excluded from the PRAP discussion.

RESPONSE 11: See RESPONSE 10. The chosen remedy in the FS was for *in-situ* chemical oxidation of on-site soils. This technology is not very effective for soil contamination in the vadose zone, as is the case for the LPS site. Furthermore, the success of chemical oxidation relies on the direct contact of the chemical oxidant with the contaminated soil. It is difficult to direct the injection of chemical oxidants into the vadose zone to achieve the necessary contact time.

COMMENT 12: Starting on page 9, the PRAP cost estimates do not correspond with the cost estimates included in the May 2003 LPS FS Report. From where did the PRAP costs originate? Please document NYSDEC's cost estimates. Why were the FS cost estimates omitted?

RESPONSE 12: As discussed in RESPONSE 10, the alternatives outlined in the FS do not correlate directly to the alternatives outlined in the PRAP. The

alternatives were modified to include a more complete list of tasks/elements to accomplish remediation. The cost estimates were modified consistent with this assessment. Costs for the alternatives as described in the PRAP were developed from the FS and from information in NYSDEC records for other sites.

COMMENT 13: On pages 11 and 12, the PRAP discusses the eight criteria used to compare the remedies evaluated in the FS. On pages 12 and 13, NYSDEC uses these criteria to make its preferred remedy selection. I have the following comments concerning the NYSDEC criteria evaluation:

- On page 12, column 2, paragraph 1, I disagree with NYSDEC's statement that "Alternative 4 [Dual Phase Extraction] is the only alternative that would treat soil contamination under the building."

- On page 12, column 2, paragraph 3, with respect to achieving long-term effectiveness (criteria 4), I disagree with NYSDEC's statement that "Alternative 4 would treat the entire site, including under the building," for the same reasons given above in comment 12b. Also, NYSDEC has no scientific basis for the statement that "Alternative 4 would treat the entire site.

- On page 12, column 2, paragraph 4, with respect to implementability (criteria 6), I do not believe that NYSDEC fairly compares DPE to the other alternatives. Among all the remedies discussed in the PRAP, DPE will be the most difficult to implement effectively. Engineering the DPE system will require significant pilot testing, planning, ground water controls, surface permeability modifications (e.g. capping) and continuous monitoring and upgrading.

- On page 12, column 2, paragraph 5, with respect to reductions in toxicity, mobility or volume (criteria 5), I disagree with several of NYSDEC's statements. Excavation and removal (remedy 2) and DPE (remedy 4) do not reduce the toxicity of 1,1,1 TCA. For the DPE remedy, soil contaminants such as 1,1,1 TCA will be transferred to activated carbon. Only the phytoremediation remedy (remedy 3) in the PRAP reduces the toxicity, mobility and volume of contaminants such as 1,1,1 TCA by the chemical breakdown of the TCA molecule inside the plant.

- On page 13, column 1, paragraph 1, with respect to implementability (criteria 6), the PRAP states that alternative 4 [Dual Phase Extraction] has been shown to be more effective than alternative 3 [Phytoremediation] with the site contaminants of concern. In fact, the dual phase extraction remedy (and its more simple cousin, the soil vapor extraction [SVE] system) have a poor record of remedial success in poorly sorted and/or low permeability soils such as those found at the LPS site. At sites with low permeability or shallow soil contamination, SVE-type systems peak early and seldom achieve total soil cleanup goals.

- On page 13, column 1, paragraph 2, with respect to cost effectiveness (criteria 7), I disagree with NYSDEC's statement that "the cost of the alternatives varies, although not significantly." The PRAP estimated cost differential between a $290,000 remedy and $607,000 remedy is very significant to GSI and to most other small corporations, individuals and companies.

- On page 13, column 1, paragraph 2, with respect to cost effectiveness (criteria 7), the PRAP states that alternative 4 [Dual Phase Extraction Remedy] "would be favorable because it would be a permanent remedy which would eliminate the continuing source of ground water contamination at the site..." Many of the remedies evaluated in the May 2003 FS Report could also be designed as "permanent remedies" for the site. This is not a unique and distinguishing characteristic of alternative 4.

RESPONSE 13: See RESPONSES 10, 11 and 12. Furthermore,

- Alternative 4 is the only alternative *evaluated in the PRAP* that would treat the.contamination under the building in a timely manner. The PRAP indicates that a sub-slab depressurization system may be instituted for long-term control of soil gas after the DPE treatment.

- To clarify, the DPE system would be designed to address the full extent of the contamination identified at the site. This would be accomplished by installing an appropriate

number of wells with adequate spacing across the site and under the building.

- The alternatives presented in the FS, which were not evaluated in the PRAP, would require a comparable degree of effort to implement as DPE. See RESPONSES 10 and 11.

- It has been clarified in the ROD that excavation and disposal does not reduce the toxicity of the contaminant but does reduce the toxicity, mobility and volume relative to the LPS site. Depending on the method employed to dispose of the carbon from the DPE system, (e.g., incineration), the contaminants may be destroyed. Furthermore, phytoremediation is a new technology limited by contaminant type, growth rates, growing seasons, contaminant depth, and concentration. The uncertainties associated with this technology (among other factors) precluded its selection in the PRAP. See RESPONSES 10 and 11.

- DPE is a proven technology which can effectively treat volatile contamination. During the design, the site-specific soil properties will be considered when determining well spacing, required vacuum, etc.

- The sentence has been modified to "The cost of the alternatives varies from $290,000 for Alternative 3 to $607,000 for Alternative 4".

- See RESPONSE 10.

COMMENT 14: The eight components of alternative 4 [Dual-phase Extraction], listed on pages 13 and 14 of the PRAP, describe a more complex remedial system than that evaluated in the May 2003 FS Report. Because of this, I believe the cost estimate for the system (as prepared by NYSDEC) is too low, based on my FS evaluations. Please reveal the cost estimate sources used by NYSDEC in order to compare them with those used in the FS.

RESPONSE 14: See RESPONSE 12.

COMMENT 15: The other two innovative soil technologies evaluated in the FS (Enhanced Bioremediation and In-situ Oxidation) were ignored and not considered in the PRAP.

RESPONSE 15: See RESPONSES 10 and 11.

COMMENT 16: Despite the elimination of soil vapor extraction as a promising remedial technology for the LPS site in the November 2002 version of the FS Report, NYSDEC insisted that a revised FS report be prepared which evaluates soil vapor extraction. When the technical reasons for screening out the remedy from the FS were discussed verbally, the NYSDEC supervisor responded that the technical problems could be overcome with engineering controls.

RESPONSE 16: See RESPONSES 10 and 11.

COMMENT 17: Despite the fact that investigations at the General Switch (a.k.a Wallkill Waterwells) site, adjacent to the LPS site, have documented greater soil and ground water contamination and much greater human and environmental exposure to hazardous materials, NYSDEC has not required the same level of investigation and clean up effort (via the USEPA) as that required at the LPS site.

RESPONSE 17: See RESPONSE 2. The investigation and remediation of the General Switch property is being handled by the USEPA. The groundwater investigation is being completed and will be followed by an evaluation of alternatives for groundwater remediation as OU 2.

COMMENT 18: Despite the fact that soil permeability values (as determined by RI slug tests) do not support the choice of a dual-phase extraction system for the LPS site, NYSDEC's preferred remedy as per its PRAP is a DPE system.

RESPONSE 18: See RESPONSES 10 and 11. When remediating low permeability soil in the vadose and saturated zones, the advantages of using DPE outweigh those of a groundwater extraction and treatment system or a chemical oxidant treatment system. In the case of the ground water extraction and recovery system, the groundwater yield would be low, and the contamination in the vadose zone would remain unaffected. In the case of the chemical oxidant treatment system, effective delivery of the chemical to target areas

in the saturated zone is problematic. And again, the contamination in the vadose zone would remain unaffected.

COMMENT 19: Despite the fact that NYSDEC supports its choice of dual-phase extraction by using the eight evaluation criteria specified by USEPA and NYSDEC, these criteria could just as easily support the choice of several other remedies or combinations of remedies evaluated in the FS.

RESPONSE 19: See RESPONSES 10, 11 and 13.

COMMENT 20: Despite the fact that I have offered to collect indoor air samples, NYSDEC/NYSDOH has refused to accept this kind of data stating that it may not be representative of indoor air quality at all times of the year in the building. Never-the-less, NYSDEC uses the ***possibility*** of indoor air contamination as one of the main reasons for supporting its preferred DPE remedy. Furthermore, concentrations found in sub-slab soil gas are less than the Federal OSHA's permissible exposure limits (PEL) and therefore should not be considered a "threat."

RESPONSE 20: Because the facility is not an active manufacturing facility currently using the site contaminants of concern, OSHA standards are not applicable. Sub-slab vapor samples, indoor air samples, and ambient air samples will be collected simultaneously as part of the remedial action to provide the necessary information to properly evaluate the potential for sub-slab vapor impacts to indoor air.

APPENDIX B

Administrative Record

Administrative Record

Lubricant Packaging Site
Operable Unit No. 1
Site No. 3-36-034

1. Proposed Remedial Action Plan for the Lubricant Packaging site, Operable Unit No. 1, dated December 2003, prepared by the NYSDEC.

2. Order on Consent, Index No. W3-0142-99-05, between NYSDEC and George Saines, Inc., executed on March 31, 2000.

3. "Phase II Site Investigation", November 1994, prepared by Steven J. Saines.

4. "Remedial Investigation Work Plan", June 2000, prepared by Steven J. Saines.

5. "Citizen Participation Plan", April 2001, prepared by Steven J. Saines.

6. "Fact Sheet", April 2001, prepared by the NYSDEC.

7. "Remedial Investigation Report", June 2002, prepared by Steven J. Saines.

8. "Feasibility Study Report", May 2003, prepared by Steven J. Saines.

9. "Fact Sheet", January 2004, prepared by the NYSDEC.

10. Letter dated January 28, 2004 from Steven J. Saines.