Klinke Cleaners
02-13-307195

Northern Environmental℠
Hydrologists • Engineers • Geologists

1203 Storbeck Drive
Waupun, WI 53963
920-324-8600
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October 10, 2002
(KLE08-2200-0590)

Mr. Mike Schmoller
Wisconsin Department of
Natural Resources
South Central Region Headquarters
3911 Fish Hatchery Road
Fitchburg, Wisconsin 53711-5397

RE: Workplan for a Chlorinated-Solvent Release Investigation at Klinke Cleaners, 412 East Washington Street, Madison, Wisconsin
BRRTS#02-13-307195

Dear Mr. Schmoller:

Enclosed for your review is a workplan for continued investigation activities at the above-referenced site.

Following your review, please provide written approval or contact me to address any questions or concerns you may have. Work will proceed once written approval of the workplan is received.

Sincerely,
Northern Environmental Technologies, Incorporated

Scott A. McKittrick
Project Manager

SAM:alw

c: Mr. Richard Klinke

WORKPLAN: CHLORINATED- SOLVENT RELEASE SITE INVESTIGATION

KLINKE CLEANERS
412 EAST WASHINGTON STREET
MADISON, WISCONSIN

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WORKPLAN: CHLORINATED-SOLVENT RELEASE SITE INVESTIGATION

KLINKE CLEANERS
412 EAST WASHINGTON STREET
MADISON, WISCONSIN

October 10, 2002

Prepared For:

Mr. Richard Klinke
4518 Monona Drive
Madison, Wisconsin 53716

Prepared By:

Northern Environmental Technologies, Incorporated
1203 Storbeck Drive
Waupun, Wisconsin 53963

Project Number: KLE08-2200-0590

Scott A. McKittrick, PSS
Project Manager

Marty L. Koopman, PG
District Director

SAM:alw

3

TABLE OF CONTENTS

FIGURES

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1.0 INTRODUCTION AND BACKGROUND INFORMATION

On behalf of Mr. Richard Klinke, Northern Environmental Technologies, Incorporated (Northern Environmental) has prepared this workplan for consulting services to investigate a potential dry-cleaning solvent release at Klinke Cleaners, 412 East Washington Street, Madison, Wisconsin (the Site). Figure 1 illustrates the site location and local topography.

Klinke Cleaners has operated a dry cleaning facility at the Site since 1955. A Phase I environmental site assessment (ESA) was conducted at the Site in January 2002. Based on finding from the Phase I ESA, a Phase II ESA was conducted at the Site in February 2002. During the Phase II, soil samples were collected from five boreholes, and ground-water grab samples were collected from four of the boreholes. Tetrachloroethene (PCE) was detected in ground-water samples collected from three borings, at concentrations exceeding the NR 140 enforcement standard (ES). PCE and trichloroethene (TCE) were also detected in soil samples collected from three borings. A chlorinated-solvent release was reported to the Wisconsin Department of Natural Resources (WDNR). The WDNR requested that an investigation be conducted to determine the extent of the contamination at the Site.

Phase II ESA activities, conducted on February 12, 2002, consisted of the following.

- Five soil borings (B-1 through B-5) were drilled. Borings B-1 and B-2 were drilled in the suspected location of a former fuel oil underground storage tank (UST) and borings B-3 through B-5 were drilled adjacent to former chlorinated solvent storage areas.
- The concrete floor in the basement, where former dry-cleaning equipment was operated, was inspected for signs of patching
- Soil samples were collected from borings B-1 and B-2 for laboratory analysis of diesel range organics (DRO) and petroleum volatile organic compounds (PVOCs). A groundwater sample was also collected from boring B-2 for laboratory analysis DRO and PVOCs. Soil samples were field-screened with a flame ionization detector (FID).
- Soil and groundwater samples were collected from borings B-3 through B-5 for laboratory analysis of volatile organic compounds (VOCs). Soil samples were also field-screened with an FID in order to detect the presence of VOCs.

The Phase II ESA results revealed the following.

- Soils at the Site consist of gravel fill to a depth of approximately 2 feet below grade (fbg). Silt underlies the fill to a depth of 8 to 10 fbg. Silty sand with occasional weathered sandstone was observed below the silt to the deepest extent of the borings (approximately 20 fbg).
- Shallow ground water appears to be present in the silty sand at depths ranging from 16 to 18 fbg.
- PCE exceeds the NR 140 ES in ground-water samples collected from borings B-3, B-4, and B-5.

- DRO or PVOCs were not detected in soil samples collected from borings B-1 and B-2.
- No evidence of concrete patching was observed in the basement.

The WDNR has requested that the investigation be completed to determine the lateral and vertical extent of chlorinated-solvent contamination in the groundwater.

2.0 WORKPLAN

The proposed workplan was designed to make maximum use of the existing information, satisfy the regulatory requirements of the WDNR, minimize the total project cost, maximize the reimbursable costs, 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 uses information gathered in previous tasks to better focus subsequent portions of the investigation. A structured program facilitates efficient project completion and limits overall cost.

The Northern Environmental goal is to meet WDNR requirements and obtain site closure. All work will be performed in accordance with WDNR guidelines, the requirements of Chapter NR 700 Series, Wisconsin Administrative Code (NR 700, Wis. Adm. Code) and NR 169, Wis. Adm. Code. The proposed workplan consists of the following five major tasks.

Task 1.0	Project Initiation
Task 2.0	Site Investigation
Task 3.0	Site Investigation Report Preparation
Task 4.0	Remedial Options Report Preparation (if necessary)
Task 5.0	Dry Cleaner Environmental Response Fund (DERF) Reimbursement Application Preparation

Project assumptions and tasks are described below.

Task 1.0 Project Initiation

The first activity as part of the investigation is to inform the WDNR of the proposed investigative activities. The goal of the initial contact is to open an effective channel of communication between regulatory bodies, the client, and the consultant. This will help ensure that the project is completed to the satisfaction of all interested parties. Next, it is important to review existing historical data from other nearby investigations, local geology, hydrogeology, location of nearby water supply wells, and other pertinent information which can be used to better direct subsequent tasks and identify potential health hazards.

Hydrogeology

Based on Wisconsin hydrogeologic data, there are several lithostratigraphic units underlying the site. The unconsolidated sediments overlie rock units including (listed in descending order) Ordovician aged dolomites and sandstones, Cambrian aged sandstones, and Precambrian aged igneous and metamorphic rocks. The shallow unconsolidated sediments can produce suitable hydraulic yield in areas with coarser and thicker sediments. The fractured dolomites and sandstone units are useable aquifers with adequate yield. The Precambrian crystalline rocks produce low hydraulic yield (Kammerer, 1981).

According to the most recent United States Geological Survey (USGS) topographic map, the site surface elevation is approximately 860 feet above mean sea level (MSL). The Site is located on an isthmus between Lake Mendota and Lake Monona. The Yahara River (elevation 850 feet above MSL), which connects Lake Mendota and Lake Monona, is located approximately 1mile to the northeast of the site.

Topographically high areas usually are ground-water recharge areas and topographically low areas are typically discharge points such as wetlands, streams, and lakes. Ground water in the shallow aquifer generally flows from areas of higher surface elevation to areas of lower surface elevation, mimicking the topography. The topography in the area slopes toward the northeast. It is anticipated that groundwater flow will be towards the northeast. During the Phase II investigation, groundwater was observed at a depth of 16 to 18 fbg.

Based on regional surface soil and geologic information, the surface soil at the site is of the Colwood Series. The Colwood Series consists of deep, poorly drained, nearly level soils on low benches in old lake basins. These soils formed under sedge grasses in deep, alternating layers of calcareous, lake-laid silt and fine sand. In a representative profile the surface layer is black silt loam about 10 inches thick followed by a subsoil which is about 25 inches thick. The upper part of the subsoil is grayish-brown clay loam, the middle part is olive-gray sandy clay loam; and the lower part is light brownish-gray loamy very fine sand. The underlying material consists of alternate layers of different thickness, of brownish-gray, light yellowish-brown, and gray coarse silt, very fine sand, and fine sand. (United States Department of Agriculture, 1978).

During previous investigation activities, soils observed at the Site consisted of gravel fill to a depth of approximately 2 fbg. Silt underlies the fill to a depth of 8 to 10 fbg. Silty sand with occasional weathered sandstone was observed below the silt to the deepest extent of the borings (approximately 20 fbg).

Site Investigation Scoping

As required by Section NR 716.07, Wis. Adm. Code, the following items were evaluated prior to the field component of the site investigation to ensure that the scope of the field investigation will be appropriate for the site:

1.) Klinke Cleaners has operated a dry cleaning facility at the Site since 1955. A Phase I ESA was conducted at the Site in January 2002. Based on finding from the Phase I ESA, a Phase II ESA was conducted at the Site in February 2002. During the Phase II, soil samples were collected from five boreholes, and ground-water grab samples were collected from four of the boreholes. PCE was detected in ground-water samples collected from three borings, at concentrations exceeding the NR 140 ES. PCE and TCE were also detected in soil samples collected from three borings. A chlorinated-solvent release was reported to the WDNR. The WDNR requested that an investigation be conducted to determine the extent of the contamination at the Site.

2.) There are no known previous hazardous substance discharges or environmental concerns.

3.) Ground water contains levels of chlorinated solvents that are in exceedance of NR 140 ESs.

4.) Permission has been obtained to access the Property. Permission will be obtained as needed from other nearby or adjacent properties.

5.) The two nearest City-of-Madison municipal wells are located approximately 2,300 feet to the southwest of the Site and 2 miles northeast of the Site, respectively. PCE and TCE have been detected at concentrations below the NR 140 ES in samples collected from the City-of-Madison water system.

8.) There is no known potential for impacts to the following: (a) threatened or endangered species, (b) species habitat or ecosystems sensitive to the contamination, (c) wetlands, (d) outstanding resource waters (e) sites or facilities of historical or archeological significance.

9.) The potential interim and remedial actions applicable to the Site and the contamination are: (a) cleanup of contaminated soil so that it meets residual contaminant levels set in NR 720, Wis. Adm. Code, (b) cleanup of potentially contaminated ground-water so that it meets contaminant level standards set for it in NR 140, Wis. Adm. Code.

0.) No immediate or interim actions have been completed at the Site.

11.) No other items were found which could potentially affect the scope or conduct of the site investigation.

Task 2.0 Site Investigation

The goal of the site investigation is to define the vertical and lateral extent of the chlorinated solvents in the soil and ground water. This information is essential in determining the risk to human health and the environment associated with the release and evaluating the necessity of a remedial action program. The field investigation will be performed in accordance with s. NR 716.11, Wis. Adm. Code.

Subtask 2.1 Install and Sample Soil Borings

A total of twelve soil borings will be installed. Up to eight of the borings will be installed with a truck-mounted drill rig using hollow stem augers. Up to four of the borings, proposed to be located in the basement floor of the Klinke Cleaners' building, will be installed using a Geoprobe unit. A Geoprobe unit, typically mounted on a pickup truck or an all-terrain vehicle, uses hydraulics to push a steel sampler into the soil. Analytical results of soil samples collected from the borings installed in the basement floor will be used to help assess the degree of soil contamination under the building, since some soil may need to be excavated and properly disposed of during the potential removal of the building. The analytical results from the remaining soil borings will be used to assess the lateral and vertical extent and degree of soil contamination on the remainder of the Klinke Cleaners property and surrounding areas.

Six of the borings will be converted to groundwater monitoring wells and one boring will be converted to a piezometer. Five of the borings will be properly abandoned following soil sample collection. Soil samples will be collected at 2-foot intervals using standard sampling techniques in accordance with American Society for Testing and Materials (ASTM) 1586. However, soil borings installed adjacent to borings installed during the Phase II ESA will not be sampled. 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 (PID) for the presence of VOCs and semi-volatile organic compounds, such as those found in chlorinated solvents. Field screening will also include observation of soil odor and appearance. All soil sampling equipment will be washed with a detergent solution and double-rinsed with organic-free tap water before each soil sample is collected to prevent sample cross-contamination.

Soil borehole logs will be prepared by a Northern Environmental hydrogeologist, geologist, or engineer in general conformance with ASTM 2488. The log 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 (USCS) group symbol, and genetic origin.

From each boring, the soil sample with the highest PID reading will be submitted for laboratory analysis to confirm the results of field screening and evaluate the magnitude of soil contamination. Additional soil samples with the lowest PID readings may be collected below the VOC-impacted soil to help define the vertical extent of contamination. A maximum of sixteen soil samples will be preserved and submitted for analysis by a WDNR-certified laboratory to confirm the results of field screening, to evaluate contaminant concentrations, and to assess the contaminant-plume configuration. The soil samples will be analyzed for VOCs using Environmental Protection Agency (EPA) Method 8021.Soil cuttings produced from the boreholes will temporarily be placed in 55-gallon drums on-site pending laboratory analysis. Soil cuttings will be disposed of as part of the remedial program if laboratory analysis reveals they are contaminated.

Subtask 2.2 Install, Develop, and Sample Ground-Water Monitoring Wells and a Piezometer

Seven borings will be converted into six monitoring wells and one piezometer in accordance with ASTM D-1452.

It is anticipated that the monitoring wells will be installed to a depth of approximately 25 fbg, and the piezometer will be installed to a depth of approximately 45 fbg. Four of the monitoring wells are proposed to be located off site to help determine groundwater flow direction and the lateral extent of groundwater contamination. Northern Environmental will contact the off-site property owners to obtain access for installation of the monitoring wells.

The monitoring wells and piezometer will be constructed in accordance with state requirements (NR 141, Wis. Adm. Code). Specifically, they will be constructed of 2-inch diameter polyvinyl chloride (PVC) threaded casing and will use a minimum of 5 feet of 0.010-inch slot PVC screen. No glues, solvents, or lubricants will be used in well construction. The horizontal and vertical locations of the wells and piezometers will be surveyed to determine the ground-water flow direction and gradient. All wells in traffic areas will be equipped with flush-mounted protective covers.

The monitoring wells and piezometer will be developed using a variable capacity bailer or centrifugal pump to remove 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 the well or the well produces sediment-free water. We assume the wells can be developed, purged, and sampled in one site visit. Additional development, at extra cost, may be required if the wells recharge slowly. All well development and sampling equipment will be thoroughly cleaned between wells. Ground water produced from each well will be stored in 55-gallon drums on-site. Appropriate disposal of the ground water will be determined after receipt of laboratory analyses. If the development water cannot be disposed of in the sanitary sewer at the Site, other disposal options will be developed as part of the remedial program.

After well development and purging, the six monitoring wells and piezometer will be sampled in accordance with WDNR ground-water sampling procedures (WDNR Publication No. WR-168). The ground-water samples will be analyzed by a WDNR-certified analytical laboratory for VOCs using Environmental Protection Agency Method 8021. Samples will also be submitted for analysis of select natural attenuation parameters. Duplicates, field and trip blanks will be collected pursuant to WDNR

protocol and analyzed for VOCs. A second round of groundwater samples will be collected approximately 3 months following the initial event.

Subtask 2.3 Data Analysis

Data collected during the previous tasks will be compiled and analyzed to determine if the soil and ground water have been fully evaluated, and whether the extent of contamination has been defined vertically and laterally. Analytical results from the soil and ground-water sampling will be reviewed and tabulated. A meeting will then be held with Mr. Klinke to discuss the findings of the investigation and evaluate the need for any additional work. If necessary, Northern Environmental will meet with the WDNR to determine the scope of additional work necessary to define the extent of the chlorinated-solvent release.

Task 3.0 Site Investigation Report Preparation

The results of Tasks 1.0 and 2.0 will be detailed in a final report that 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:

- Describe investigative methods in detail
- Provide a conceptual model of site hydrogeology
- Present and interpret analytical data
- Assess the significance of identified contaminant migration pathways
- Assess the ultimate fate and significance of the released chlorinated solvents

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 Mr. Klinke, the report will be submitted to the WDNR.

Task 4.0 Remedial Options Report Preparation

If chlorinated compounds are adversely affecting the soil and ground water at the Site or off-site and/or the chlorinated compounds pose a human health risk, it may be necessary to develop a remedy to address the contamination. Information compiled during Tasks 1.0 through 3.0 will be analyzed to select the most cost-effective remedial option for the Site. The cost, time frame, benefits (both direct and indirect), and drawbacks of each option will be presented and discussed. After the client's review and incorporation of any comments, the remedial action options report will be submitted to the WDNR.

Task 5.0 DERF Reimbursement Application Preparation

Costs incurred investigating a release at this Site may be eligible for reimbursement under the DERF program. Under this task, Northern Environmental offers to prepare the DERF application for reimbursement on behalf of Mr. Klinke at appropriate project milestones. Application for reimbursement can be made following completion of the investigation and bi-annually during the completion of remedial action. The DERF application(s) will be submitted as soon as the project invoices are completed and paid.

3.0 PROJECT SCHEDULE

Work can begin on this project immediately. Project work will be coordinated with the client, WDNR, and selected contractor(s). It is anticipated that the installation of monitoring wells and piezometers may be completed within 6 weeks of WDNR approval of this workplan. The boring/well-installation schedule will be dependent upon the availability of subcontractors and the ability to gain off-site access. The site investigation report and remedial options report will likely be completed within 6 weeks once the extent of soil and ground-water contamination is defined.

4.0 REFERENCES

United States Geological Survey, Madison East *Quadrangle*, Wisconsin 7.5 Minute Topographic Map, 1983.

U.S. Geological Survey, *Pleistocene Geology of Dane County, Wisconsin Circular No. 54,* 1986., *Information Circular* No. 68, 1991.

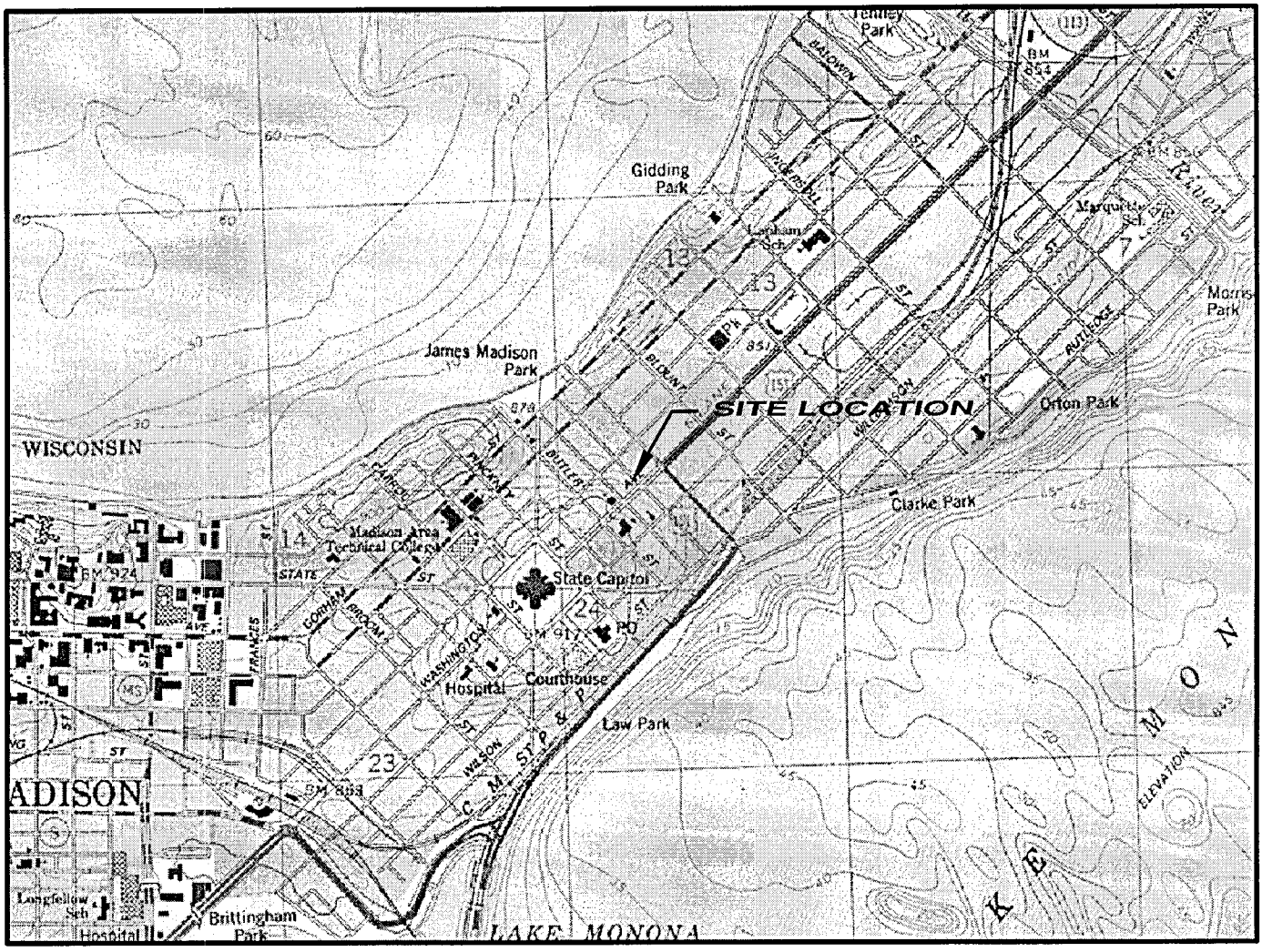
Wisconsin Department of Natural Resources, *Environmental Protection – Investigation and Remediation of Environmental Contam*ination, Chapter NR 700 – NR 736, Wisconsin Administrative Code, April 1995.

Wisconsin Department of Natural Resources, *Groundwater Monitoring Well Requirements*, Chapter NR 141 Wisconsin Administrative Code, September 1995.

Kammerer, Phil A., Jr., *Ground Water Quality Atlas of Wisconsin*, 1981

United States Department of Agriculture, Soil Conservation Service, *Soil Survey of Dane County, Wisconsin,* April 1978.

FIGURES



SCALE IN FEET

1" = 2000'

0 1000 2000 3000 4000 5000 6000 7000 8000

CONTOUR INTERVAL 10 FEET

NATIONAL GEODETIC VERTICAL DATUM OF 1929

QUADRANGLE LOCATION

BASE MAP SOURCE: NATIONAL GEOGRAPHIC TOPOI, 2000

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REV. DATE	THIS DRAWING AND ALL INFORMATION CONTAINED THEREON IS THE PROPERTY OF NORTHERN ENVIRONMENTAL INCORPORATED AND SHALL NOT BE COPIED OR USED EXCEPT FOR THE PURPOSE FOR WHICH IT IS EXPRESSLY FURNISHED.	

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FIGURE 1
SITE LOCATION AND LOCAL TOPOGRAPHY
KLINKE CLEANERS
412 EAST WASHINGTON AVENUE
MADISON, WISCONSIN

FOR: KLINKE CLEANERS

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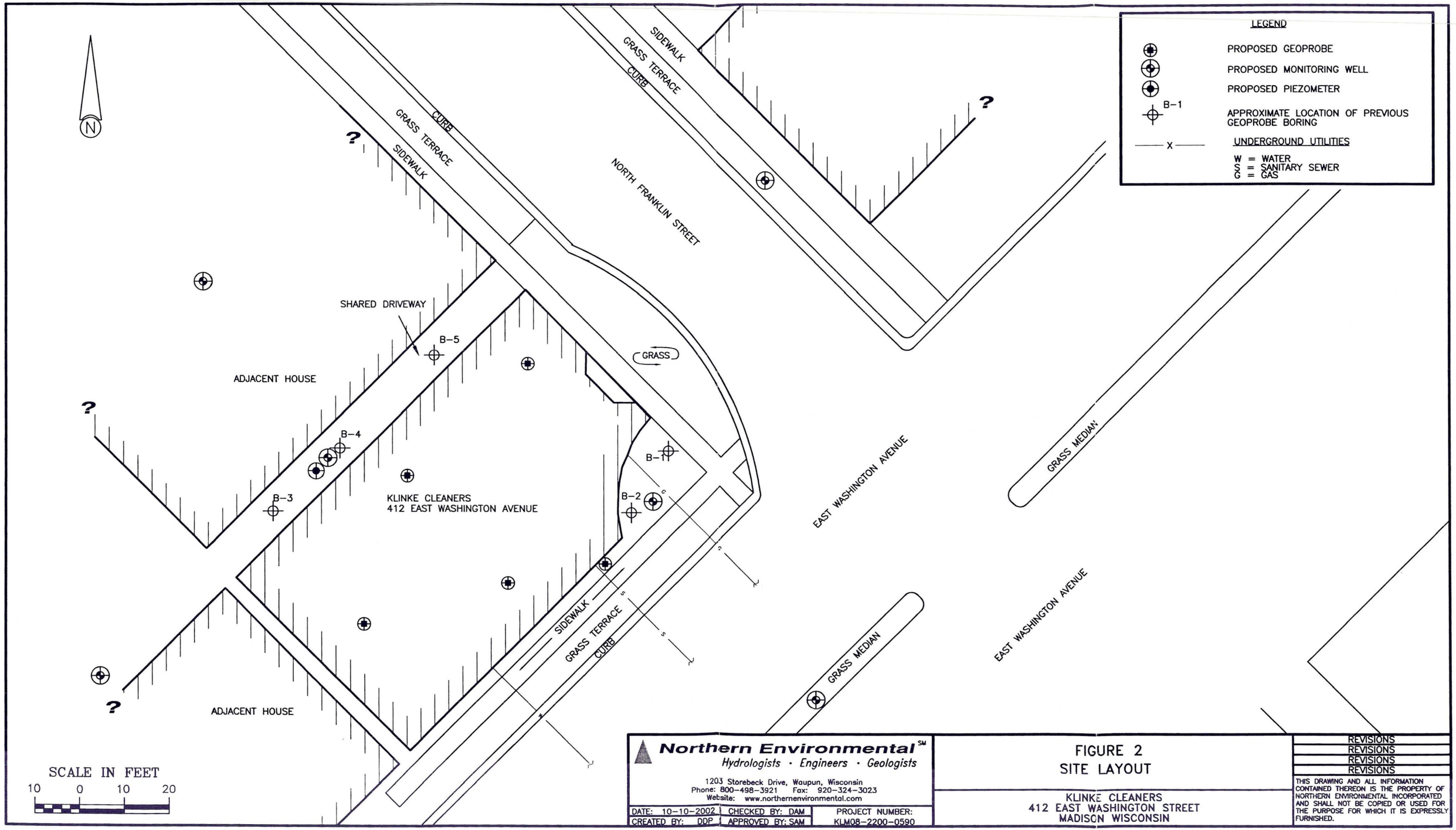

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DATE: 10-10-2002	CHECKED BY: DAM	PROJECT NUMBER:
CREATED BY: DDP	APPROVED BY: SAM	KLM08-2200-0590

FIGURE 2
SITE LAYOUT

KLINKE CLEANERS
412 EAST WASHINGTON STREET
MADISON WISCONSIN

REVISIONS
REVISIONS
REVISIONS
REVISIONS

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