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**WORKPLAN FOR A  
SITE INVESTIGATION**

**V & L STRIPPING, INC.  
864 MATHER STREET  
GREEN BAY, WISCONSIN**

**(LUST ID #03-05-174885)**

**January 16, 1998**

January 16, 1998  
(KJP330663)

Mr. Alan Nass  
Wisconsin Department of Natural Resources  
1148 North Military  
Post Office Box 10448  
Green Bay, Wisconsin 54307-0448

RE: Workplan for an Underground Storage Tank Site Investigation, V & L Stripping, Inc.,  
864 Mather Street, Green Bay, Wisconsin; LUST ID #03-05-174885

Dear Mr. Nass:

On behalf of V & L Stripping, Inc., Northern Environmental Technologies, Incorporated (Northern Environmental) has prepared this workplan to conduct a site investigation at 864 Mather Street, Green Bay, Wisconsin (the Site). The Site is located in the northwest half of French Long Lot Section 1, Township 24 North, Range 20 East (44 degrees, 31 minutes, 37 seconds north latitude, 88 degrees, 1 minute, 27 seconds west longitude) in the city of Green Bay, Brown County, Wisconsin. The Site location is illustrated on Figure 1.

All work will be performed in accordance with the Wisconsin Department of Natural Resources (WDNR) guidelines and the requirements of NR 700 Series, Wisconsin Administrative Code. This workplan briefly describes the proposed investigative activities.

### **BACKGROUND INFORMATION**

The Site is currently the location of V & L Stripping Inc., a furniture repair business. Prior to being a furniture repair business, a drycleaner occupied the site. According to historical records of the city of Green Bay, the Site was a gasoline station from the 1930s through the 1960s. Based on Sanborn Fire Insurance Maps from the 1930s, it appears there were three underground storage tanks (USTs) in operation at the Site. The UST system is believed to have consisted of three 1000-gallon leaded gasoline USTs, associated piping, and dispensers. It is believed the UST system was subsequently removed from the Site after the gasoline station ceased operation.

On October 21, 1997, Northern Environmental conducted a limited Phase II Environmental Site Assessment (ESA) at the Site. Petroleum odors and elevated photoionization detector readings were detected in soil samples collected from one soil boring advanced near the location of the former USTs. Results of a soil sample submitted for laboratory analysis detected 30 milligrams per kilogram gasoline range organics (GRO). Results of laboratory analysis of a water sample collected from the same boring detected 0.7 micrograms per liter benzene in the ground water. Based on the laboratory analytical results, a release was reported to the WDNR October 29, 1997.

The WDNR has requested that a site investigation be performed to determine the extent of petroleum contamination identified at the Site. A leaking underground storage tank (LUST) case number (LUST ID #03-05-174885) was assigned to the Site. The site layout is included as Figure 2.

## **WORKPLAN**

The investigation outlined below was designed to make maximum use of the existing information, satisfy the regulatory requirements of the WDNR and Wisconsin Department of Commerce (WDCOMM), and allow for expedient project completion.

In order to minimize the project cost and schedule, the project will be completed in a phased approach. Each phase utilizes information gathered in previous tasks to better focus on subsequent portions of the investigation. A structured program facilitates efficient project completion and limits overall cost.

The proposed workplan consists of six major tasks:

- Task 1.0 Project Initiation and Investigative Activities Design
- Task 2.0 Investigative Program Implementation
- Task 3.0 Remedial Investigation Report Preparation
- Task 4.0 Remedial Alternatives Evaluation and Remedial Action Plan Preparation
- Task 5.0 Petroleum Environmental Cleanup Fund Act (PECFA) Application Preparation
- Task 6.0 Remedial Action, as Necessary

Each of the tasks are briefly described below.

### **Task 1.0 Project Initiation and Investigative Activities Design**

The first activity, as part of this investigation, is to review existing background information which provides data on previous investigations; local geology, hydrogeology, location of nearby private water supply wells; and other pertinent information which can be used to better direct subsequent tasks. Task 1.0 has been completed as part of this workplan. Information on previous investigations was provided in the background section. Information regarding local geology and hydrogeology was obtained from a review of available literature and is presented below. Site scoping information required in s. NR 716.07, Wis. Adm. Code is also presented below.

#### **Subtask 1.1 Basic Physiography, Geology, and Hydrogeology**

The Site is located in an area once occupied by the Green Bay Lobe of the Laurentide Ice Sheet. Based on regional information from *Pleistocene Stratigraphic Units of Wisconsin*, surficial sediments are composed of glacial till of the Middle Inlet Member of the Kewaunee Formation. The till of the Middle Inlet Member is typically brown to reddish-brown sand and silt with lesser amounts of clay. The Middle Inlet till commonly overlies bedded sand or silty sand and in some areas it directly overlies the Kirby Lake till.

Based upon regional information gathered from the *Ground-Water Quality Atlas of Wisconsin*, two distinct aquifers, a shallow glacial drift aquifer and the underlying bedrock aquifer are present at the Site. The glacial drift aquifer consists of saturated coarse-grained glacial sediment ranging in thickness of 50 to 200 feet. The bedrock aquifer is comprised of Cambrian-aged sandstone, the Prairie du Chien Group, and the St. Peter Sandstone.

According to the most recent United States Geological Survey topographic map, the surface elevation of the site is approximately 590 feet above mean sea level. Surface topography at the Site is relatively flat; however, the surface surrounding the Site gradually slopes towards the Fox River which is located approximately 3/4 of a mile southeast of the Site. Because ground water in a glacial drift aquifer generally moves from areas of higher elevation to areas of lower elevation, it is anticipated that ground water at the Site flows southeasterly towards the Fox River. Local variations in ground-water flow may exist within the unconsolidated materials and man-made disturbances (e.g., utility lines, fill, etc.). Based upon information gathered from the ESA, the depth to ground water is assumed to be approximately 6 feet below grade (fbg). Laboratory analytical results of the ground-water sample collected from a soil boring indicate that petroleum compounds are present in the ground water at the Site.

#### Subtask 1.2 Site Investigation Scoping

As required by s. NR 716.07, Wis. Adm. Code, the following items were evaluated to ensure that the scope and detail of the field investigation were appropriate to the site:

1. The Site is currently the location of a furniture repair business. Prior to the furniture repair business, a drycleaner occupied the Site. According to historical records, the Site was a gasoline station from the 1930s through the 1960s. Based on fire insurance maps from the 1930s, three USTs with associated piping and a dispenser were in operation at the Site. The UST system is believed to have been subsequently removed from the Site after the gasoline station ceased operation.
2. The amount and type of contamination identified at the Site was determined to be a gasoline release of unknown volume.
3. Other than the petroleum release currently under investigation, there is no known history of previously reported hazardous substance discharges or environmental pollution at the Site.
4. A soil sample collected from a soil boring advanced as part of the ESA on October 21, 1997 verified petroleum-impacted soil in the area of the former USTs. Laboratory analytical results of a ground water sample collected from the same boring indicated petroleum compounds are present in the ground water at the Site.

5. According to a review of WDNR records, Randy's Mobil Service, 878 Mather Street, Green Bay, is a LUST site (LUST ID #03-05-111777) and is located to the northwest of the Site across Velp Avenue. At this time it is unknown if the release from Randy's Mobil Service has impacted the Site.
6. If off-site drilling is necessary, the appropriate access agreements will be obtained.
7. There are no known impacts to public or private water supplies, buildings, or utilities. Potable water for the Site is supplied by the city of Green Bay municipal system deriving water from Lake Michigan and a series of ground-water production wells. There are no known water supply wells within 1200-foot radius of the Site.
8. The proposed activities will be performed on the Site in a developed area, there are no known potential impacts to threatened or endangered species; species, habitats, or ecosystems sensitive to the contamination; wetlands; outstanding resource waters or exceptional resource waters; or sites or facilities of historical or archaeological significance.
9. No potential interim actions were determined to be necessary at the Site or facility, and it has not been determined what remedial actions will be necessary at the Site.
10. No immediate or interim actions have been taken or are in progress at the Site, and it has been determined that interim action was not necessary at the Site.
11. No other circumstances were found which could potentially affect the scope or conduct of the site investigation.

## **Task 2.0 Investigative Program Implementation**

The investigative program will be implemented under Task 2.0. The goal of the investigative work is to define the vertical and lateral extent of the released petroleum. This information is essential for design of a cost-effective remedial program. Appropriate quality assurance and quality control procedures will be followed during investigative activities, including those specified in s. NR 716.13, Wis. Adm. Code, to ensure that accurate data will be collected.

### **Subtask 2.1 Drill and Sample Soil Exploration Borings**

A minimum of four soil exploration borings will be drilled and sampled in the area of the former USTs and dispenser island to define the vertical and horizontal extent of soil affected by the identified release. Additional borings may be required to fully define the contaminant plume depending on the extent. The soil exploration borings will be advanced using hollow-stem augers in accordance with American Society for Testing and Materials (ASTM) D 1425. The

actual location, depth, and number of borings will be dependent upon site hydrology and stratigraphy and the extent of the identified release. For the purposes of this workplan, an average depth of 15 feet below grade has been assumed. The initial five proposed boring locations are included on Figure 2.

Boring soil samples will be collected during drilling at a minimum of every 2½ feet using standard split barrel sampling techniques ASTM 1586. A portion of each soil sample will be immediately sealed, cooled, and preserved for possible laboratory analysis in accordance with WDNR guidelines.

A portion of the sample will be field screened with a photoionization detector for the presence of volatile and semi-volatile organic compounds such as those found in petroleum fuels. Field screening will also include observation of soil odor and appearance.

Boring logs will be prepared by a Northern Environmental hydrogeologist, geologist, or engineer in general conformance with ASTM 2488. These logs will include information on soil type, gradation, plasticity, color (Munsell notation), moisture content, odor, structural characteristics, consistency, density, lithology, unconfined compressive strength, estimated United Soil Classification System group symbol, and genetic origin.

All downhole sampling equipment will be steam cleaned before each use. Soil samplers will be washed with trisodium phosphate detergent and double rinsed with organic-free tap water between soil sample collection intervals. No lubricants, other than organic-free water, will be used on any downhole drilling tools. All soil cuttings produced during drilling will be temporarily stored on-site in 55-gallon steel drums pending laboratory analysis results and proper treatment or disposal.

The sample exhibiting the greatest instruments reading encountered in each boring, based upon field screening results, will be submitted for laboratory analysis to confirm the results of field screening and evaluate the distribution and magnitude of soil contamination. Additional soil samples may be collected below the impacted soil zone from the first sediments identified as "clean" by field screening to help define the vertical extent of contamination. A minimum of four soil samples will be selected for laboratory analysis. However, additional samples may be required to fully define the vertical and horizontal extent of contamination. The selected samples will be submitted under chain-of-custody protocol to a WDNR-certified laboratory for the WDNR-required suite of parameters. Soil samples will be analyzed for GRO (WDNR Modified Method), volatile organic compounds (VOCs) (EPA Method SW 846 8021), and lead (EPA Method 846 8270). To expedite the project, a representative sample of contaminated soil may also be analyzed for waste characterization parameters to identify the appropriate treatment or disposal option.

#### Subtask 2.2 Install, Develop, and Sample Ground-Water Quality Monitoring Wells

Under this task the three borings drilled as part of Subtask 2.1 will be completed as ground-water quality monitoring wells. Additional monitoring wells may be needed to fully define the ground-water plume. The actual number, depth, and location of the wells will be dependent

on site hydrology and stratigraphy and the extent of the identified release. For the purpose of this workplan, an average depth of 15 fbg has been assumed for the monitoring wells. Proposed monitoring well locations are shown on Figure 3.

Monitoring wells will be installed in conformance with WDNR standards for monitoring well construction (NR 141, Wis. Adm. Code). Specifically, the monitoring wells will be constructed of 2-inch diameter polyvinyl chloride (PVC) threaded casing. The wells will utilize a minimum of 10-feet of 0.010-inch slot PVC screen positioned such that the screened interval intersects the water table to allow the presence of any light non-aqueous phase liquids, such as petroleum hydrocarbons, to be identified. No glues, solvents, or lubricants will be used in well construction. All wells will be completed with protective covers. Because the wells will be located in traffic areas, flush-mount protective covers will be used. Ground and riser elevations will be measured to the nearest 0.01 foot at each well and will be referenced to mean sea level datum. Elevation data will allow subsequent water well measurements to be used to assess shallow ground-water flow direction.

All monitoring wells will be developed using a variable capacity centrifugal pump or bailer to mitigate the effects of drilling and well installation and to maximize well yield. During development, measurements of specific conductance, pH, temperature, and turbidity will be recorded. Development will continue until ten saturated well volumes are removed from each well or the well produces sediment-free water. If the aquifer is characterized by low yield, more than one site visit may be necessary to adequately complete well development. All water removed from the monitoring wells during development will be temporarily stored on-site in 55-gallon steel drums pending laboratory analysis and proper disposal.

All well development equipment will be thoroughly cleaned between monitoring wells. Additionally, well development will proceed from the presumed least impacted to the most impacted well to further limit the potential for cross contamination. After development, the wells will be sampled. Ground-water samples will be submitted under chain-of-custody protocol to a WDNR-certified laboratory for analysis for GRO, VOCs, and lead. One trip blank, duplicate, and field blank will be collected and analyzed for VOCs per the WDNR requirements. Ground-water samples collected from the monitoring wells will also be analyzed for geochemical indicators of natural attenuation.

### Subtask 2.3 Data Reduction and Analysis

Data collected during Subtasks 2.1 and 2.2 will be compiled and analyzed to determine if the soil and ground-water have been fully evaluated and, whether or not, the extent of contamination has been defined vertically and laterally. Analytical results from soil and ground-water sampling will be reviewed and tabulated. Soil boring logs, monitoring well construction forms, and other paperwork will be completed as required to satisfy WDNR guidance. Results of the data gathered during the project will be discussed with the client.

### **Task 3.0 Remedial Investigation Report Preparation**

The results of Tasks 1.0 and 2.0 will be detailed in a final report which documents the investigative program and summarizes the results and conclusions. The report will include all text, tables, figures, field data, and laboratory reports necessary to support the findings and conclusions. Specifically the report will:

- 1) Describe investigative methods
- 2) Provide a conceptual model of site hydrogeology
- 3) Present and interpret analytical data
- 4) Assess the significance of identified contaminant migration pathways
- 5) Assess the ultimate fate and significance of the petroleum release

All activities, including preparation of the final report will be under the supervision of a Northern Environmental WDNR-certified hydrogeologist, a professional geologist, and/or a professional engineer registered to practice in the state of Wisconsin. After review and incorporation of any comments by the client, the report will be submitted to the WDNR and WDCOMM.

### **Task 4.0 Remedial Alternatives Evaluation and Remedial Action Plan Preparation**

If the results of the remedial investigation indicate contaminants are present at the Site at concentrations that will require remediation, an evaluation of remedial alternatives will be completed. Information compiled during Tasks 1.0 through 3.0 will be analyzed to select the most cost-effective remedial option for the site. In accordance with PECFA requirements, at least three remedial alternatives will be evaluated including passive bioremediation or long-term monitoring. The cost, time frame, benefits (both direct and indirect), and drawbacks of each option will be presented and discussed. This information will be discussed with the client and the most desirable remedial alternative will be selected and described in the remedial action plan. After review and incorporation of any comments by the client, the remedial action plan will be submitted to the WDNR and WDCOMM.

### **Task 5.0 PECFA Application Preparation**

Based on analytical results of contaminants found at the site during the limited Phase II ESA, this site is eligible for reimbursement under the PECFA program. Under this task, Northern Environmental will prepare the PECFA application for reimbursement with the client at appropriate project milestones. Application for reimbursement can be made following completion of this workplan and again following execution of remedial action. The PECFA application(s) is anticipated to be submitted as soon as the project invoices are completed and paid.

### **Task 6.0 Remedial Action, as Necessary**

If the results of the remedial investigation indicate that remedial action is required, Northern Environmental, on behalf of the client, will initiate remedial activities under Task 6.0. An amendment to the professional service agreement, an estimate of remedial action costs, and



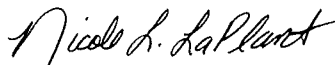
a proposed schedule for undertaking the remedial action will be provided to the client for review and approval prior to implementation of remedial activities.

**SCHEDULE**

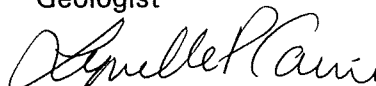
Task 1.0 has been completed as part of this workplan. Northern Environmental anticipates that Task 2.0 will be completed within four weeks or once financing has been attained. Laboratory results for soil and ground-water samples will be available within two to three weeks of sampling. The remedial investigation report and remedial action plan will be available six to eight weeks after completion of Task 2.0 and receipt of laboratory analytical results. Remedial action, if necessary, can begin following submittal of the review of remedial alternatives to the WDCOMM. The application for reimbursement from PECFA will be completed within four weeks of the completion of the project and payment of final invoices.

Please feel free to contact Northern Environmental at 920-592-8400 if you have any questions or comments.

Sincerely,  
**Northern Environmental  
Technologies, Incorporated**



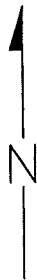
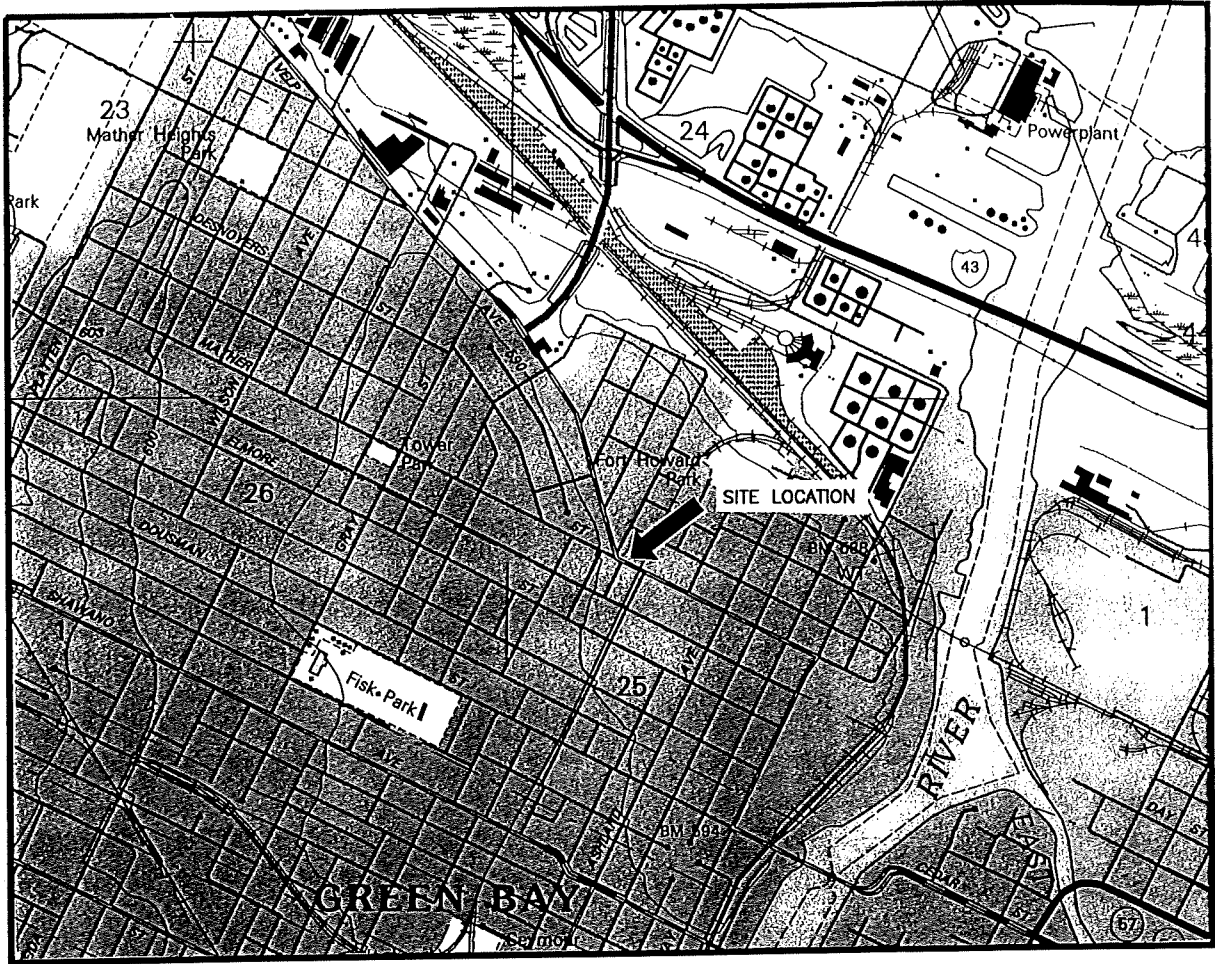
Nicole L. LaPlant  
Geologist



Lynelle P. Caine  
Project Coordinator

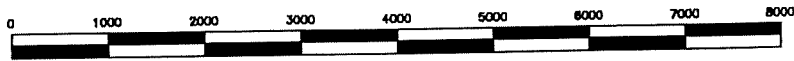
rlt  
Enclosures

c: Mr. Kenneth Juza



SCALE IN FEET

1" = 2000'



CONTOUR INTERVAL 10 FEET  
NATIONAL GEODETIC VERTICAL DATUM OF 1929



QUADRANGLE LOCATION

BASE MAP SOURCE: USGS SHAWANO, WISCONSIN 7.5 MINUTE QUADRANGLE (REVISED 1982)

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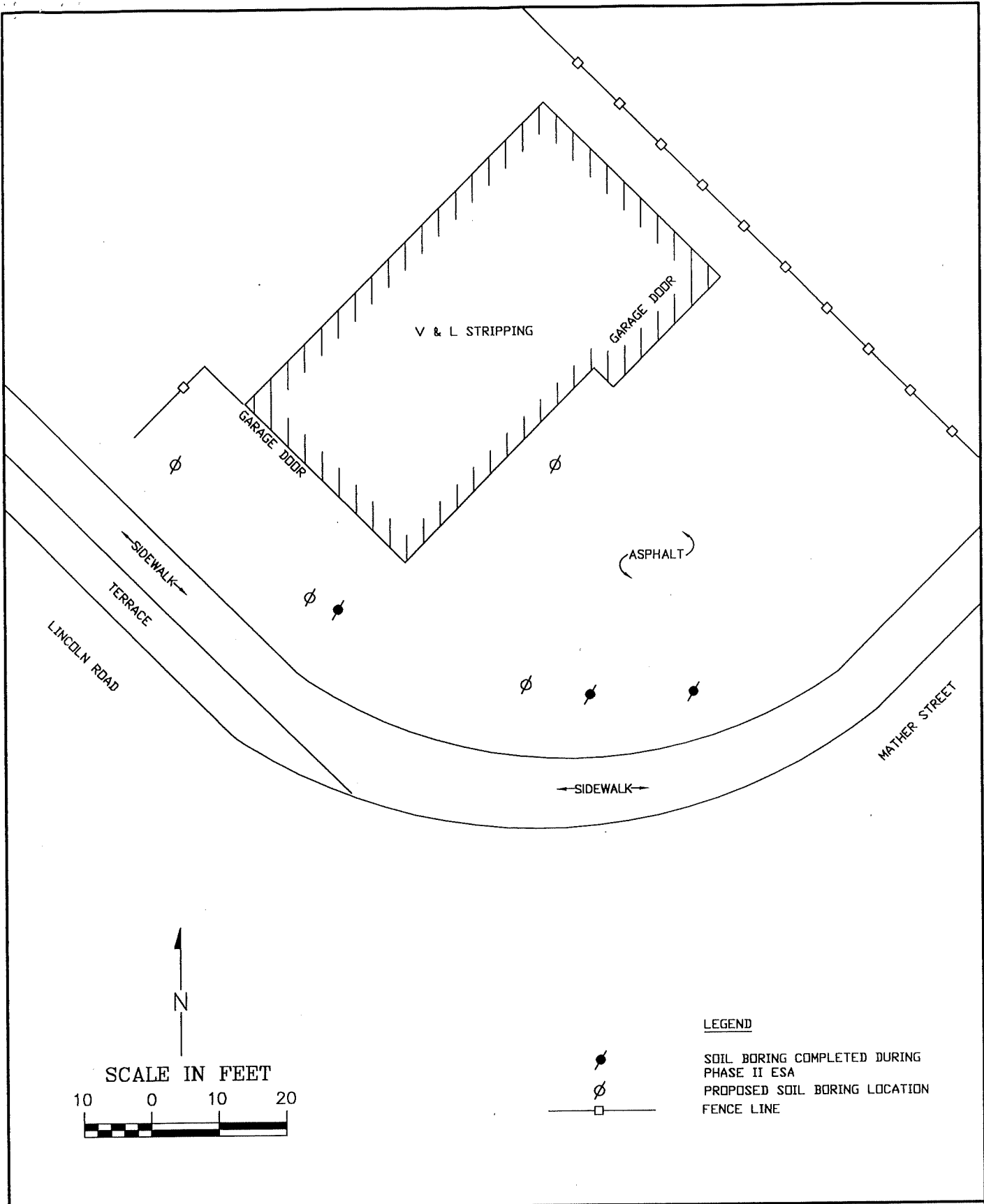
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

FIGURE 1  
SITE LOCATION AND LOCAL TOPOGRAPHY  
V & L STRIPPING INC.  
GREEN BAY, WISCONSIN

**Northern Environmental**<sup>SM</sup>  
Hydrologists • Engineers • Geologists

FOR: MR. KENNETH JUZA



LEGEND

-  SOIL BORING COMPLETED DURING PHASE II ESA
-  PROPOSED SOIL BORING LOCATION
-  FENCE LINE


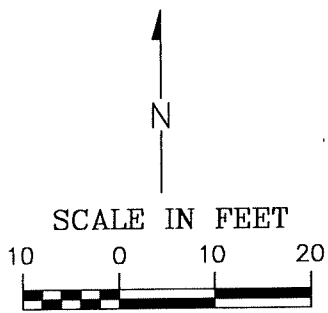
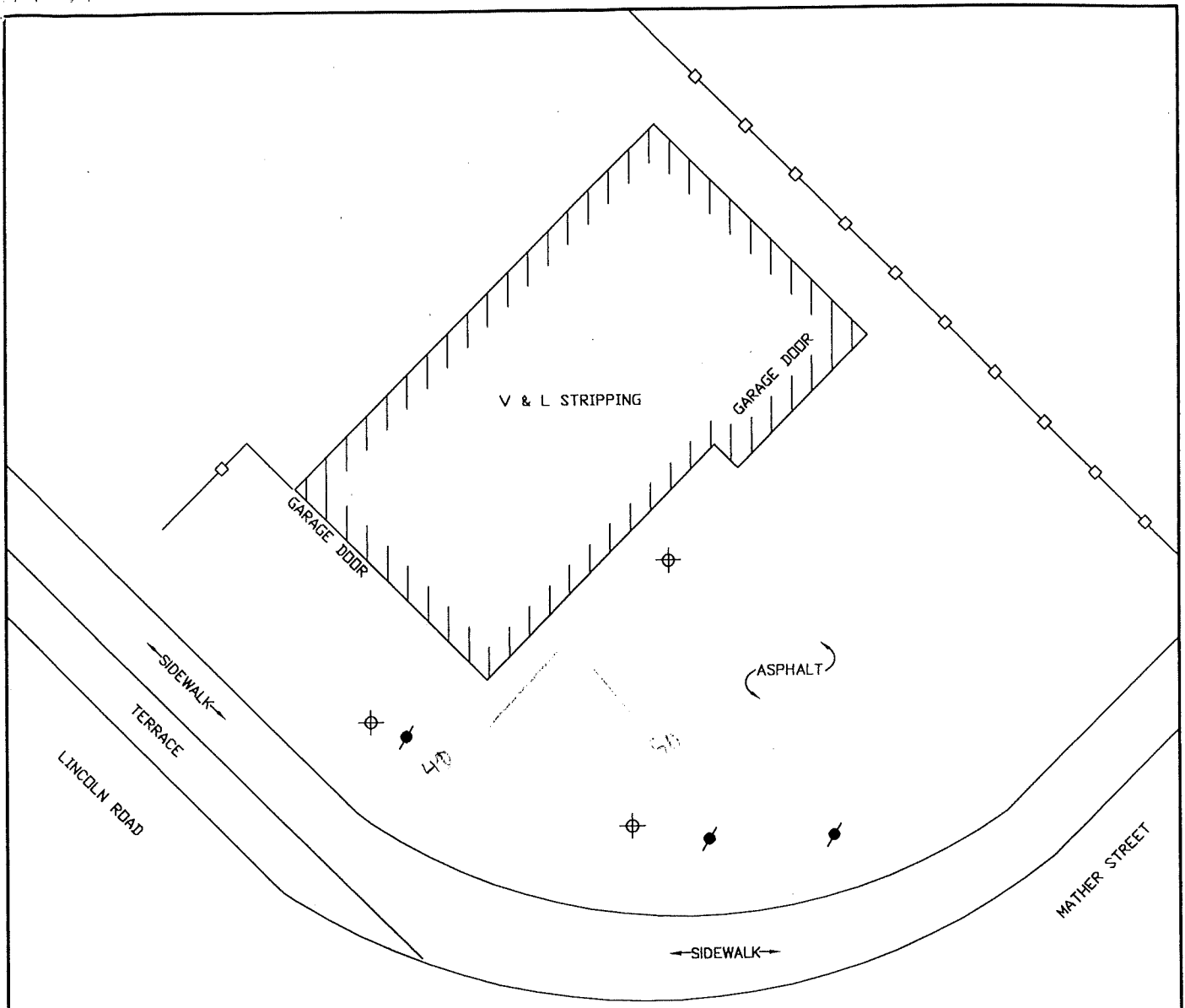


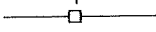

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 <b>Northern Environmental</b> <sup>SM</sup> Hydrologists • Engineers • Geologists		

FIGURE 2  
 PROPOSED SOIL BORING LOCATIONS  
 V & L STRIPPING  
 GREEN BAY, WISCONSIN

FOR: MR. KENNETH JUZA



- LEGEND**
-  SOIL BORING COMPLETED DURING PHASE II ESA
  -  PROPOSED MONITORING WELL LOCATION
  -  FENCE LINE

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**FIGURE 3**  
 PROPOSED MONITORING WELL LOCATIONS  
 V & L STRIPPING  
 GREEN BAY, WISCONSIN  
 FOR: MR. KENNETH JUZA