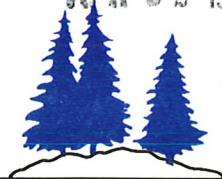


APR 02 1991



Environmental Associates
of Milwaukee, Inc.

April 1, 1991

John Feeney
Wisconsin Department of Natural Resources
Southeast District Headquarter
2300 N. Dr. Martin Luther King Jr. Drive
P.O. Box 12436
Milwaukee, WI 53212

RE: Subsurface Investigation at Village of Thiensville Highway
Department, 120 W. Freistadt Road, Thiensville, Wisconsin.

Dear Mr. Feeney:

Please find enclosed a copy of the proposed subsurface investigation
at the above mentioned location.

As always, if you have any questions or concerns, please contact us
at your convenience.

Sincerely,

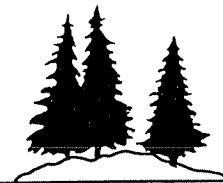
Environmental Associates
of Milwaukee, Inc

Brian T. Bartling

Brian T. Bartling
Principal Geoscientist

BTB:wj

Environmental Associates
of Milwaukee, Inc.



March 13, 1991

Kristine M. Hinrich
Village Administrator
Village of Thiensville
250 Elm Street
Thiensville, WI 53092

RE: Subsurface investigation at Village of Thiensville Highway
Department, 120 W. Freistadt Road Thiensville, Wisconsin.

Dear Ms. Hinrich:

Per your Request, Environmental Associates of Milwaukee, Inc. (Environmental Associates) has prepared a proposal for conducting a subsurface investigation for The Village of Thiensville Highway Department at the above referenced location and is located in the southeast 1/4 of the southeast 1/4 of Section 15, Township 9 North, Range 21 East (Figure 1) . This location will be referenced to as the "Property" in the remainder of this proposal. The proposed investigation is designed to define the nature and extent of soil and groundwater impacts identified during the 55-gallon drum spill clean-up conducted on February 21, 1991. This information is essential to cost effective remediation of the suspected and identified impacts at the site. The proposal describes the project workplan and provides estimated costs, unit rates, and list of subcontractors we would anticipate using for the project as well as a list of professional references for your review.

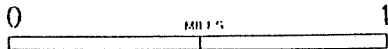
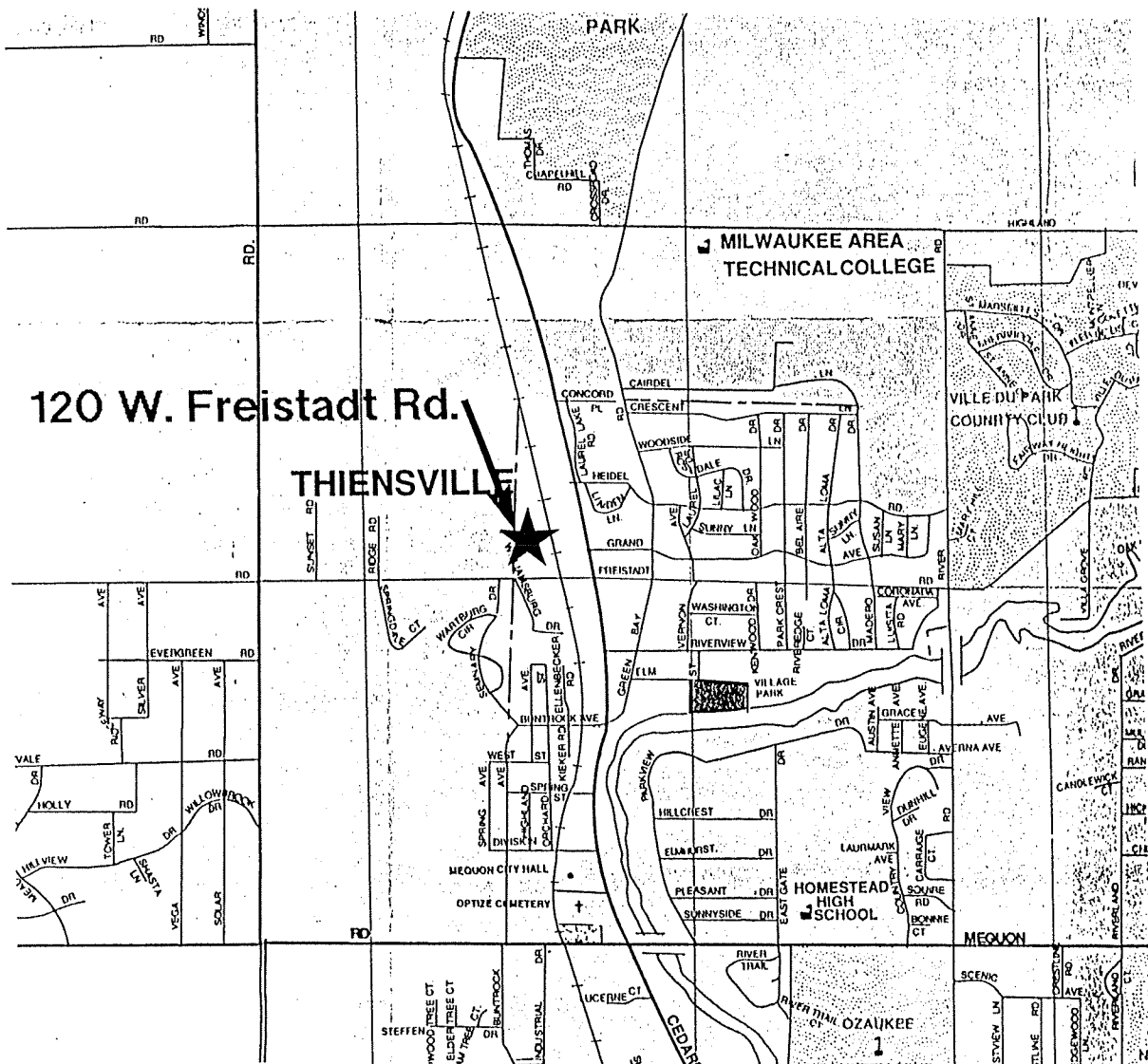


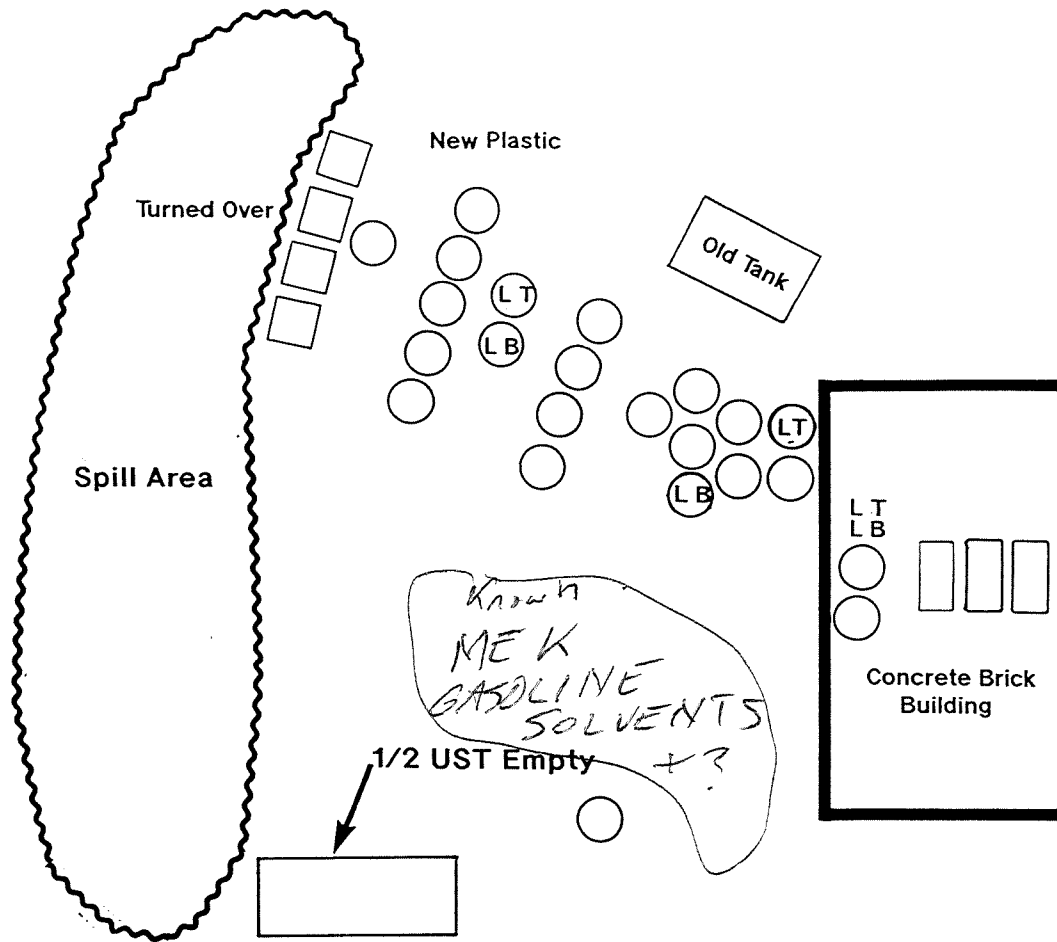
FIGURE 1
Site Location Map
and
Local Topography
Village of Thiensville
Highway Department

Environmental Associates of Milwaukee, Inc.

Drawn by:	Checked by:	Drawing number
	Approved by:	91-06078-1

G.M.B. ENGINEERING 536988

VOC'S
 SEMI-VOC'S
 TCE
 MEK



LEGEND

- LT Leaking From Top
- LB Leaking From Bottom

FIGURE 2
Site Map
Drum and Spill
Location Map

Not to Scale

Environmental Associates of Milwaukee, Inc.

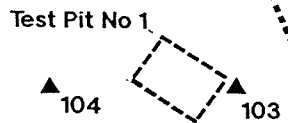
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by:		Approved by:			

Project Workplan

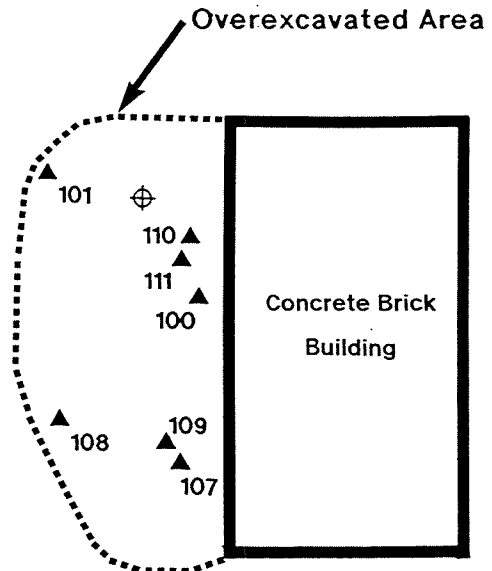
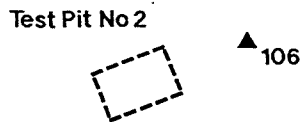
Successful and cost effective remediation of the suspected and identified impacts at the site requires a thorough understanding of the contaminants involved and their degree of migration as well as the local hydrogeology. The full extent of impacts identified at the property could not be quantified during the spill clean-up. Since subsurface materials consist largely of various fill, silty sands and some gravel, the lateral and vertical extent of impacted soil as well as groundwater could possibly be extensive and needs to be defined and quantified so as to provide for selection of the most cost efficient and effective remedial option.

To define the extent of soil and potential groundwater impacts at the site, approximately four (4) soil exploration borings will be advanced with a drill rig equipped with 6-1/4 inch ID hollow stem augers. The actual depth and number of boreholes will be dependent upon actual subsurface conditions encountered during drilling activities as well as any impacts detected with in-field instrumentation. Additional borings may be necessary if the selected locations prove to inadequately define the extent of remaining soil or potential groundwater impacts at the site (Figure 3).

The borings will be used to define the vertical and lateral extent of remaining impacted soils at the site and will be drilled to approximately 15 feet below grade. Of these borings, one will be located to define the presumed down gradient extent of soil/groundwater impacts. Two borings will be drilled on both sides of the suspected contaminant plume to help define the lateral extent of contamination. The fourth boring will be drilled hydraulically upgradient to assess the potential for contaminants originating from other, here-to unidentified, on and off-site sources as well as establishing reasonable clean-up standards should remediation be required.



Impacted at Depth



- LEGEND**
- ▲ Soil Sample Location
 - ⊕ Proposed Monitoring Well Location

FIGURE 3
Soil Sample
and
Proposed Borehole
and
Monitoring Well
Location Map

Not to Scale

Environmental Associates of Milwaukee, Inc.

Drawn by:		Checked by:		Drawing number	91-06078-3
		Approved by:			

Soil samples will be collected every 3 feet using standard split-spoon techniques per ASTM D-1586 specifications. A portion of each sample will be immediately placed in a clean dry glass jar with a Teflon lined lid and cooled for possible laboratory analysis. Another portion of the sample will be screened with a photo ionization detector (PID) for the presence of volatile organic compounds (VOC's). The remaining sample will be described by an Environmental Associates hydrogeologist and stored in eight ounce paragon jars for any further description and/or subsequent analysis of physical parameters. Final borehole logs will be prepared in general conformance with ASTM 2488 specifications. These logs will include information on soil type, color, moisture content, odor, structural characteristics, consistency, density, lithology, and PID response during screening.

All downhole drilling equipment will be steam cleaned between borehole locations. Split-spoon samplers will be steam cleaned or washed with tri-sodium phosphate (TSP) and rinsed with potable water (from an off-site source) before each soil sample is collected. Lubricants will not be used on any downhole drilling tools. A decontamination area will be set up for collection of wash water generated during equipment decontamination procedures. All development and wash water will be contained and stored on site pending laboratory analysis.

Cuttings from the boring operation will be containerized in drums or stockpiled on an impermeable base and covered with an impermeable sheeting pending laboratory analysis. Upon receipt of soil analysis results from the borehole samples, the contaminated soil will be disposed of following proper methods and procedures

One soil sample per boring (4 samples) will be selected for laboratory analysis to evaluate the contamination plume configuration. The sample will be selected from the area where the boring intersects the water table, which should be approximately

four feet below present grade.

Do also TPH, TCLP

Samples selected for laboratory analysis will be submitted under chain of custody to a WDNR approved laboratory for analysis of volatile organic compounds (VOC's), semi-volatiles, trichlorethylene, and methyl ethyl ketone (EPA method 8240).

Soil

TPH?
metals?
HAZ
waste?

↑ not in 8240

All boreholes will be completed as groundwater quality monitoring wells. These wells will be constructed of two-inch diameter schedule 40 PVC casing in conformance with NR 141 groundwater monitoring well construction requirements. All monitoring wells will be surveyed with respect to mean sea level to the nearest 0.1 foot. Any other additional boreholes that may be required will be abandoned per NR 141.25 within three (3) working days after their discontinuation.

The groundwater quality monitoring wells will be developed per NR 141.21 requirements using a variable capacity PVC bailer or centrifugal pump. After well development is completed, the groundwater quality monitoring wells will be sampled. Each well will be sampled within 24 hours of purging to ensure that sampled water is representative of ambient groundwater quality. The water samples will be submitted under chain of custody to a WDNR approved laboratory for analysis of EPA method 8240 as described above. All development water will be containerized on site pending laboratory analysis for proper disposal.

Data Analysis and Remedial Action Evaluation

The results of the aforementioned investigative activities will be reviewed and analyzed for the purpose of determining the extent of remaining soil/groundwater impacts at the site and evaluating the feasibility and method of remedial action. The objectives of any remedial action plan would be to:

- o Minimize or eliminate any impacts to human health and the

environment.

- o Satisfy WDNR regulations and guidelines concerning VOC contaminated soil and/or groundwater.
- o Minimize or eliminate potential future environmental liabilities to The Village of Thiensville.
- o Minimize the total cost of remediation.
- o Minimize total time requirements to accomplish remedial action objectives.

The results of the evaluation will be summarized in a final report and culminate in a plan for remedial action at the site. The report will include all data, figures, text, and appendices necessary to present, interpret, and support any conclusions and recommendations. Specifically, the report will provide the following:

- o Description of all investigative methods in detail.
- o Provide an interpretative conceptual model of site geology/hydrogeology.
- o Assess the significance of any identified contaminant pathways.
- o Presentation and interpretation of resulting soil and groundwater quality analytical results generated by the investigation.
- o Assess the significance and potential fate of identified remaining impacts.
- o Identify potentially feasible remedial alternatives as well as

locate on map nearby wells

describe in detail the preferred remedial action plan as well as provide a detailed cost estimate.

Work can begin on this project within two to four weeks upon receipt of written approval of the work plan from the WDNR. The remedial investigation activities and follow-up report should take six to eight weeks with a draft remedial investigation report issued at that time. The final report will be submitted to the WDNR for review after the appropriate review by The Village of Thiensville and/or their representatives.

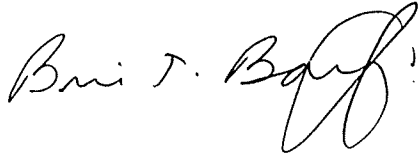
All work will be performed on a time and materials basis in accordance with the enclosed unit rate schedule. Only actual amounts will be invoiced. The estimated costs includes all labor, supplies, subcontract work and laboratory services necessary to complete the described work plan.

It is understood that Environmental Associates and its contractors are to be granted access to the site. All information gathered or generated as part of this project as well as all results, conclusions and recommendations derived from the data will be treated as confidential to the owner(s) within the limits of the law. Any information will not be released to any third party without the prior written approval of the owner or their representative.

This proposal and all information contained herein is supplied expressly for the purpose of technical and financial evaluation by the addressed party and/or their representative, and shall not be released to any third party without prior written approval from Environmental Associates.

We hope this information meets your needs. If you have any questions or require additional information or clarification, please call us at your convenience. Environmental Associates looks forward to working with you on this very important project.

Sincerely
Environmental Associates
of Milwaukee, Inc.



Brian T. Bartling
President/Principal Geoscientist

BTB:wj

*document proper testing/
disposal of drums +
contents*

*determine if soil
is hazardous*