Engineers
Architects
Planners
Scientists

Foth & Van Dyke
10340 Viking Drive, Suite 100
Eden Prairie, MN 55344
612/942-0396
FAX: 612/942-0865

March 1, 1991

Mr. James R. Lundy
Tanks and Spills Section
Hazardous Waste Division
Minnesota Pollution Control Agency
520 Lafayette Road
St. Paul, MN 55155

90W56

Dear Mr. Lundy:

RE: Remedial Investigation Work Plan
Site: Waste Management of Minnesota - Savage
Site ID: LEAK 00000990

PURPOSE

This work plan addresses issues raised by the Minnesota Pollution Control Agency (MPCA) in a letter submitted by the agency to Waste Management dated July 11, 1990. At that time, the agency had made a preliminary review of two reports submitted by Foth & Van Dyke on action undertaken at the Savage facility.

Completion of the tasks described in this work plan will provide greater detail on the extent and condition of soil and water contamination resulting from the release of petroleum products at the Savage facility.

BACKGROUND

Foth & Van Dyke has undertaken an underground storage tank (UST) investigation at the site. Two reports have been submitted to the MPCA. Approximately 100 cubic yards of contaminated soil has been excavated and disposed. Four groundwater monitoring wells have been installed and sampled quarterly since February 1990. The results of the monitoring are contained in Appendix A of this work plan. Photos showing the location of monitoring well MW-2 and the area where UST #2 was located are also included with this work plan.

SCOPE OF INVESTIGATION

In response to the MPCA's request, Foth & Van Dyke proposes to complete the following additional site activities. Each is described in the following tasks.

Task 1. March Sampling of MW-2

Prior to commencing with other tasks, Foth & Van Dyke will sample MW-2 again for benzene, ethylbenzene, toluene, xylenes (BETX), total hydrocarbons (THC) for gasoline and oil, and lead. This is to determine whether the levels for these parameters have diminished below the Minnesota Department of Health's (MDH) Recommended Allowable Limits (RALs). The December 1990 sampling event had benzene at 15 ug/l in comparison with 73 ug/l for the August 1990 sampling event. The RAL for benzene is 10 ug/l.

Depending upon the sampling results, additional monitoring and the installation of additional wells may be required as discussed in Task 4. However, if the sampling shows continued decreases in the benzene, additional wells are probably not needed.

Task 2. Soil Monitoring for UST #1 Tank

Soil monitoring will be conducted inside the Waste Management truck servicing building to determine whether an abandoned UST beneath the building's floor is or has contributed to any soil contamination. This tank is referred to as UST #1 in the MPCA letter and its location is shown on Figure 1.

Borings will be installed using hollow stem augers through the floor in two or three locations and will extend to the water table. Samples will be collected in 2.5-foot intervals with a split spoon. Soil samples with the highest headspace reaching and from the bottom of each boring will be analyzed for BETX, THC for gasoline and fuel oil, and lead. Samples will be visually inspected for contamination and headspace analysis for volatile organic compounds (VOCs) will be performed on each sample using a Photovac MicroTIP photoionization detector.

Task 3. Soil Boring Installation

In response to the MPCA's request for additional soils analysis, three to six additional soil borings will be installed down and side gradient to where the former UST #2 was located. Each boring will be extended to the water table. Soil samples will be visually inspected for contamination and headspace analysis for VOCs will be performed on each soil sample using a Photovac TIP 1 photoionization detector. Selected samples showing signs of contamination will be further analyzed for BETX, THC for gasoline and fuel oil, and lead.

Proposed placement of the borings is shown on Figure 1.

Task 4. Monitoring Well Installation → of Task 3

Depending upon the results of Task 1, one additional groundwater monitoring well may be installed downgradient from the UST #2 location and MW-2. The approximate location is shown on Figure 2 and is off-site from the Waste Management property. Final placement will be subject to utility and easement restrictions.

In addition, if the results of headspace analysis in Task 2 show contamination in the soil and adjacent to UST #1, another monitoring well may be installed downgradient from UST #1 and adjacent to the building.

Task 5. Monitoring

Depending upon the results of previous tasks, groundwater samples from MW-1, MW-2, and any new well(s) will be collected and analyzed for BETX, THC-gasoline and fuel oil, and lead for two consecutive quarters. If possible one sample from the on-site well (unique number 207947) will be collected and analyzed for the same parameters as the monitoring wells.

The results will be compared to existing data and a recommendation for future monitoring or remediation will be made at that time. We are requesting that MW-3 and MW-4 no longer be sampled since we are not finding any detects in these wells. MW-1 results will represent upgradient groundwater quality.

Task 6. Valley Oil Company Site

A review of existing and available data will be made on the Valley Oil site located at Pennsylvania Avenue and the Hwy 13 frontage road north of the Waste Management site. Valley Oil has had several underground tanks removed and has also conducted groundwater pumping in June and July 1990 to lower the water table to allow for retanking. The pumping caused the level in MW-4 to drop 6.28 ft. between our May and August 1990 sampling events. This action may have impacted the Waste Management site.

Task 7. Report

A report describing the work carried out under this work plan and the results will be prepared. Based upon the monitoring and past site remediation efforts, recommendations for additional remediation will be made. Remediation will address both soil and water contamination if it is warranted by this investigation. The report will also contain site maps showing the locations at all pertinent facilities. A property survey map showing monitoring wells will be provided.

SUMMARY

The proposed work scope addresses the salient issues raised in the MPCA July 11, 1990 letter. In addition, site photos showing the location of MW-2, the new pump island and site of where UST #2 was located are provided in Appendix B. We believe this photographic documentation provides greater clarity relating to the issue of showing monitoring wells on a site map which is limited in scale accuracy due to the small map size.

Please contact us if you need further information.

Sincerely,

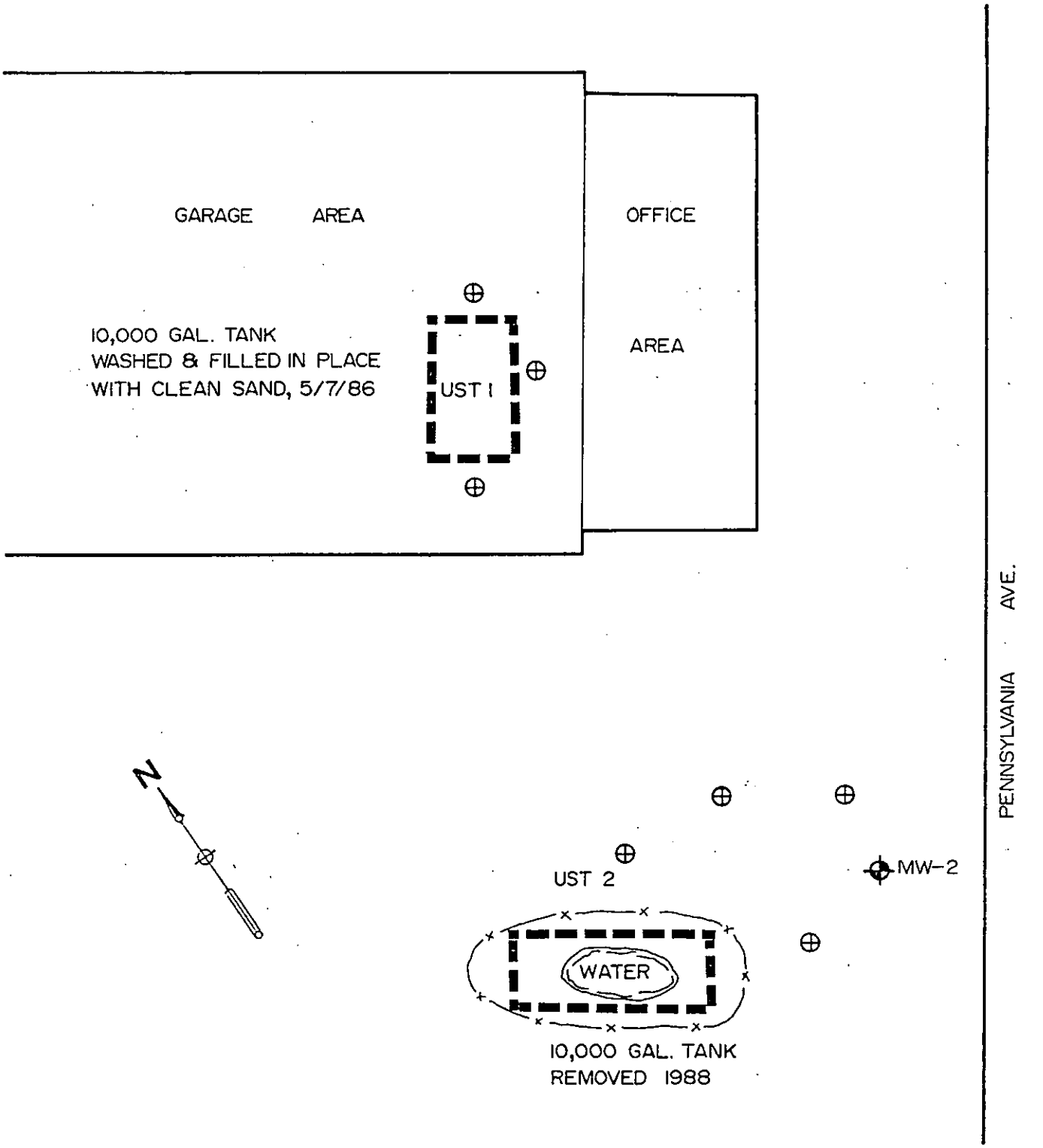
FOTH & VAN DYKE

Fred J. Doran, P.E.
Division Manager

Craig L. Johansen
Associate and Program Manager
Solid/Hazardous Waste Management

FJD/CLJ:jmk

cc: Bruce Weaver, Waste Management, Inc.
Mike Berkopec, Waste Management, Inc.



LEGEND

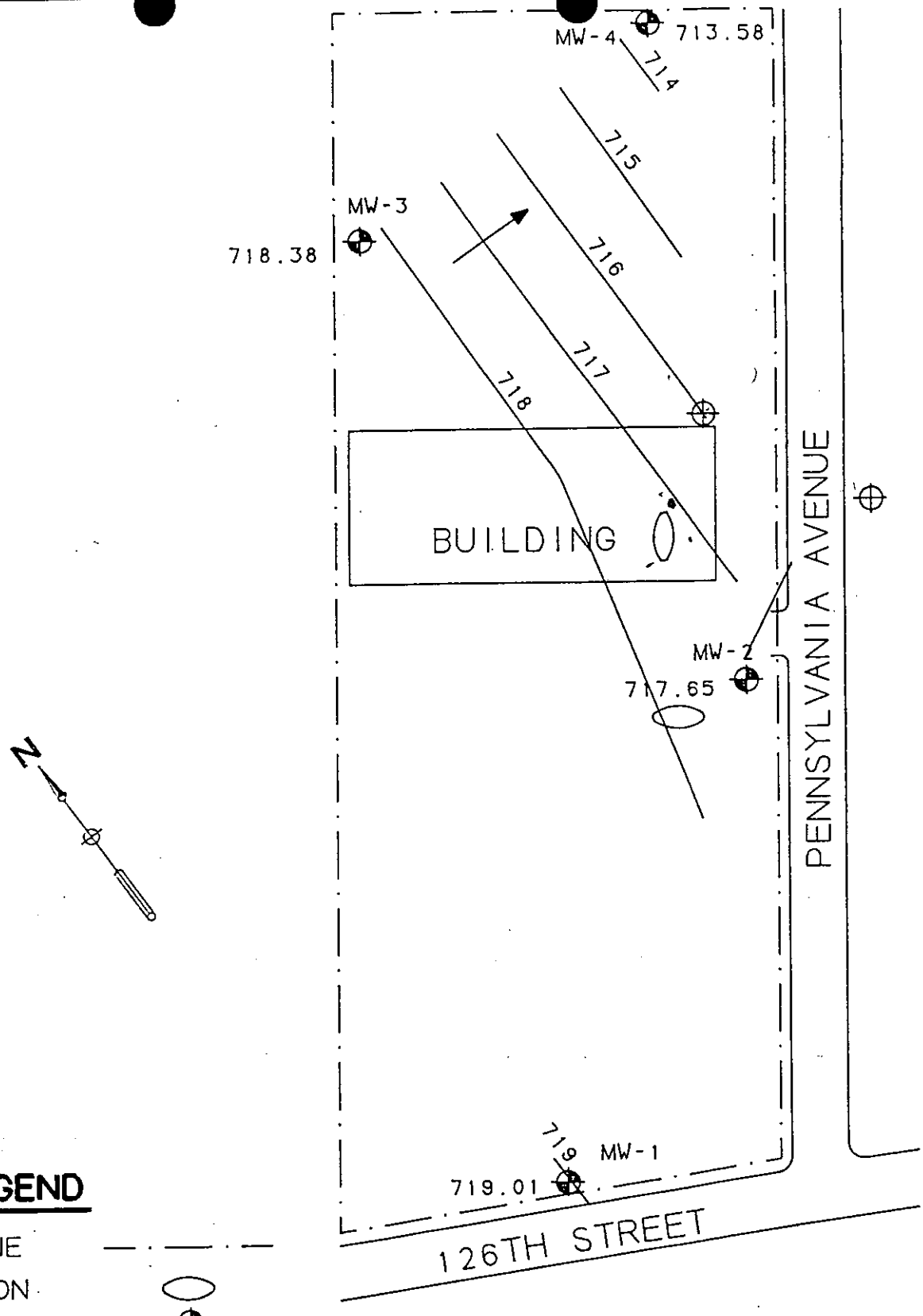
⊕	PROPOSED SOIL BORING
MW-2 ⊕	MONITORING WELL
▬ ▬ ▬	UST SITE BOUNDARY
x——x	6' CYCLONE FENCE

WASTE MANAGEMENT OF MINNESOTA

FIGURE 1

SITE MAP
SAVAGE, MINNESOTA

Scale: 1" = 30'	Date: 2/28/91
Prepared by: Foth & Van Dyke	By: MWB



LEGEND

- PROPERTY LINE
- TANK LOCATION
- MONITORING WELL
- WATER TABLE CONTOUR 717
- GROUNDWATER FLOW DIRECTION
- PROPOSED MONITORING WELL

WASTE MANAGEMENT OF MINNESOTA

FIGURE 2

MONITORING WELL LOCATIONS AND WATER TABLE CONTOUR MAP
SAVAGE, MINNESOTA

SCALE: 1" = 100'	DWG. NO: W5601F2	DATE: 2/28/91
PREPARED BY: FOTH & VAN DYKE		BY: FJD

APPENDIX A

Groundwater Analytical Results

May 1990
August 1990
December 1990

Summary
Groundwater Analytical Results

August 1990

	MW-1	MW-2	MW-3	MW-4
Benzene	ND	0.073	ND	ND
Toluene	ND	0.013	ND	ND
Ethylbenzene	ND	0.028	ND	ND
Xylenes	ND	0.13	ND	ND
THC as Gasoline	ND	1.0	ND	ND
Lead, Dissolved	ND	0.018	0.009	0.007
Hexane Extraction Gasoline	ND	0.30	ND	ND

December 1990

	MW-1	MW-2	MW-3	MW-4
Benzene	ND	0.015	ND	ND
Toluene	ND	0.005	ND	ND
Ethylbenzene	ND	0.009	ND	ND
Xylenes	ND	0.037	ND	ND
THC as Gasoline	ND	0.64	ND	ND
Lead, Dissolved	ND	ND	ND	ND
Hexane Extraction Gasoline	ND	0.17	ND	ND

Notes:
1. May 1990 analysis showed no detects.
2. All detects reported in mg/l.

90W56

ORTEK
ENVIRONMENTAL LABORATORY

Oneida Environmental Technology Center
2496 West Mason Street
P.O. Box 12435
Green Bay, WI 54307-2435
Telephone No.: (414) 498-2222

LABORATORY ANALYSIS RESULTS

Wisconsin Certification No.
405099530

Sample ID: WMM-SAVAGE
Sample Desc: WATER
Batch #: 9006016
Job #: 90W56

Client: Foth & Van Dyke
Address: 10340 Viking Dr Suite 100
Eden Praire, MN 55344

Attn: K. Dittman
Telephone No.: 612-942-0396

GC/MS ORGANIC ANALYSIS SUMMARY

Client ID reported on forms as EPA sample number.
Volatile organic analysis performed by EPA method 8240 on a DB-624 capillary Column.

FORM INDEX:
- Form 1A - Volatile Organics Data Sheet
- Form 1E - Volatile Tentatively Identified Compounds

"Q" COLUMN QUALIFIERS:
- U - Compound analyzed for but not detected
- D - Compound indentified in the analysis at a secondary dilution
- B - Indicates the analyte is found in the associated method blank
- J - Estimated value, concentration of analyte below quantitation limit
- E - Compound exceeds calibration range

THC quantitated as Benzene, Ethylbenzene, Toluene, Total Xylenes, Methyl-t-butyl ether, Tetramethylbutane, Ethylmethylbenzene and Trimethylbenzene.

Comments:

Signed: _____ Date: 7/14/92

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-1

Lab Name: ORTEK Contract: 1460

Lab Code: ORTEK Case No.: 100904 SAS No.: 90W56 SDG No.: MW1

Matrix: (soil/water) WATER Lab Sample ID: 100904

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 006CV020

Level: (low/med) LOW Date Received: 06/01/90

% Moisture: not dec. Date Analyzed: 06/05/90

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-4	Dichlorodifluoromethane	1	U
1634-04-4	Methyl-t-butyl ether	1	U
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl Chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene Chloride	0.5	U
75-35-4	1,1-Dichloroethene	0.5	U
75-34-3	1,1-Dichloroethane	0.5	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	Trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	0.5	U
107-06-2	1,2-Dichloroethane	1	U
71-55-6	1,1,1-Trichloroethane	0.5	U
56-23-5	Carbon Tetrachloride	0.5	U
75-27-4	Bromodichloromethane	0.5	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	0.5	U
79-01-6	Trichloroethene	0.5	U
124-48-1	Dibromochloromethane	0.5	U
79-00-5	1,1,2-Trichloroethane	0.5	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	0.5	U
110-75-8	2-Chloroethylvinylether	1	U
75-25-2	Bromoform	1	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	0.5	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	0.5	U
100-41-4	Ethylbenzene	0.5	U
1330-20-7	Xylene (total)	1	U
----------	Total Hydrcarbons as Gas	10	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-2

Lab Name: ORTEK Contract: 1460

Lab Code: ORTEK Case No.: 100904 SAS No.: 90W56 SDG No.: MW1

Matrix: (soil/water) WATER Lab Sample ID: 100905

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 006CV023

Level: (low/med) LOW Date Received: 06/01/90

% Moisture: not dec. ____ Date Analyzed: 06/05/90

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-4	Dichlorodifluoromethane	1	U
1634-04-4	Methyl-t-butyl ether	1	U
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl Chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene Chloride	0.5	U
75-35-4	1,1-Dichloroethene	1	
75-34-3	1,1-Dichloroethane	0.6	
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	Trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	0.5	U
107-06-2	1,2-Dichloroethane	1	U
71-55-6	1,1,1-Trichloroethane	0.5	U
56-23-5	Carbon Tetrachloride	0.5	U
75-27-4	Bromodichloromethane	0.5	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	0.5	U
79-01-6	Trichloroethene	2	
124-48-1	Dibromochloromethane	0.5	U
79-00-5	1,1,2-Trichloroethane	0.5	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	0.5	U
110-75-8	2-Chloroethylvinylether	1	U
75-25-2	Bromoform	1	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	0.5	U
108-88-3	Toluene	1	
108-90-7	Chlorobenzene	0.5	U
100-41-4	Ethylbenzene	0.5	U
1330-20-7	Xylene (total)	1	U
----------	Total Hydrcarbons as Gas	10	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-3

Lab Name: ORTEK Contract: 1460

Lab Code: ORTEK Case No.: 100904 SAS No.: 90W56 SDG No.: MW1

Matrix: (soil/water) WATER Lab Sample ID: 100906

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 006CV024

Level: (low/med) LOW Date Received: 06/01/90

% Moisture: not dec. ____ Date Analyzed: 06/05/90

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-4	Dichlorodifluoromethane	1	U
1634-04-4	Methyl-t-butyl ether	1	U
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl Chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene Chloride	0.5	U
75-35-4	1,1-Dichloroethene	0.5	U
75-34-3	1,1-Dichloroethane	0.5	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	Trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	0.5	U
107-06-2	1,2-Dichloroethane	1	U
71-55-6	1,1,1-Trichloroethane	0.5	U
56-23-5	Carbon Tetrachloride	0.5	U
75-27-4	Bromodichloromethane	0.5	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	0.5	U
79-01-6	Trichloroethene	0.5	U
124-48-1	Dibromochloromethane	0.5	U
79-00-5	1,1,2-Trichloroethane	0.5	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	0.5	U
110-75-8	2-Chloroethylvinylether	1	U
75-25-2	Bromoform	1	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	0.5	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	0.5	U
100-41-4	Ethylbenzene	0.5	U
1330-20-7	Xylene (total)	1	U
----------	Total Hydrcarbons as Gas	10	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-4

Lab Name: ORTEK Contract: 1460

Lab Code: ORTEK Case No.: 100904 SAS No.: 90W56 SDG No.: MW1

Matrix: (soil/water) WATER Lab Sample ID: 100907

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 006CV025

Level: (low/med) LOW Date Received: 06/01/90

% Moisture: not dec. ____ Date Analyzed: 06/05/90

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-4	Dichlorodifluoromethane	1	U
1634-04-4	Methyl-t-butyl ether	1	U
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl Chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene Chloride	0.5	U
75-35-4	1,1-Dichloroethene	0.5	U
75-34-3	1,1-Dichloroethane	0.5	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	Trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	0.5	U
107-06-2	1,2-Dichloroethane	1	U
71-55-6	1,1,1-Trichloroethane	0.5	U
56-23-5	Carbon Tetrachloride	0.5	U
75-27-4	Bromodichloromethane	0.5	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	0.5	U
79-01-6	Trichloroethene	0.5	U
124-48-1	Dibromochloromethane	0.5	U
79-00-5	1,1,2-Trichloroethane	0.5	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	0.5	U
110-75-8	2-Chloroethylvinylether	1	U
75-25-2	Bromoform	1	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	0.5	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	0.5	U
100-41-4	Ethylbenzene	0.5	U
1330-20-7	Xylene (total)	1	U
----------	Total Hydrcarbons as Gas	10	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TRIP_BLANK

Lab Name: ORTEK Contract: 1460

Lab Code: ORTEK Case No.: 100904 SAS No.: 90W56 SDG No.: MW1

Matrix: (soil/water) WATER Lab Sample ID: 100908

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 006CV026

Level: (low/med) LOW Date Received: 06/01/90

% Moisture: not dec. _____ Date Analyzed: 06/05/90

Column: (pack/cap) CAP Dilution Factor: 1.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		Q
75-71-4	Dichlorodifluoromethane	1	U
1634-04-4	Methyl-t-butyl ether	1	U
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl Chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene Chloride	0.5	U
75-35-4	1,1-Dichloroethene	0.5	U
75-34-3	1,1-Dichloroethane	0.5	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	Trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	0.5	U
107-06-2	1,2-Dichloroethane	1	U
71-55-6	1,1,1-Trichloroethane	0.5	U
56-23-5	Carbon Tetrachloride	0.5	U
75-27-4	Bromodichloromethane	0.5	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	0.5	U
79-01-6	Trichloroethene	0.5	U
124-48-1	Dibromochloromethane	0.5	U
79-00-5	1,1,2-Trichloroethane	0.5	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	0.5	U
110-75-8	2-Chloroethylvinylether	1	U
75-25-2	Bromoform	1	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	0.5	U
108-88-3	Toluene	1	
108-90-7	Chlorobenzene	0.5	U
100-41-4	Ethylbenzene	0.5	U
1330-20-7	Xylene (total)	1	U
----------	Total Hydrcarbons as Gas	10	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U

ORTEK
ENVIRONMENTAL LABORATORY

Oneida Environmental Technology Center
2496 West Mason Street
P.O. Box 12435
Green Bay, WI 54307-2435
Telephone No.: (414) 498-2222

LABORATORY ANALYSIS RESULTS

Wisconsin Certification No. 405099530

Client: Foth & Van Dyke Engineers
Address: 10340 Viking Dr. Suite 100
Eden Prairie, MN 55344

Attn: Kathy Dittman
Telephone No.: 612-942-0396

Sample ID: MW-2
Sample Desc: GROUNDWATER
Date Collected: 5-30-90
Date Received: 6-1-90
Result Sheet #: 1460
Job #: WMM-SAVAGE 90W56

CALIFORNIA METHOD TPH ANALYSIS

PARAMETER	DETECTION LIMIT	CONCENTRATION	UNITS
Gasoline	0.5	ND	mg/l
Kerosene	0.1	ND	mg/l
Diesel	0.1	ND	mg/l

ND = Not Detected

Comments Lab Sample ID: 9006016-100905
Date Analyzed: 6-21-90
Analyzed by GC/FID on a DB-5 Capillary Column

Signed: D. [signature] Date: 7-13-90

ORTEK
ENVIRONMENTAL LABORATORY

Oneida Environmental Technology Center
2496 West Mason Street
P.O. Box 12435
Green Bay, WI 54307-2435
Telephone No.: (414) 498-2222

LABORATORY ANALYSIS RESULTS

Wisconsin Certification No. 405099530

Client: Foth & Van Dyke Engineers
Address: 10340 Viking Dr. Suite 100
Eden Prairie, MN 55344

Attn: Kathy Dittman
Telephone No.: 612-942-0396

Sample ID: MW-3
Sample Desc: GROUNDWATER
Date Collected: 5-30-90
Date Received: 6-1-90
Result Sheet #: 1460
Job #: WMM-SAVAGE 90W56

CALIFORNIA METHOD TPH ANALYSIS

PARAMETER	DETECTION LIMIT	CONCENTRATION	UNITS
Gasoline	0.5	ND	mg/l
Kerosene	0.1	ND	mg/l
Diesel	0.1	ND	mg/l

ND = Not Detected

Comments Lab Sample ID: 9006016-100906
Date Analyzed: 6-21-90
Analyzed by GC/FID on a DB-5 Capillary Column

Signed: D. Schmidt Date: 7-13-90

ORTEK
ENVIRONMENTAL LABORATORY

Oneida Environmental Technology Center
2496 West Mason Street
P.O. Box 12435
Green Bay, WI 54307-2435
Telephone No.: (414) 498-2222

LABORATORY ANALYSIS RESULTS

Wisconsin Certification No.
405099530

Client: Foth & Van Dyke Engineers
Address: 10340 Viking Dr. Suite 100
Eden Prairie, MN 55344

Attn: Kathy Dittman
Telephone No.: 612-942-0396

Sample ID: MW-4
Sample Desc: GROUNDWATER
Date Collected: 5-30-90
Date Received: 6-1-90
Result Sheet #: 1460
Job #: WMM-SAVAGE 90W56

CALIFORNIA METHOD TPH ANALYSIS

PARAMETER	DETECTION LIMIT	CONCENTRATION	UNITS
Gasoline	0.5	ND	mg/l
Kerosene	0.1	ND	mg/l
Diesel	0.1	ND	mg/l

ND = Not Detected

Comments Lab Sample ID: 9006016-100907
Date Analyzed: 6-21-90
Analyzed by GC/FID on a DB-5 Capillary Column

Signed: D. Schmidt Date: 7-13-90

ORTEK
ENVIRONMENTAL LABORATORY

Oneida Environmental Technology Center
2496 West Mason Street
P.O. Box 12435
Green Bay, WI 54307-2435
Telephone No.: (414) 498-2222

LABORATORY ANALYSIS RESULTS

Wisconsin Certification No.
405099530

Client: Foth & Van Dyke Engineers
Address: 10340 Viking Dr. Suite 100
Eden Prairie, MN 55344

Attn: Kathy Dittman
Telephone No.: 612-942-0396

Sample ID: TRIP BLANK
Sample Desc: GROUNDWATER
Date Collected: 5-30-90
Date Received: 6-1-90
Result Sheet #: 1460
Job #: WMM-SAVAGE 90W56

CALIFORNIA METHOD TPH ANALYSIS

PARAMETER	DETECTION LIMIT	CONCENTRATION	UNITS
Gasoline	0.5	ND	mg/l
Kerosene	0.1	ND	mg/l
Diesel	0.1	ND	mg/l

ND = Not Detected

Comments Lab Sample ID: 9006016-100908
Date Analyzed: 6-21-90
Analyzed by GC/FID on a DB-5 Capillary Column

Signed: D. Eckhardt Date: 7-13-90

ORTEK
Oneida Environmental Technology Center
2496 West Mason Street
P. O. Box 12435
Green Bay, WI 54307-2435
Telephone: (414) 498-2222

LABORATORY ANALYSIS RESULTS

W.D.N.R. LAB CERT. NO. 405099530

Client	FOTH & VAN DYKE	Sampled By	MWB
Address	10340 VIKING DRIVE	P.O. #	
	SUITE 100	Job #	
	EDEN PRAIRIE MN 55344	Report to:	K DITTMAN
Name of Rep.		Invoice #	6114
Telephone No.	(000) 000-0000	Result Sheet No.	1460.01

Sample I.D.	MW-1 WMM-SAVAGE	MW-2 WMM-SAVAGE
ORTEK Sample I.D.	9006016-100904	9006016-100905
Date Collected	5/30/90	5/30/90
Date Received	6/1/90	6/1/90

Parameters	Results	Results	Detection Limit	Units
Total Lead	ND	ND	2.0	UG/L

ND = Not Detected

Comments:

Signed: _____ Date: 7/14/90

ORTEK
Oneida Environmental Technology Center
2496 West Mason Street
P. O. Box 12435
Green Bay, WI 54307-2435
Telephone: (414) 498-2222

LABORATORY ANALYSIS RESULTS

W.D.N.R. LAB CERT. NO. 405099530

Client	FOTH & VAN DYKE	Sampled By	MWB
Address	10340 VIKING DRIVE	P.O. #	
	SUITE 100	Job #	
	EDEN PRAIRIE MN 55344	Report to:	K DITTMAN
Name of Rep.		Invoice #	6114
Telephone No.	(000) 000-0000	Result Sheet No.	1460.02

Sample I.D.	MW-3 WMM-SAVAGE	MW-4 WMM-SAVAGE		
ORTEK Sample I.D.	9006016-100906	9006016-100907		
Date Collected	5/30/90	5/30/90		
Date Received	6/1/90	6/1/90		
Parameters	Results	Results	Detection Limit	Units
Total Lead	ND	ND	2.0	UG/L

ND = Not Detected

Comments:

Signed: [signature] Date: 7/14/90

CHAIN OF CUSTODY RECORD

No.: 1460

Client: FOTH & VANDYKE

Project No.: WMM - SAVAGE, 90W56, BL-1

Sampling Site: SAME

Sampler: MWB

Packed by: _____ Seal #: _____

Seal Intact Upon Receipt by Sampling Co: ☐ Yes ☐ No

Condition of Contents: _____

Sealed for Shipping by: _____

Initial Contents Temp: _____ °C Seal #: _____

Seal Intact Upon Receipt by Laboratory: ☐ Yes ☐ No

Date	Time	Sample I.D.:/Description	Bottle Size / Preservative: 40ml/NONE	500ml/HNO3	1L AMBER/NONE				Bottle Total	Sample Type	Lab Use Only	Remarks
5/30/90	1053	MW-1 9006 016	3	1	1				5	GRAB	100 904	
〃	1004	MW-2	3	1	1				5	〃	905	
	1193	MW-3	3	1	1				5		906	
↓	1231	MW-9	3	1	1				5	↓	907	
		TRIP-BLANK	2						2		908	

Custody Transfers

	Relinquished by:	Date:	Time:	Received by:	Date:	Time:
1.		6/1/90	15:18			
2.						
3.						
4.						

Received for Laboratory: Arlene Schaefer 6/1/90 15:18

Shipping Details

Method of Shipment: Hand delivery

Condition of Contents: Good

Contents Temperature: 13.6 °C

ORTEK Project No.: _____

ORTEK
2496 W. Mason
Green Bay, Wisconsin 54303
Phone: 414/498-2222 Fax: 414/498-4067

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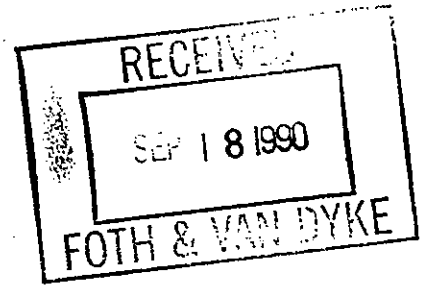
THE ASSURANCE OF QUALITY

REPORT OF LABORATORY ANALYSIS



September 10, 1990

Mr. Mike Bluma
Foth & Van Dyke
10340 Viking Drive
suite 100
Eden Prairie, MN 55344

RE: PACE Project No. 900828.506
WM-Sauage 90W56-1

Dear Mr. Bluma:

Enclosed is the report of laboratory analyses for samples received August 28, 1990.

If you have any questions concerning this report, please feel free to contact us.

Sincerely,

R. Lorraine Vokaty

R. Lorraine Vokaty
Project Manager

FRED

Enclosures

1710 Douglas Drive North
Minneapolis, MN 55422
TEL: 612-544-5543
FAX: 612-525-3377

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REPORT OF LABORATORY ANALYSIS

Foth & Van Dyke
10340 Viking Drive
suite 100
Eden Prairie, MN 55344

September 10, 1990
PACE Project
Number: 900828506

MPCA LEAK # 00000990

Attn: Mr. Mike Bluma

WM-Savage

PACE Sample Number:			10 0340669	10 0340677	10 0340685
Date Collected:			08/27/90	08/27/90	08/27/90
Date Received:			08/28/90	08/28/90	08/28/90
Parameter	Units	MDL	MW-1	MW-2	MW-3
INORGANIC ANALYSIS					
INDIVIDUAL PARAMETERS					
Lead, Dissolved	mg/L	0.005	ND	0.018	0.009
ORGANIC ANALYSIS					
VOLATILE PETROLEUM RELATED COMPOUNDS					
Date Analyzed			08/31/90	08/31/90	08/31/90
Benzene	mg/L	0.001	ND	0.073	ND
Toluene	mg/L	0.001	ND	0.013	ND
Ethylbenzene	mg/L	0.001	ND	0.028	ND
Xylenes	mg/L	0.003	ND	0.13	ND
Total hydrocarbons as gasoline	mg/L	0.01	ND	1.0	ND
HEXANE EXTRACTION FOR PETROLEUM PRODUCTS					
Date Analyzed			08/30/90	08/30/90	08/30/90
Date Extracted			08/29/90	08/29/90	08/29/90
Gasoline	mg/L	0.10	ND	0.30	ND
Fuel Oil #1	mg/L	0.10	ND	ND	ND
Fuel Oil #2	mg/L	0.10	ND	ND	ND

MDL Method Detection Limit
ND Not detected at or above the MDL.

1710 Douglas Drive North
Minneapolis, MN 55422
TEL: 612-544-5543
FAX: 612-525-3377

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REPORT OF LABORATORY ANALYSIS

Mr. Mike Bluma
Page 2

September 10, 1990
PACE Project
Number: 900828506

WM-Savage

MPCA LEAK #00000990

Parameter	Units	MDL	MW-4
PACE Sample Number:			10 0340693
Date Collected:			08/27/90
Date Received:			08/28/90
INORGANIC ANALYSIS			
INDIVIDUAL PARAMETERS			
Lead, Dissolved	mg/L	0.005	0.007
ORGANIC ANALYSIS			
VOLATILE PETROLEUM RELATED COMPOUNDS			
Date Analyzed			08/31/90
Benzene	mg/L	0.001	ND
Toluene	mg/L	0.001	ND
Ethylbenzene	mg/L	0.001	ND
Xylenes	mg/L	0.003	ND
Total hydrocarbons as gasoline	mg/L	0.01	ND
HEXANE EXTRACTION FOR PETROLEUM PRODUCTS			
Date Analyzed			08/30/90
Date Extracted			08/29/90
Gasoline	mg/L	0.10	ND
Fuel Oil #1	mg/L	0.10	ND
Fuel Oil #2	mg/L	0.10	ND

MDL Method Detection Limit
ND Not detected at or above the MDL.

1710 Douglas Drive North
Minneapolis, MN 55422
TEL: 612-544-5543
FAX: 612-525-3377

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THE ASSURANCE OF QUALITY

REPORT OF LABORATORY ANALYSIS

Mr. Mike Bluma
Page 3

WM-Savage

September 10, 1990
PACE Project
Number: 900828506
MPCA LEAK # 00000990

The data contained in this report were obtained using EPA or other approved methodologies. All analyses were performed by me or under my supervision.

Starla Enger
Inorganic Chemistry Manager

James J. Matteson
FOR

Liesa A. Shanahan
Organic Chemistry Manager

1710 Douglas Drive North
Minneapolis, MN 55422
TEL: 612-544-5543
FAX: 612-525-3377

CHAIN OF CUSTODY RECORD

No.:

Client: FOTH & VAN DYKE

Project No.:

Sampling Site: WM - SAVAGE

Sampler: MWB 150412
900828-506

Packed by: Seal #:

Seal Intact Upon Receipt by Sampling Co: ☐ Yes ☐ No

Condition of Contents:

Sealed for Shipping by:

Initial Contents Temp: °C Seal #:

Seal Intact Upon Receipt by Laboratory: ☐ Yes ☐ No

Date	Time	Sample I.D.:/Description		Bottle Size / Preservative: 40ml/HCl	500/HNO3	1000ml/NONE				Bottle Total	Sample Type	Lab Use Only	Remarks
8/27/90	1305	MW-1	34066.9	3	1	1				5	GRAB		THC BTEX, HEX EX, Pb-u-D
9	1616	MW-2	67.7	3	1	1				5	9		
	1428	MW-3	68-5	3	1	1				5			
	1630	MW-4	69.3	3	1	1				5			

Custody Transfers

	Relinquished by:	Date:	Time:	Received by:	Date:	Time:
1.		8/27/90	1830			
2.						
3.						
4.						

Received for Laboratory: 8/27/90

Shipping Details

Method of Shipment:

Condition of Contents:

Contents Temperature: °C

ORTEK Project No.:

ORTEK
2496 W. Mason
Green Bay, Wisconsin 54303
Phone: 414/498-2222 Fax: 414/498-4067

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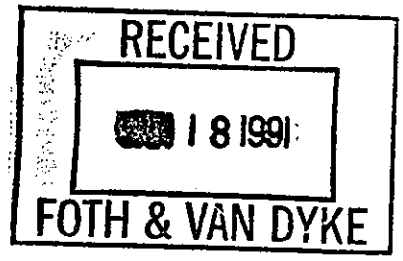
REPORT OF LABORATORY ANALYSIS

January 08, 1991



Mr. Craig Johanesen
Foth & Van Dyke & Associates
10340 Viking Drive
Suite 100
Eden Prairie, MN 55344

RE: PACE Project No. 901219.517
Savage

Dear Mr. Johanesen:

Enclosed is the report of laboratory analyses for samples received December 19, 1990.

If you have any questions concerning this report, please feel free to contact us.

Sincerely,

R. Lorraine Vokaty

R. Lorraine Vokaty
Project Manager

Enclosures

1710 Douglas Drive North
Minneapolis, MN 55422
TEL: 612-544-5543
FAX: 612-525-3377

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REPORT OF LABORATORY ANALYSIS

Foth & Van Dyke & Associates
10340 Viking Drive
Suite 100
Eden Prairie, MN 55344

January 08, 1991
PACE Project
Number: 901219517

Attn: Mr. Craig Johanesen

Savage

PACE Sample Number:			10 0499714	10 0499722	10 0499730
Date Collected:			12/19/90	12/19/90	12/19/90
Date Received:			12/19/90	12/19/90	12/19/90
Parameter	Units	MDL	MW-1	MW-2	MW-3
INORGANIC ANALYSIS					
INDIVIDUAL PARAMETERS					
Lead, Dissolved	mg/L	0.1	ND	ND	ND
ORGANIC ANALYSIS					
VOLATILE PETROLEUM RELATED COMPOUNDS					
Date Analyzed			E 12/28/90	H 12/29/90	E 12/28/90
Benzene	mg/L	0.001	ND	0.015	ND
Toluene	mg/L	0.001	ND	0.005	ND
Ethylbenzene	mg/L	0.001	ND	0.009	ND
Xylenes	mg/L	0.003	ND	0.037	ND
Total hydrocarbons as gasoline	mg/L	0.01	ND	0.64	ND
HEXANE EXTRACTION FOR PETROLEUM PRODUCTS					
Date Analyzed			01/03/91	01/03/91	01/03/91
Date Extracted			12/21/90	12/21/90	12/21/90
Gasoline	mg/L	0.10	ND	0.17	ND
Fuel Oil #1	mg/L	0.10	ND	ND	ND
Fuel Oil #2	mg/L	0.10	ND	ND	ND

MDL Method Detection Limit
ND Not detected at or above the MDL.

1710 Douglas Drive North
Minneapolis, MN 55422
TEL: 612-544-5543
FAX: 612-525-3377

REPORT OF LABORATORY ANALYSIS

Mr. Craig Johanesen
Page 2

January 08, 1991
PACE Project
Number: 901219517

Savage

Parameter	Units	MDL	MW-4	Trip Blank
PACE Sample Number:			10 0499749	10 0499757
Date Collected:			12/19/90	12/19/90
Date Received:			12/19/90	12/19/90
INORGANIC ANALYSIS				
INDIVIDUAL PARAMETERS				
Lead, Dissolved	mg/L	0.1	ND	-
ORGANIC ANALYSIS				
VOLATILE PETROLEUM RELATED COMPOUNDS				
Date Analyzed			E 12/28/90	E 12/28/90
Benzene	mg/L	0.001	ND	ND
Toluene	mg/L	0.001	ND	ND
Ethylbenzene	mg/L	0.001	ND	ND
Xylenes	mg/L	0.003	ND	ND
Total hydrocarbons as gasoline	mg/L	0.01	ND	ND
HEXANE EXTRACTION FOR PETROLEUM PRODUCTS				
Date Analyzed			01/03/91	-
Date Extracted			12/21/90	-
Gasoline	mg/L	0.10	ND	-
Fuel Oil #1	mg/L	0.10	ND	-
Fuel Oil #2	mg/L	0.10	ND	-

MDL Method Detection Limit
ND Not detected at or above the MDL.

1710 Douglas Drive North
Minneapolis, MN 55422
TEL: 612-544-5543
FAX: 612-525-3377

REPORT OF LABORATORY ANALYSIS

Mr. Craig Johanesen
Page 3

January 08, 1991
PACE Project
Number: 901219517

Savage

The data contained in this report were obtained using EPA or other approved methodologies. All analyses were performed by me or under my supervision.

Starla Enger
Inorganic Chemistry Manager

Liesa A. Shanahan
Organic Chemistry Manager

1710 Douglas Drive North
Minneapolis, MN 55422
TEL: 612-544-5543
FAX: 612-525-3377

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THE ASSURANCE OF QUALITY

05725

CHAIN-OF-CUSTODY RECORD
Analytical Request

Client: FOTH & VAN DYKE
Address: 10340 VIKING DR SUITE 100
EDEN PRAIRIE, MN 55344
Phone: 942-0396

Report To: CRAIG JOHANESEN
Bill To: FOTH & VAN DYKE
P.O. # / Billing Reference: 70W56
Project Name / No.: SAVAGE

Pace Client No.: 150401
Pace Project Manager: MV
Pace Project No.: 9012197
*Requested Due Date:

Sampled By (PRINT): MICHAEL BLUMA
Sampler Signature:
Date Sampled: 12/19/00

ITEM NO.	SAMPLE DESCRIPTION	TIME	MATRIX	PACE NO.	NO. OF CONTAINERS	PRESERVATIVES: UNPRESERVED	H_2SO_4	HNO_3	VOA	ANALYSES REQUEST: DRO/DRX	TPH as GAS	TPH as FUEL OIL	DIS LEAD	REMARKS
1	MW-1	0901	WATER	49971.4	5	1		1	3	X	X	X	X	
2	MW-2	1110		49972.2	5	1		1	3	X	X	X	X	
3	MW-3	1003		49973.0	5	1		1	3	X	X	X	X	1x GV Broken
4	MW-9	1019		49974.9	5	1		1	3	X	X	X	X	
5	TRIP BLANK			49975.7	2				2	X	X			
6														
7														
8														

COOLER NOS.	BAILERS	SHIPMENT METHOD OUT / DATE	SHIPMENT METHOD RETURNED / DATE

Additional Comments

ITEM NUMBER	RELINQUISHED BY / AFFILIATION	ACCEPTED BY / AFFILIATION	DATE	TIME
	FUD		12/19/00	1235

SEE REVERSE SIDE FOR INSTRUCTIONS