State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Southeast District - Annex building
Post Office Box 12436
4041 N. Richards St.
Milwaukee, Wisconsin 53212
TELEPHONE: 414-961-2727
TELEFAX # : 414-961-2770

George E. Meyer
Secretary

February 10, 1995

File Ref: 2703

FID #: 241558130
ERR LUST

Mr. Robert Zidar
Concrete Raising Corporation
2121 S. 55th St.
West Allis, WI 53219

RE: **PECFA REIMBURSEMENT CLAIM # 53219-5010-16**

**CASE CLOSURE, WASCO Property, 5116 W. Lincoln Ave.
West Allis, WI 53219**

Dear Mr. Zidar:

The Wisconsin Department of Natural Resources (WDNR) has signed your Form 4 for reimbursement under the State's Petroleum Environmental Cleanup Fund (PECFA) program. The Form 4, signed for "Completed Remedial Action," is enclosed. Please forward the white copy of the Form 4, (with a copy of this letter attached to it) to the Wisconsin Department of Industry, Labor and Human Relations (WDILHR) with your completed claim.

In accordance with the provisions of PECFA, evidence of a hazardous substance release was reported to the WDNR on September 24, 1992 as required in s.144.76(2) Wisconsin Statutes. The activities conducted at the subject site were <u>not</u> performed by the WDNR using federal LUST Trust funding (42 USC 6991). No enforcement action has been necessary at this site.

The PECFA claim pertains to contamination associated with one 2000 gallon gasoline underground storage tank removed in September 1992. The WDNR reviewed the following documents prepared by Drake Environmental, Inc.:

Remedial Investigation Report (November 3, 1993)

Soil Remediation Documentation Report (March 14, 1994)

Letter RE: Soil Remediation (July 26, 1993 (1994))

According to the information submitted, nine soil borings were installed on the subject site in 1993. One boring was converted into a groundwater monitoring well. In November 1993, 649 tons of contaminated soil was excavated and disposed at Metro Regional Disposal Facility.

Printed on Recycled Paper

Based on the information submitted, we are not requiring any further investigation or other action in connection with this cleanup at this time. The WDNR retains the right to require remedial action in the future if additional environmental impacts are detected.

You should note that this letter does not constitute Department "certification" under s. 144.765 (2) (a) 3, Stats., as created by 1993 Wisconsin Act 453 (May 12, 1994). Persons who meet the definition of "purchaser" in s.144.765 (1) (c) must receive Department pre-approval prior to conducting a site investigation in order to be eligible for the liability exemption under s. 144.765, Stats. For more information about this, please contact Mark Giesfeldt at (608) 267-7562 or Darsi Foss at (608) 267-6713, at the WDNR's Madison office.

The WDNR appreciates the actions you have taken to restore the environment at the WASCO property in West Allis. I apologize that the large number of leaking underground storage tank cases throughout the state prevented us from addressing this case more quickly. If you have any questions, please contact me at (414) 961-2746.

Sincerely,

Nancy S. Kochis

Nancy S. Kochis
Hydrogeologist

enclosure

cc: Jeff Tracy, Drake Environmental, Inc.
Joan Schmaus, PECFA program, WDILHR
✓SED case file

File # 53219 # 5020416558130

Wisconsin Department of Industry,
Labor and Human Relations
Safety and Buildings Division

FORM 4

DNR SITE INVESTIGATION AND REMEDIAL ACTION PLAN REVIEW

Bureau of Petroleum Inspection
and Fire Protection
P.O. Box 7969
Madison, WI 53707
(608) 267-4545
(608) 267-7538
(608) 266-9420

Section 101.143 (3) (c) 4, Wis. Stats., requires that a claimant obtain written approval from the Department of Natural Resources (DNR) when requesting reimbursement for activities in response to a discharge from a commercial petroleum product storage system or home oil tank. The DNR approval must indicate that the site investigation and remedial action plan is adequate to meet requirements of s. 144.76, Wis. Stats. The DNR approval is created for the purpose of meeting the requirements of s. 101.143 (3), Wis. Stats., only and does not bar the DNR from requiring that additional investigation and/or remediation activities be performed by persons responsible under s. 144.76, Wis. Stats.

DNR Use Only

Any DNR / DOJ Enforcement Action(s) or DNR LUST Trust Expenditures on this site? ☐ Yes ☒ No

If answer is yes, please provide pertinent details on attached sheet.

Claimant's Name CONCRETE RAISING CORPORATION	Remedial Action Site Name (if business) WASCO PROPERTY
Street Address 2121 SOUTH 55th STREET	Remedial Action Site Address 5116 WEST LINCOLN AVENUE
City, State, Zip Code WEST ALLIS, WI 53219	City, State, Zip Code WEST ALLIS, WI 53219
Claimant's Telephone Number (414) 649-2000	Telephone Number of Site (414) 649-2000

Claimant is
☒ Owner ☐ Operator ☐ Other - please specify:

Approval requested for: ☒ Petroleum Product Storage System ☐ Home Oil Tank System ☐ Aboveground

FOR DNR USE ONLY (Indicate Whether Completed Remedial Action or Other Action(s))

A copy of this completed document must be submitted to DNR for approval of initial activities (emergency action, site investigation and remediation) in accordance with s. 101.143 (3) (c) 4, Wis. Stats.

☒ Completed Remedial Action (complete cleanup and single claim for reimbursement) (Steps 1 through 3)

Progress Payments For:

☐ Emergency Action (Step 1 - check only if emergency action was performed)

☐ Completion of Site Investigation (Step 1) and Proposed Remedial Action Plan (Step 2)

☐ Remedial Action (Step 3)

☐ Operation/Maintenance and Environmental Monitoring (annual claim for remedial action activities) (Step 4)

☐ Site Investigation **By Order** of DNR And/Or DILHR - No Remedial Action

Check Appropriate Box(es)

RECEIVED
APR 15 1994
D.N.R. SED Hqtrs.
Milwaukee, WI

The DNR received a request for approval of the above identified activities for the site listed on this document on the following date 4/15/94.

The DNR response for purposes of s. 101.143 (3), Wis. Stats., is attached.

Remedial action activities conducted by owners/operators are not eligible for funding under 42 USC 6991 (L.U.S.T. Funding). (See s. 101.143 (3) (a) 2., Wis. Stats.)

Send one copy of this completed form to the address shown in the upper right corner and one copy to the claimant.

Reviewer's Signature Nancy S. Koches Date Signed Feb. 8, 1995

Reviewer's Title HYDROGEOLOGIST

MW003758

APPLICATION TO TREAT OR DISPOSE OF PETROLEUM CONTAMINATED SOIL

Form 4400-120

This form is required by the Department of Natural Resources for leaking underground storage tank sites to ensure that petroleum contaminated soil is treated or disposed of in compliance with NR 500-540, NR 158 and NR 419, Wis. Adm. Code. Failure to comply with applicable statutes and administrative rules may lead to violations of subchapters III and IV of ch. 144, Wis. Stats. and may result in forfeitures of not less than $10 or more than $25,000 for each violation, pursuant to ss. 144.426(1), 144.74 (1), and 144.99, Wis. Stats., or fines of not less than $100 or more than $150,000 or imprisonment for not more than 10 years, or both, pursuant to s. 144.74 (2), Wis. Stats. Each day of a continuing violation constitutes a separate violation. Department approval of this form is required prior to site remediation, except for soils to be buried in landfills.

DIRECTIONS: 1) Complete part I. 2) Select the treatment option in part II. Pretreatment approval is required for any treatment other than landfill burial. Submit this form to the DNR project manager for approval. 3) If your treatment option is landfill burial, complete part III before submitting the ORIGINAL form to the project manager. 4) If soil will be used as cover at a landfill, first submit this form for approval and then, after part III has been completed, resubmit the ORIGINAL to the project manager.

4.91:2.2P

ALL SITES MUST COMPLETE PART I.

Part I. Source of Soil

Site/Facility Name: WASCO PROPERTY

Site I.D. # (for DNR use only):

Site Address: 5116 West Lincoln Avenue

Contact Name: Mr. Bob Zidar

City, State, Zip Code: West Allis, Wisconsin 53219-5010

1/4, 1/4, Section, Township, and Range: SW 1/4, SE 1/4, Sec 2, T6N, R21E

The information on this form is accurate to the best of my knowledge.

NOTE: Soil generators responsible for waste disposed of in landfills may incur future liability.

Signature of Soil Generator: [signature]

Telephone Number (include area code): (414) 649-2000

Consulting Firm: DRAKE ENVIRONMENTAL, INC.

Contact: JEFF TRACY

Telephone Number: (414) 253-1440

1995 FEB 10 PM 1:00 DEPARTMENT OF NATURAL RESOURCES SED

Estimated Volume Contaminated Soil: 450 Tons/cubic yards (circle one)

Type of Petroleum Contamination (Circle):

(Gasoline) Diesel Fuel/#2 Fuel Oil

Other _____

Soil Type (USCS)

- ___ sand (SP, SW)
- ___ silty/clayey sands (SM, SC)
- ___ silt (ML, MH, OL)
- X clay (CL, CH, OH)
- ___ gravel (GC, GM, GP, GW)
- ___ peat (PT)

Distance to Nearest Residence/Business: Adjacent

Contaminant concentration:

One screened sample for each 15 yds³ and one laboratory analysis for each 300 yds³ of contaminated soil when the field instrument *registers contamination* OR one laboratory analysis for each 100 yds³ when the field instrument *does not register contamination* on soil shown to be contaminated during the site investigation/excavation or stockpiling. PLEASE ATTACH A TABLE LISTING RESULTS OF BOTH FIELD SCREENING AND LAB ANALYSES, AND INCLUDE SUPPORTING LAB REPORTS, IN ADDITION TO THE TPH AND BENZENE INFORMATION REQUESTED BELOW. NOTE: DILHR requires a minimum of 3 laboratory samples on excavated soil for PECFA claims.

Total Benzene in soil to be remediated (attach calculations) 8.568 lbs

Total Petroleum Hydrocarbons(TPH) in soil to be remediated (attach calculations) 4,309.2 lbs

Total TPH as GRO

ATTACH EMISSIONS CALCULATIONS

(a/1,000,000) x (2,800 lbs/yd³) x b = benzene emission in lbs., where a = benzene concentration of soil sample in ppm or mg/kg dry weight basis, and b = amount of contaminated soil in yds³. NOTE: This calculation can also be used to estimate TPH emissions by substituting TPH concentration (ppm or mg/kg) for "a". It may also be used to calculate VOCs.

COMPLETE ONLY THOSE SECTIONS OF PART II THAT PERTAIN TO YOUR SITE

Part II: Proposed method of treatment

1. **SOIL VENTING/VACUUM EXTRACTION**

Note: This option may require an air pollution control permit. An activated carbon unit or similar treatment system to strip VOCs fro the blower discharge will be required if emissions exceed limits established by Air Management. System design and monitoring information must be included.

Contact responsible for system maintenance.....

Telephone Number (include area code).....Anticipated start date.....

Total VOC discharge rate from Pilot testing or calculations _____ lbs/hr at _____ scfm

Benzene Discharge Rate from Pilot testing or calculations _____ lbs/hr at _____ scfm _____ Estimated Project Total

2. **ANY METHOD OF REMEDIATION NOT LISTED IN PART II** (NOTE: For thermal treatment, use Form 4400-149.)

Attach narrative and drawing(s) to describe the remediation method to be used. A final report is required. At a minimum, the information submitted should include the following applicable items:

a. proposed treatment method
b. location/size of remediation site
c. distance to nearest residence/business
d. field sampling methods
e. protective covering and corbing techniques
f. volume estimate and soil thickness needing remediation
g. method of turning/mixing soil
h. highest estimated hourly/daily VOC emissions
i. highest estimated daily/total benzene emissions
k. anticipated startup and completion dates
l. proposed verification method of contaminant content
m. project contact person
n. final destination of soil

LEAVE BLANK - DEPARTMENT OF NATURAL RESOURCES USE ONLY

Application Concurrence:

Air Management _____ Date _____

Project Manager _____ Date _____

Comments:

3. **DISPOSAL OF CONTAMINATED SOILS AT A SANITARY LANDFILL NR 500**

NOTE: Contaminant concentrations must meet Solid Waste guidelines and analytical results must be submitted within 30 days of dispo

PLEASE COMPLETE PART III BELOW AFTER LANDFILL BURIAL IS COMPLETED.

THIS SECTION IS TO BE COMPLETED BY THE DISPOSAL FACILITY ACCEPTING THE CONTAMINATED SOIL

Part III

Transporter Name Peaches Trucking Transporter License Number WDNR 13006

Name of landfill Metro Recycling And Disposal License No. 01099

Actual Volume of soil landfilled ~~[illegible]~~ 649.22 indicate yds³ or tons ___ cover soil X buried

Date received at landfill December 11+12, 1993 Accumulated Benzene emissions to date -0-

Signature of landfill facility representative Peggy Blind

TOTAL P.05

FID# 241558130
ERR
LUST

July 26, 1994

DRAKE
ENVIRONMENTAL, INC.
Common Sense. Uncommon Service.

RECEIVED
AUG 9 1994
D.N.R. SED Hqtrs.
Milwaukee, WI

Mr. Jim Delwiche
Department of Natural Resources
4041 North Richards Street
P.O. Box 12436
Milwaukee, WI 53212

LRS

RE: Soil Remediation at the Wasco property located in West Allis, Wisconsin — Drake Project No. J93169

Dear Mr. Delwiche:

The Wisconsin Department of Natural Resources (DNR) has reviewed the case file associated with a former underground storage tank (UST) at the Wasco property, (F.I.D. #241558130), located at 5116 West Lincoln Avenue in West Allis, Wisconsin. Based on their review, the DNR has requested additional information associated with a groundwater sample collected during the Remedial Investigation (RI) we conducted at the site. This letter provides the requested additional information.

Mr. Robert Zidar owns the Concrete Raising Corporation and manages the Wasco property through Concrete Raising Corporation. Three USTs were removed from the Wasco site in September 1992. The USTs were 550 gallons, 1,000 gallons, and 2,000 gallons in capacity and stored gasoline. During the RI and soil remediation phases of the project, we collected and submitted soil and groundwater samples to Enviroscan Corporation, an independent certified laboratory, for analyses. In general accordance with the DNR's Leaking Underground Storage Tank (LUST) and Petroleum Analytical and Quality Assurance Guidance (PUBL-SW-130 93, dated July 1993), selected soil samples were analyzed for gasoline range organics (GRO), petroleum volatile organic compounds (PVOCs), and total lead. The groundwater sample collected during the RI was analyzed for GRO, volatile organic compounds (VOCs), and lead. These analyses generally detect contamination associated with gasoline products.

At the time the RI was being conducted, Mr. Zidar was refinancing the loan associated with the subject site through Firstar Bank of Milwaukee. Mr. Bob Jennings of Firstar requested the water sample also be analyzed for diesel range organics (DRO). DRO is

N80 W14824 Appleton Ave.
Menomonee Falls, WI 53051
Phone: (414) 253-1440
Fax: (414) 253-1448

generally associated with contamination from heavier petroleum products such as diesel, fuel oil, or waste oil. Because the USTs at the site stored gasoline, we did not recommend the DRO analysis. However, because Mr. Zidar was refinancing the loan through Firstar and Firstar had requested the DRO analysis, the water sample was tested for DRO.

Neither GRO, VOCs, or lead were detected in the groundwater sample submitted during the RI. DRO was detected at a concentration of 108 parts per billion. The GRO and VOC results indicate that contamination associated with gasoline-related products does not exist at the site. The elevated DRO result indicates that contamination associated with heavier petroleum products may exist at the site. However, the DRO results are not consistent with the VOC results, which would also likely be elevated if contamination associated with heavier petroleum products were present at the site.

Because the presence of DRO in the groundwater may indicate petroleum due to heavier petroleum products, we reviewed the Wisconsin Department of Industry, Labor, and Human Relations (DILHR) inventory of USTs and the DNR's Leaking Underground Storage Tank (LUST) sites list to identify possible sources of contamination in the vicinity of the Wasco site. In addition, we interviewed Mr. Zidar to determine the historical use of the USTs at the Wasco site. To the best of Mr. Zidar's knowledge, the USTs at the Wasco site have only been utilized to store gasoline.

Two properties in the vicinity of the Wasco site have USTs registered with DILHR. Grebe's Bakery exists on the adjacent property west of the site. Based on the Milwaukee Quadrangle map, groundwater flow at the Grebe's site is side gradient with respect to the Wasco site. An 8,000-gallon diesel UST was removed from the Grebe's site in 1988. However, the Grebe's site is not included on the DNR's LUST site list, and therefore, is not considered a likely source of contamination.

The Oil Gear Company is located approximately 100 feet south of the subject site. Based on the Milwaukee Quadrangle map, groundwater flow at the Oil Gear site is sidegradient with respect to the Wasco site. Six USTs at the site are registered with DILHR. Four of the USTs contain fuel oil, one UST contains kerosene, and one UST

contains an unidentified chemical. The USTs are currently in use. The Oil Gear Company is on the DNR's LUST site list for fuel oil contamination. On July 6, 1994, we reviewed the LUST file associated with the Oil Gear Company. Based on our review, soil and groundwater contamination exists at the Oil Gear site, but likely does not migrate onto the Wasco property, and therefore, does not likely affect the groundwater quality at the Wasco site.

Based on Enviroscan's laboratory report, the chromatogram associated with the groundwater sample was not distinct for either gasoline or diesel and contained significant compounds outside the diesel range. A copy of the laboratory report and chromatogram is attached. In addition, neither GRO or VOCs were detected in the groundwater sample. Therefore, it is our opinion that the DRO detected is not likely due to petroleum contamination, but rather, naturally occurring organic matter at the site.

We hope this letter clarifies any concerns you may have regarding the DRO detected in the groundwater at the Wasco site. If you have any questions or require additional information, please call.

Respectfully,

DRAKE ENVIRONMENTAL, INC.

Jeffrey G. Tracy
Project Manager

Michael D. Frede, P.E.
Principal—Investigation/Remediation Group

cc: Mr. Robert Zidar

20/J93169O

ANALYTICAL REPORT

ENVIROSCAN

Drake Environmental,Inc.
N91 W17194 Appleton Ave.
Menomonee Falls, WI 53051

CUST NUMBER: J93169
SAMPLED BY: Client
DATE REC'D: 09/10/93
REPORT DATE: 09/15/93
PREPARED BY: DJB 0523
REVIEWED BY: [illegible]

Attn: Jeff Tracy

Modified Gasoline Range Organics (GRO)
Parameter # 78920

	GRO	Date Analyzed	Analytical No.
B-9,S-3 5'-6.5'	208. (4,5)	09/12/93	91280
Detection Limit	5.0		
Units	µg/g		
MW-9	X	09/12/93	91282
Detection Limit	50.		
Units	µg/l		
MEOH BLANK	X	09/12/93	91281
Detection Limit	2.5		
Units	mg/l		

Notes: Only above indicated notes apply.

(1) The chromatogram is distinct for gasoline.
(2) The chromatogram is distinct in showing that the contaminant is a mixture of both gasoline and diesel. All peaks within the GRO window were quantitated.
(3) The chromatogram is not distinct for either gasoline or diesel. All peaks within the GRO window were quantitated.
(4) The chromatogram is not distinct for either gasoline or diesel. It has characteristics of a product which has significant peaks within the GRO window.
(5) The chromatogram also contained significant unidentified peaks outside the GRO window.

The replicate spike recovery of this batch of samples was found to be 106% and 108%.

ANALYTICAL REPORT

ENVIROSCAN

Drake Environmental,Inc.
N91 W17194 Appleton Ave.
Menomonee Falls, WI 53051

CUST NUMBER: J93169
SAMPLED BY: Client
DATE REC'D: 09/10/93
REPORT DATE: 09/15/93
PREPARED BY: DJB DJB
REVIEWED BY:

Attn: Jeff Tracy

Modified Diesel Range Organics (DRO)
Parameter # 78919

	DRO	Date Ext	Date Analyzed	Analytical No.
MW-9	108. (4,5)	09/13/93	09/14/93	91282
Detection Limit	50.			
Units	µg/l			

Notes: Only above indicated notes apply.

(1) The chromatogram is distinct for diesel.
(2) The chromatogram is distinct in showing that the contaminant is a mixture of both gasoline and diesel. All peaks within the DRO window were quantitated.
(3) The chromatogram is not distinct for either gasoline or diesel. It is being reported as diesel, but there is the possibility it is aged or degraded gasoline.
(4) The chromatogram is not distinct for either gasoline or diesel. All peaks within the DRO window were quantitated.
(5) The chromatogram also contained significant peaks outside the DRO window.
(6) The chromatogram did not have any peaks, but the baseline was found to be raised.
(7) The DRO window was quantitated, but the peaks represent less than 10 % of the elevated baseline.
(8) The baseline was found to be raised and the peaks represent more than 10 % of the elevated baseline.

The replicate spike recovery of this batch of samples was found to be 118% and 101%.

ANALYTICAL REPORT

ENVIROSCAN

Drake Environmental,Inc.
N91 W17194 Appleton Ave.
Menomonee Falls, WI 53051

CUST NUMBER: J93169
SAMPLED BY: Client
DATE REC'D: 09/10/93
REPORT DATE: 09/15/93
PREPARED BY: DJP
REVIEWED BY:

Attn: Jeff Tracy

EPA 8021	Units	Detection Limit	MW-9	TRIP BLANK-BR
Benzene	µg/l	0.2	X	X
Bromobenzene	µg/l	0.5	X	X
Bromodichloromethane	µg/l	0.5	X	X
Carbon Tetrachloride	µg/l	0.5	X	X
Chlorobenzene	µg/l	2.0	X	X
Chloroethane	µg/l	2.0	X	X
Chloroform	µg/l	0.5	X	X
Chloromethane	µg/l	2.0	X	X
o-Chlorotoluene	µg/l	1.0	X	X
p-Chlorotoluene	µg/l	1.0	X	X
Chlorodibromomethane	µg/l	0.5	X	X
1,2-Dibromo-3-chloropropane	µg/l	13.3	X	X
1,2-Dichlorobenzene	µg/l	1.0	X	X
1,3-Dichlorobenzene	µg/l	1.0	X	X
1,4-Dichlorobenzene	µg/l	0.5	X	X
1,1-Dichloroethane	µg/l	0.5	X	X
1,2-Dichloroethane	µg/l	0.5	X	X
1,1-Dichloroethylene	µg/l	0.4	X	X
cis-1,2-Dichloroethylene	µg/l	0.5	X	X
trans-1,2-Dichloroethylene	µg/l	0.5	X	X
Methylene Chloride	µg/l	2.5	X	X
1,2-Dichloropropane	µg/l	0.5	X	X
1,3-Dichloropropane	µg/l	0.5	X	X
2,2-Dichloropropane	µg/l	2.0	X	X
Ethylbenzene	µg/l	1.0	X	X
1,2-Dibromoethane	µg/l	1.0	X	X
1,1,2,2-Tetrachloroethane	µg/l	1.0	X	X
Tetrachloroethylene	µg/l	0.5	X	X
Toluene	µg/l	0.5	X	X
1,1,1-Trichloroethane	µg/l	0.5	X	X
1,1,2-Trichloroethane	µg/l	0.5	X	X
Trichloroethylene	µg/l	0.2	X	X
Vinyl Chloride	µg/l	0.2	X	X
o-Xylene	µg/l	1.0	X	X
m- & p-Xylene	µg/l	1.0	X	X
Analytical No.:			91282	91283

X = Analyzed but not detected.

All analyses conducted in accordance with Enviroscan Quality Assurance Program.

ANALYTICAL REPORT

ENVIROSCAN

Drake Environmental,Inc.
N91 W17194 Appleton Ave.
Menomonee Falls, WI 53051

CUST NUMBER: J93169
SAMPLED BY: Client
DATE REC'D: 09/10/93
REPORT DATE: 09/15/93
PREPARED BY: DJP
REVIEWED BY:

Attn: Jeff Tracy

	Units	Detection Limit	MW-9	TRIP BLANK-BR
Methyl tert Butyl Ether	µg/l	2.0	X	X
1,3,5-Trimethylbenzene	µg/l	1.0	X	X
1,2,4-Trichlorobenzene	µg/l	1.0	X	X
1,2,3-Trichlorobenzene	µg/l	1.0	X	X
Isopropylbenzene	µg/l	1.0	X	X
Dichlorodifluoromethane	µg/l	2.0	X	X
Naphthalene	µg/l	1.0	X	X
Trichlorofluoromethane	µg/l	1.0	X	X
Hexachlorobutadiene	µg/l	1.0	X	X
n-Propylbenzene	µg/l	1.0	X	X
n-Butylbenzene	µg/l	1.0	X	X
1,2,4-Trimethylbenzene	µg/l	1.0	X	X
sec-Butylbenzene	µg/l	1.0	X	X
tert-Butylbenzene	µg/l	1.0	X	X
p-Isopropyltoluene	µg/l	1.0	X	X
Isopropyl Ether	µg/l	1.0	X	X
Date of VOC Analysis:			9/12/93	9/13/93
EPA 200.9				
Lead	µg/l	1.7	X	NA
Date of Lead Analysis:			9/14/93	
Analytical No.:			91282	91283

NA = Not Analyzed.
X = Analyzed but not detected.

All analyses conducted in accordance with Enviroscan Quality Assurance Program.

REQUEST FOR SERVICES

303 W. MILITARY RD. ROTHSCHILD, WI 54474 1-800-338-SCAN

CLIENT INFORMATION

Name: Jeff Tracy
Company: Drake Enviro Inc
Address: N91 W17194 Appleton Ave
Menomonee Falls Wi 53051
Phone: (414) 253 1440
P.O. # / Project #: J93169
Quote / Reference #: 1721-9
Note: Terms and conditions printed on back apply. L.U.S.T.S.k
Please send bill to Concrete Raising Corporation.
21-0753
Pecfa

Turnaround Time
☐ Normal
☒ Rush
Date Needed September 15th
(Preapproved by Lab)

Sample Type (Check all that apply)
☒ Groundwater
☐ Wastewater
☒ Soil
☐ Solid Waste
☐ Oil
☐ Other

Sample Handling
☐ Nonhazardous
☐ Flammable
☐ Skin Irritant
☐ Highly Toxic
☒ Other (specify) MEOH
☒ Refrigerate
☐ Work in Hood
☐ Wear Gloves

ANALYTICAL REQUESTS
(use separate sheet if necessary)

LAB USE ONLY	DATE	TIME	No. of Containers MATRIX COMP	GRAB	SAMPLE ID	Rush SOILGRO	GRO (W.S. Mod. Matrix)	DRO/DROEXT (W.S. Mod. Matrix)	VOC (8021 VOCRUN)	PB (EPA 8021)	PB-Pb (EPA 3020)	REMARKS
17091280	9.9.93	10:29		2	B-9 S-3 5'-6½'	X						CODE E CODE E CODE E
17091281	~	-	MEOH	1	MEOH TRIP BLANK	X						→ GRO, GRORUN
17091282	9.9.93	2:35		8	MW-9	X	X	X	X			CODE C GRO, GRORUN
17091283	9.01.93	8:5	water HCL	1	Trip BLANK-BR			X				CODE C
	9-9-93	~	water	1	Temp BLANK							

DRAKE — bill to CONCRETE

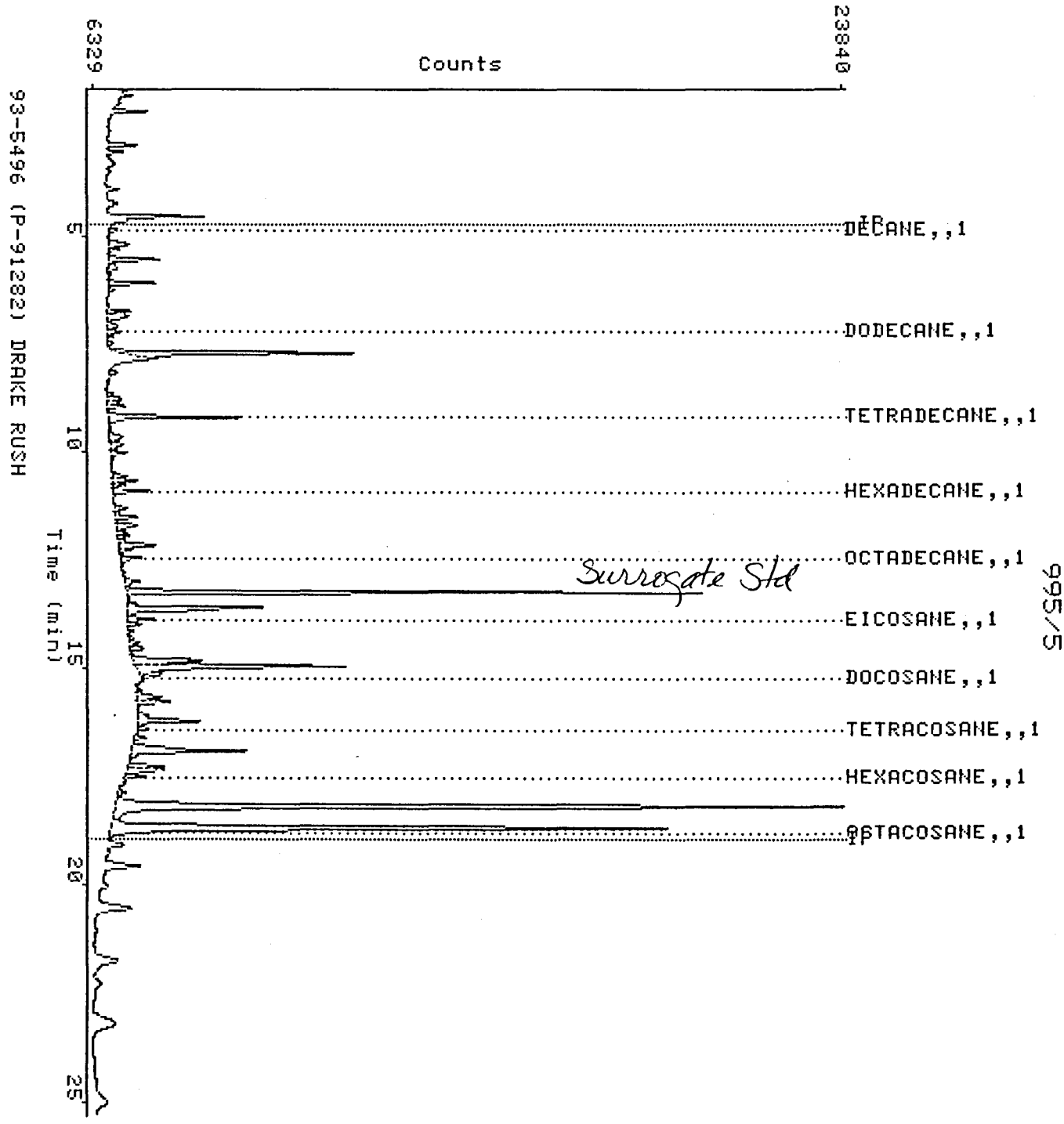
CHAIN OF CUSTODY RECORD

SAMPLERS: (Signature)

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
	9.9.93 4:00pm	
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED FOR LABORATORY BY: (Signature) Doris Retzinger — DATE/TIME 9/10/93 9:40 AM

Del'v: Hand Comm.
Ship. Cont. OK? Y N N/A
Rec'd Refrig.? Y N N/A
Seals OK? Y N N/A
Samples leaking? Y N N/A
Comments: Rec'd on ice

Data file: USER$DISK3:[CHROM.SEMI]14TPHZ997.RAW;1
Report: 82794
Acquired: 14-SEP-1993 19:21:02
Time range: 1.60-25.33
Vert. scale/offset: 1.0/0



995/5

DRO AWH 91282

Proj. No. 931169

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

WISCONSIN
DEPT. OF NATURAL RESOURCES

George E. Meyer
Secretary

Southeast District - Annex Building
4041 N. Richards Street
P. O. Box 12436
Milwaukee, WI 53212
TELEPHONE 414-961-2727
TELEFAX 414-961-2770

June 15, 1994

File Ref.: F.I.D.# 241558130
ERR - LUST

Mr. Robert Zidar
Concrete Raising Corporation
2121 South 55th Street
West Allis, Wisconsin 53219

SUBJECT: Petroleum Contamination, Concrete Raising Corporation, 2121 South 55th Street, West Allis

Dear Mr. Zidar:

The Department of Natural Resources has received your request for review of the case file for the above-named site for closure. Upon review of the file, we find that we will need more information to proceed.

The samples taken for groundwater characterization indicate the presence of Diesel Range Organics (DRO), but no Gasoline Range Organics (GRO) or Petroleum Volatile Organic Compounds (PVOC). Tanks removed were used for gasoline storage. Please have your consultant, Drake Environmental, explain the presence of this petroleum contamination in the groundwater, i.e., have there ever been diesel or fuel oil storage tanks at the site? Are there known DRO contamination sources in the vicinity? On what basis was the decision made to test for DRO in addition to GRO and PVOC?

Please provide us with this information, and we will review the file again when the above concerns have been addressed. The Department appreciates the efforts you have undertaken thus far to protect the environment at this site. If you have any questions about this letter, please write to the above address, or call Jim Delwiche at 961-2732.

Sincerely,

Kathleen Schneider

Kathleen Schneider
Environmental Specialist
Underground Storage Tank Program

James C. Delwiche

James C. Delwiche
Hydrogeologist
Underground Storage Tank Program

cc: Jeff Tracy, Drake Environmental
SED case file

Printed on Recycled Paper

FID# 241 558130
ERR
LUST

DRAKE
ENVIRONMENTAL, INC.
Common Sense. Uncommon Service.

April 13, 1994

Jim Delwiche
Wisconsin DNR
4041 North Richards Street
Milwaukee, WI 53212

Jim:

The "Application to Treat or Dispose of Petroleum Contaminated Soil" for the Wasco property located at 5116 West Lincoln Avenue is attached. Please include it in your file.

Thanks,

Jeff Tracy
JEFF TRACY

RECEIVED
APR 15 1994
D.N.R. SED Hqtrs.
Milwaukee, WI

N80 W14824 Appleton Ave.
Menomonee Falls, WI 53051
Phone: (414) 253-1440
Fax: (414) 253-1448

MW003758

APPLICATION TO TREAT OR DISPOSE OF PETROLEUM CONTAMINATED SOIL

Form 4400-120

This form is required by the Department of Natural Resources for leaking underground storage tank sites to ensure that petroleum contaminated soil is treated or disposed of in compliance with NR 500-540, NR 158 and NR 419, Wis. Adm. Code. Failure to comply with applicable statutes and administrative rules may lead to violations of subchapters III and IV of ch. 144, Wis. Stats. and may result in forfeitures of not less than $10 or more than $25,000 for each violation, pursuant to ss. 144.426(1), 144.74 (1), and 144.99, Wis. Stats.. or fines of not less than $100 or more than $150,000 or imprisonment for not more than 10 years, or both, pursuant to s. 144.74 (2), Wis. Stats. Each day of a continuing violation constitutes a separate violation. Department approval of this form is required prior to site remediation, except for soils to be buried in landfills.

DIRECTIONS: 1) Complete part I. 2) Select the treatment option in part II. Pretreatment approval is required for any treatment other than landfill burial. Submit this form to the DNR project manager for approval. 3) If your treatment option is landfill burial, complete part III before submitting the ORIGINAL form to the project manager. 4) If soil will be used as cover at a landfill, first submit this form for approval and then, after part III has been completed, resubmit the ORIGINAL to the project manager.

4.91:2.2P

ALL SITES MUST COMPLETE PART I.

Part I. Source of Soil

Site/Facility Name: WASCO PROPERTY

Site I.D. # (for DNR use only):

Site Address: 5116 West Lincoln Avenue

Contact Name: Mr. Bob Zidar

City, State, Zip Code: West Allis, Wisconsin 53219-5010

1/4, 1/4, Section, Township, and Range: SW 1/4, SE 1/4, Sec 2, T6N, R21E

The information on this form is accurate to the best of my knowledge.
NOTE: Soil generators responsible for waste disposed of in landfills may incur future liability.

Signature of Soil Generator

Telephone Number (include area code): (414) 649-2000

Consulting Firm: DRAKE ENVIRONMENTAL, INC.

Contact: JEFF TRACY

Telephone Number: (414) 253-1440

Estimated Volume Contaminated Soil

450 Tons/cubic yards (circle one)

Type of Petroleum Contamination (Circle):

(Gasoline) Diesel Fuel/#2 Fuel Oil

Other _____

Soil Type (USCS)

___sand (SP, SW)
___silty/clayey sands (SM, SC)
___silt (ML, MH, OL)
X clay (Cl, CH, OH)
___gravel (GC, GM, GP, GW)
___peat (PT)

Distance to Nearest Residence/Business: Adjacent

Contaminant concentration:

One screened sample for each 15 yds³ and one laboratory analysis for each 300 yds³ of contaminated soil when the field instrument *registers contamination* OR one laboratory analysis for each 100 yds³ when the field instrument *does not register contamination* on soil shown to be contaminated during the site investigation/excavation or stockpiling. PLEASE ATTACH A TABLE LISTING RESULTS OF BOTH FIELD SCREENING AND LAB ANALYSES, AND INCLUDE SUPPORTING LAB REPORTS, IN ADDITION TO THE TPH AND BENZENE INFORMATION REQUESTED BELOW. NOTE: DILHR requires a minimum of 3 laboratory samples on excavated soil for PECFA claims.

Total Benzene in soil to be remediated (attach calculations) 8.568 lbs

Total Petroleum Hydrocarbons(TPH) in soil to be remediated (attach calculations) 4,309.2 lbs

Total TPH as GRO

ATTACH EMISSIONS CALCULATIONS

(a/1,000,000) x (2,800 lbs/yd^3) x b = benzene emission in lbs., where a = benzene concentration of soil sample in ppm or mg/kg dry weight basis, and b = amount of contaminated soil in yds^3. NOTE: This calculation can also be used to estimate TPH emissions by substituting TPH concentration (ppm or mg/kg) for "a". It may also be used to calculate VOCs.

COMPLETE ONLY THOSE SECTIONS OF PART II THAT PERTAIN TO YOUR SITE

Part II: Proposed method of treatment

1. SOIL VENTING/VACUUM EXTRACTION

Note: This option may require an air pollution control permit. An activated carbon unit or similar treatment system to strip VOCs from the blower discharge will be required if emissions exceed limits established by Air Management. System design and monitoring information must be included.

Contact responsible for system maintenance.....

Telephone Number (include area code).....Anticipated start date.....

Total VOC discharge rate from Pilot testing or calculations _____ lbs/hr at _____scfm

Benzene Discharge Rate from Pilot testing or calculations _____lbs/hr at _____scfm _____Estimated Project Total

2. ANY METHOD OF REMEDIATION NOT LISTED IN PART II (NOTE: For thermal treatment, use Form 4400-149.)

Attach narrative and drawing(s) to describe the remediation method to be used. A final report is required. At a minimum, the information submitted should include the following applicable items:

a. proposed treatment method
b. location/size of remediation site
c. distance to nearest residence/business
d. field sampling methods
e. protective covering and curbing techniques
f. volume estimate and soil thickness needing remediation
g. method of turning/mixing soil
h. highest estimated hourly/daily VOC emissions
i. highest estimated daily/total benzene emissions
k. anticipated startup and completion dates
l. proposed verification method of contaminant content
m. project contact person
n. final destination of soil

LEAVE BLANK - DEPARTMENT OF NATURAL RESOURCES USE ONLY

Application Concurrence:

Air Management _____ Date _____

Project Manager _____ Date _____

Comments:

3. DISPOSAL OF CONTAMINATED SOILS AT A SANITARY LANDFILL-NR 500

NOTE: Contaminant concentrations must meet Solid Waste guidelines and analytical results must be submitted within 30 days of disposal.

PLEASE COMPLETE PART III BELOW AFTER LANDFILL BURIAL IS COMPLETED.

THIS SECTION IS TO BE COMPLETED BY THE DISPOSAL FACILITY ACCEPTING THE CONTAMINATED SOIL

Part III

Transporter Name PEACHES TRUCKING Transporter License Number WDNR 13006

Name of landfill METRO RECYCLING AND DISPOSAL License No. 01099

Actual Volume of soil landfilled 32.93 Indicate yds^3 or tons ___ cover soil X buried

Date received at landfill November 11+12, 1993 Accumulated Benzene emissions to date -0-

Signature of landfill facility representative Peggy Blind

RECEIVED

APR 15 1994

D.N.R. SED Hqtrs.
Milwaukee, WI

Estimates for GRO and Benzene in Soils

I. AVERAGE GRO CONCENTRATION IN THE SOILS:

Based on laboratory testing conducted by Enviroscan Corporation, results dated September 3, 1993 (attached).

Sample No.	GRO *(ppm)*
B-3, S-3	3420

II. AVERAGE BENZENE CONCENTRATION IN THE SOILS:

Based on laboratory testing conducted by Enviroscan Corporation, results dated September 3, 1993 (attached).

Sample No.	Benzene *(ppm)*
B-3, S-3	6.8

III. CALCULATION TO DETERMINE THE AMOUNT OF GRO AND BENZENE IN THE SOILS:

$$\text{Amount } (lbs.): \frac{A}{1{,}000{,}000} * 2{,}800 \frac{lbs.}{yds.^3} * B$$

A = average concentration in soil *(ppm)*
B = volume of contaminated soil
= 450 $yds.^3$

IV. GRO IN SOIL TO BE TREATED:

$$\text{GRO } (lbs.) = \frac{3420 ppm}{1{,}000{,}000} * 2{,}800 \frac{lbs.}{yd.^3} * 450\ yds.^3$$

= **4309.2** lbs.

V. BENZENE IN SOIL TO BE TREATED:

$$\text{Benzene } (lbs.) = \frac{6.8 ppm}{1{,}000{,}000} * 2{,}800 \frac{lbs.}{yd.^3} * 450\ yds.^3$$

= **8.568** lbs.

ANALYTICAL REPORT

ENVIROSCAN

Drake Environmental,Inc.
N91 W17194 Appleton Ave.
Menomonee Falls, WI 53051

CUST NUMBER: J93169
SAMPLED BY: Client
DATE REC'D: 08/13/93
REPORT DATE: 09/02/93
PREPARED BY: DJB DJB
REVIEWED BY: JB

Attn: Jeff Tracy

Modified Gasoline Range Organics (GRO)
Parameter # 78920

	GRO	Date Analyzed	Analytical No.
B-1 S-3	X	08/20/93	89658
B-2 S-2	X	08/20/93	89659
B-3 S-3	3,420. (4,5)	08/23/93	89660
B-4 S-3	142. (4,5)	08/20/93	89661
B-5 S-3	31.6 (4,5)	08/20/93	89662
B-6 S-4	X	08/20/93	89663
B-7 S-3	2,090. (4,5)	08/26/93	89664
B-8 S-3	X	08/20/93	89665
Detection Limit	5.0		
Units	µg/g		
MEOH BLANK	X	08/20/93	89666
Detection Limit	2.5		
Units	mg/l		

X = Analyzed but not detected.
Results calculated on a dry weight basis.

Notes: Only above indicated notes apply.

(1) The chromatogram is distinct for gasoline.
(2) The chromatogram is distinct in showing that the contaminant is a mixture of both gasoline and diesel. All peaks within the GRO window were quantitated.
(3) The chromatogram is not distinct for either gasoline or diesel. All peaks within the GRO window were quantitated.
(4) The chromatogram is not distinct for either gasoline or diesel. It has characteristics of a product which has significant peaks within the GRO window.
(5) The chromatogram also contained significant unidentified peaks outside the GRO window.

The replicate spike recovery of this batch of samples was found to be 86.8%, 82.2% and 96.5%, 85.2%.

ANALYTICAL REPORT

ENVIROSCAN

Drake Environmental,Inc.
N91 W17194 Appleton Ave.
Menomonee Falls, WI 53051

CUST NUMBER: J93169
SAMPLED BY: Client
DATE REC'D: 08/13/93
REPORT DATE: 09/03/93
PREPARED BY: JCH
REVIEWED BY:

Attn: Jeff Tracy

	Units	Detection Limit	B-3 S-3 08/12/93	Analyzed Date
EPA 8020				
Benzene	µg/g	0.2	6.8	08/20/93
Ethylbenzene	µg/g	0.3	71.6	08/23/93
Methyl tert Butyl Ether	µg/g	0.6	X	08/20/93
1,2,4-Trimethylbenzene	µg/g	0.3	169.	08/23/93
1,3,5-Trimethylbenzene	µg/g	0.3	45.5	08/23/93
m- & p-Xylene	µg/g	0.3	139.	08/23/93
o-Xylene	µg/g	0.3	14.2	08/20/93
Toluene	µg/g	0.2	17.3	08/20/93
EPA 6010				
Lead	µg/g	1.8	42.6	08/23/93

Analytical No.: 89660

X = Analyzed but not detected.
Results calculated on a dry weight basis.

ANALYTICAL REPORT

ENVIROSCAN

Drake Environmental,Inc.
N91 W17194 Appleton Ave.
Menomonee Falls, WI 53051

CUST NUMBER: J93169
SAMPLED BY: Client
DATE REC'D: 08/13/93
REPORT DATE: 09/03/93
PREPARED BY: JCH
REVIEWED BY:

Attn: Jeff Tracy

	Units	Detection Limit	B-7 S-3 08/12/93	Analyzed Date
EPA 8020				
Benzene	µg/g	0.4	X	08/24/93
Ethylbenzene	µg/g	0.8	9.6	08/24/93
Methyl tert Butyl Ether	µg/g	1.5	X	08/24/93
1,2,4-Trimethylbenzene	µg/g	0.8	65.8	08/24/93
1,3,5-Trimethylbenzene	µg/g	0.8	5.3	08/24/93
m- & p-Xylene	µg/g	0.8	3.2	08/24/93
o-Xylene	µg/g	0.8	6.7	08/24/93
Toluene	µg/g	0.4	4.6	08/24/93
EPA 6010				
Lead	µg/g	1.8	47.7	08/23/93

Analytical No.: 89664

X = Analyzed but not detected.
Results calculated on a dry weight basis.

REQUEST FOR SERVICES

303 W. MILITARY RD. ROTHSCHILD, WI 54474 1-800-338-SCAN

CLIENT INFORMATION

Name: Mr. Bob Zidar
Company: Concrete Ready Mix
Address: 2121 South 55th Street
West Allis, WI 53219
Phone: (414) 649-2000
P.O. # / Project #: Drake Environmental J93169
Quote / Reference #: See Attached
Note: Terms and conditions printed on back apply. LUST SITE
PECFA 1458-9 Please send a copy of the report to Jeff Tracy at Drake.

Turnaround Time
☒ Normal
☐ Rush
Date Needed September 3, 1993
(Preapproved by Lab)

Sample Type (Check all that apply)
☐ Groundwater
☐ Wastewater
☒ Soil
☐ Solid Waste
☐ Oil
☒ Other MEOH BLANK

Sample Handling
☒ Nonhazardous
☐ Flammable
☐ Skin Irritant
☐ Highly Toxic
☒ Other (specify) Methanol Preservative
☐ Refrigerate
☐ Work in Hood
☐ Wear Gloves

ANALYTICAL REQUESTS
(use separate sheet if necessary)

[redacted]	DATE	TIME	No. of Containers COMP	No. of Containers GRAB	SAMPLE ID	SOILGRO	GRO (Wisconsin Modified)	PVOC (EPA 8020)	LEAD (EPA 6010)	PB, MRER	PVD	REMARKS
18089658	8/12/93	9:02		2	B-1 S-3	X					<1	
18089659	8/12/93	10:03		2	B-2 S-2	X					2	
18089660	8/12/93	10:55		3	B-3 S-3	X	X	X			738	
18089661	8/12/93	12:13		2	B-4 S-3	X					44	
18089662	8/12/93	1:52		2	B-5 S-3	X					6	
18089663	8/12/93	3:08		2	B-6 S-4	X					<1	
18089664	8/12/93	4:18		3	B-7 S-3	X	X	X			526	
18089665	8/12/93	5:26		2	B-8 S-3	X						
18089666				1	~~TRIP~~ MEOH BLANK	X						GRO GRORUN
				1	TEMP BLANK							

DRAKE Bill to: Concrete

CHAIN OF CUSTODY RECORD

SAMPLERS: (Signature)

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
	8-12-93 6:15PM	Fed Ex
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED FOR LABORATORY BY: (Signature) / DATE/TIME

Del'v: Hand Comm
Ship. Cont. OK? Y N N/A
Rec'd Refrig.? Y N N/A
Seals OK? Y N N/A
Samples leaking? Y N N/A
Comments: Rec'd on ice

ANALYTICAL REPORT

ENVIROSCAN

Drake Environmental,Inc.
N91 W17194 Appleton Ave.
Menomonee Falls, WI 53051

CUST NUMBER: J93169
SAMPLED BY: Client
DATE REC'D: 09/10/93
REPORT DATE: 09/15/93
PREPARED BY: DJB
REVIEWED BY:

Attn: Jeff Tracy

Modified Gasoline Range Organics (GRO)
Parameter # 78920

	GRO	Date Analyzed	Analytical No.
B-9,S-3 5'-6.5'	208. (4,5)	09/12/93	91280
Detection Limit	5.0		
Units	µg/g		
MW-9	X	09/12/93	91282
Detection Limit	50.		
Units	µg/l		
MEOH BLANK	X	09/12/93	91281
Detection Limit	2.5		
Units	mg/l		

Notes: Only above indicated notes apply.

(1) The chromatogram is distinct for gasoline.
(2) The chromatogram is distinct in showing that the contaminant is a mixture of both gasoline and diesel. All peaks within the GRO window were quantitated.
(3) The chromatogram is not distinct for either gasoline or diesel. All peaks within the GRO window were quantitated.
(4) The chromatogram is not distinct for either gasoline or diesel. It has characteristics of a product which has significant peaks within the GRO window.
(5) The chromatogram also contained significant unidentified peaks outside the GRO window.

The replicate spike recovery of this batch of samples was found to be 106% and 108%.

ANALYTICAL REPORT

ENVIROSCAN

Drake Environmental,Inc.
N91 W17194 Appleton Ave.
Menomonee Falls, WI 53051

CUST NUMBER: J93169
SAMPLED BY: Client
DATE REC'D: 09/10/93
REPORT DATE: 09/15/93
PREPARED BY: DJB DJB
REVIEWED BY:

Attn: Jeff Tracy

Modified Diesel Range Organics (DRO)
Parameter # 78919

	DRO	Date Ext	Date Analyzed	Analytical No.
MW-9	108. (4,5)	09/13/93	09/14/93	91282

Detection Limit 50.
Units µg/l

Notes: Only above indicated notes apply.

(1) The chromatogram is distinct for diesel.
(2) The chromatogram is distinct in showing that the contaminant is a mixture of both gasoline and diesel. All peaks within the DRO window were quantitated.
(3) The chromatogram is not distinct for either gasoline or diesel. It is being reported as diesel, but there is the possibility it is aged or degraded gasoline.
(4) The chromatogram is not distinct for either gasoline or diesel. All peaks within the DRO window were quantitated.
(5) The chromatogram also contained significant peaks outside the DRO window.
(6) The chromatogram did not have any peaks, but the baseline was found to be raised.
(7) The DRO window was quantitated, but the peaks represent less than 10 % of the elevated baseline.
(8) The baseline was found to be raised and the peaks represent more than 10 % of the elevated baseline.

The replicate spike recovery of this batch of samples was found to be 118% and 101%.

ANALYTICAL REPORT

ENVIROSCAN

Drake Environmental,Inc.
N91 W17194 Appleton Ave.
Menomonee Falls, WI 53051

CUST NUMBER: J93169
SAMPLED BY: Client
DATE REC'D: 09/10/93
REPORT DATE: 09/15/93
PREPARED BY: DJP
REVIEWED BY:

Attn: Jeff Tracy

EPA 8021	Units	Detection Limit	MW-9	TRIP BLANK-BR
Benzene	µg/l	0.2	X	X
Bromobenzene	µg/l	0.5	X	X
Bromodichloromethane	µg/l	0.5	X	X
Carbon Tetrachloride	µg/l	0.5	X	X
Chlorobenzene	µg/l	2.0	X	X
Chloroethane	µg/l	2.0	X	X
Chloroform	µg/l	0.5	X	X
Chloromethane	µg/l	2.0	X	X
o-Chlorotoluene	µg/l	1.0	X	X
p-Chlorotoluene	µg/l	1.0	X	X
Chlorodibromomethane	µg/l	0.5	X	X
1,2-Dibromo-3-chloropropane	µg/l	13.3	X	X
1,2-Dichlorobenzene	µg/l	1.0	X	X
1,3-Dichlorobenzene	µg/l	1.0	X	X
1,4-Dichlorobenzene	µg/l	0.5	X	X
1,1-Dichloroethane	µg/l	0.5	X	X
1,2-Dichloroethane	µg/l	0.5	X	X
1,1-Dichloroethylene	µg/l	0.4	X	X
cis-1,2-Dichloroethylene	µg/l	0.5	X	X
trans-1,2-Dichloroethylene	µg/l	0.5	X	X
Methylene Chloride	µg/l	2.5	X	X
1,2-Dichloropropane	µg/l	0.5	X	X
1,3-Dichloropropane	µg/l	0.5	X	X
2,2-Dichloropropane	µg/l	2.0	X	X
Ethylbenzene	µg/l	1.0	X	X
1,2-Dibromoethane	µg/l	1.0	X	X
1,1,2,2-Tetrachloroethane	µg/l	1.0	X	X
Tetrachloroethylene	µg/l	0.5	X	X
Toluene	µg/l	0.5	X	X
1,1,1-Trichloroethane	µg/l	0.5	X	X
1,1,2-Trichloroethane	µg/l	0.5	X	X
Trichloroethylene	µg/l	0.2	X	X
Vinyl Chloride	µg/l	0.2	X	X
o-Xylene	µg/l	1.0	X	X
m- & p-Xylene	µg/l	1.0	X	X
Analytical No.:			91282	91283

X = Analyzed but not detected.

All analyses conducted in accordance with Enviroscan Quality Assurance Program.

ANALYTICAL REPORT

ENVIROSCAN

Drake Environmental,Inc.
N91 W17194 Appleton Ave.
Menomonee Falls, WI 53051

CUST NUMBER: J93169
SAMPLED BY: Client
DATE REC'D: 09/10/93
REPORT DATE: 09/15/93
PREPARED BY: DJP
REVIEWED BY:

Attn: Jeff Tracy

	Units	Detection Limit	MW-9	TRIP BLANK-BR
Methyl tert Butyl Ether	µg/l	2.0	X	X
1,3,5-Trimethylbenzene	µg/l	1.0	X	X
1,2,4-Trichlorobenzene	µg/l	1.0	X	X
1,2,3-Trichlorobenzene	µg/l	1.0	X	X
Isopropylbenzene	µg/l	1.0	X	X
Dichlorodifluoromethane	µg/l	2.0	X	X
Naphthalene	µg/l	1.0	X	X
Trichlorofluoromethane	µg/l	1.0	X	X
Hexachlorobutadiene	µg/l	1.0	X	X
n-Propylbenzene	µg/l	1.0	X	X
n-Butylbenzene	µg/l	1.0	X	X
1,2,4-Trimethylbenzene	µg/l	1.0	X	X
sec-Butylbenzene	µg/l	1.0	X	X
tert-Butylbenzene	µg/l	1.0	X	X
p-Isopropyltoluene	µg/l	1.0	X	X
Isopropyl Ether	µg/l	1.0	X	X
Date of VOC Analysis:			9/12/93	9/13/93
EPA 200.9				
Lead	µg/l	1.7	X	NA
Date of Lead Analysis:			9/14/93	
Analytical No.:			91282	91283

NA = Not Analyzed.
X = Analyzed but not detected.

All analyses conducted in accordance with Enviroscan Quality Assurance Program.

REQUEST FOR SERVICES

303 W. MILITARY RD. ROTHSCHILD, WI 54474 1-800-338-SCAN

CLIENT INFORMATION

Name: Jeff Tracy
Company: Drake Environ Inc
Address: N91 W17194 Appleton Ave
Menomonee Falls Wi 53051
Phone: (414) 253 1440
P.O. # / Project #: J93169
Quote / Reference #: 1721-9
Note: Terms and conditions printed on back apply. L.U.S.T.S.k
Please send bill to Concrete Raising Corporation.
21-0753
Pecfa

Turnaround Time
☐ Normal
☒ Rush
Date Needed September 15th
(Preapproved by Lab)

Sample Type (Check all that apply)
☒ Groundwater
☐ Wastewater
☒ Soil
☐ Solid Waste
☐ Oil
☐ Other

Sample Handling
☐ Nonhazardous
☐ Flammable
☐ Skin Irritant
☐ Highly Toxic
☒ Other (specify) MEOH
☒ Refrigerate
☐ Work in Hood
☐ Wear Gloves

ANALYTICAL REQUESTS
(use separate sheet if necessary)

LAB USE ONLY	DATE	TIME	No. of Containers MATRIX ~~COMP~~	GRAB	SAMPLE ID	Rush Code E SOIL GRO	GRO (W.S. Mod. Matrix)	DRO (W.S. Mod. Matrix)	VOC (8021 + VOC Run)	PB-Pb (EPA 8021)	PID Results	REMARKS
17091280	9.9.93	10:29	Soil	2	B-9, S-3 5'-6½'	X						358
17091281	~	-	MEOH	1	~~TRIP~~ MEOH BLANK	X						→ GRO, GROR
17091282	9.9.93	2:35	water	8	MW-9	X	X	X	X			CODE C GRO, GRORUN
17091283	4.01.93	8:55	water HCL	1	Trip BLANK-BR			X				CODE C
	9-9-93	~	water	1	Temp BLANK							

CODE E
CODE C
CODE E

DRAKE — bill to CONCRETE

CHAIN OF CUSTODY RECORD

SAMPLERS: (Signature)

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
	9.9.93 4:00pm	
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED FOR LABORATORY BY: (Signature) / DATE/TIME
		9/10/93 0940 Am

Del'v: Hand Comm.
Ship. Cont. OK? Y N N/A
Rec'd Refrig.? Y N N/A
Seals OK? Y N N/A
Samples leaking? Y N N/A
Comments:
Rec'd on ice

DRAKE
ENVIRONMENTAL, INC.
Common Sense. Uncommon Service.

RECEIVED
MAR 24 1994
D.N.R. SED Hqtrs.
Milwaukee, WI

March 14, 1994

Mr. Robert Zidar
Concrete Raising Corporation
2121 South 55th Street
West Allis, Wisconsin 53219

RE: Soil Remediation Documentation Report for the Wasco property in West Allis, Wisconsin — Project No. J93169

Dear Mr. Zidar:

We are pleased to submit the following Soil Remediation Documentation Report for the Wasco property, located at 5116 West Lincoln Avenue in West Allis, Wisconsin. The attached report describes the services provided, presents the project results, and provides our conclusions and recommendations.

With your approval, a copy of this report will be submitted to the following agency:

Mr. Jim Delwiche, DNR
4041 North Richards Street
P.O. Box 12436
Milwaukee, WI 53212

In addition, a copy of this report should be submitted with the completed Petroleum Environmental Cleanup Fund Act (PECFA) application to the following agency:

UST Program
DILHR
P.O. Box 7969
Madison, WI 53707

We appreciated this opportunity to provide environmental engineering services. If you have any questions or are in need of further assistance, please contact us.

Respectfully,

DRAKE ENVIRONMENTAL, INC.

Jeffrey G. Tracy
Associate Project Manager

Michael D. Frede, P.E.
Principal—Investigation/Remediation Group

Attachments
16/J93169L

N80 W14824 Appleton Ave.
Menomonee Falls, WI 53051
Phone: (414) 253-1440
Fax: (414) 253-1448

REPORT

PROJECT
Soil Remediation Documentation
Wasco Property
5151 West Lincoln Avenue
West Allis, Wisconsin
PECFA File No. 53219-5010-16

CLIENT
Mr. Robert Zidar
Concrete Raising Corporation
2121 South 55th Street
West Allis, Wisconsin 53219

Project Number
J93169

Date
March 14, 1994

DRAKE ENVIRONMENTAL, INC.
N80 W14824 Appleton Avenue
Menomonee Falls, WI 53051-3879

REPORT CONTENTS

Report Summary

Project Scope

- Project Description
- Site Description
- Scope of Work

Procedures

- Soil Removal Documentation Procedures
- Soil Sampling and Field Screening Procedures
- Soil Sample Analytical Testing Procedures

Results and Analysis

- Soil Removal Documentation
- Soil Conditions
- Groundwater Conditions
- Soil Screening Results
- Soil Sample Analytical Testing Results

Conclusions and Recommendations

- Conclusions
- Recommendations
- General Qualifications

Appendices

REPORT SUMMARY

A 550-gallon gasoline underground storage tank (UST), a 1,000-gallon gasoline UST, and a 2,000-gallon gasoline UST were formerly located at the Wasco property. The subject site is located at 5116 West Lincoln Avenue in West Allis, Wisconsin. Dames and Moore, Inc. conducted a Tank Closure Assessment (TCA) during UST removal. Soil contamination due to UST leakage or overfilling of the 2,000-gallon UST was detected during the TCA and confirmed during a subsequent Remedial Investigation (RI) conducted by Drake Environmental, Inc. Drake was further retained to document soil remediation activities.

A total of 628.44 tons (450 cubic yards) of contaminated soils were excavated and transported to Metro Recycling and Disposal Facility in Franklin, Wisconsin. Field screening and observations, and analytical testing results indicate adequate soil remediation was accomplished. It is Drake's opinion that additional soil remediation is not warranted at this time.

Groundwater was not encountered during soil removal. A groundwater sample collected from a monitoring well during the earlier RI contained a slight concentration of diesel range organics (DRO) and no detectable concentrations of regulated volatile organic compounds (VOCs) or lead. Based on these results and the results of the soil removal activities, it is Drake's opinion that continued evaluation of groundwater quality is not warranted.

The attached report presents a detailed description of the project and a discussion of the project results.

SOIL REMEDIATION DOCUMENTATION
WASCO PROPERTY
WEST ALLIS, WISCONSIN

PROJECT SCOPE

Project Description

Mr. Robert Zidar, owner of Concrete Raising Corporation, manages the Wasco Company property, located at 5116 West Lincoln Avenue in West Allis, Wisconsin. The Wasco property is developed with a commercial building and previously contained three gasoline underground storage tank (UST) systems. The USTs, which were 550 gallons, 1,000 gallons, and 2,000 gallons in capacity, were removed in September 1992. Concrete Raising Corporation retained Dames and Moore, Inc. to provide Tank Closure Assessment (TCA) services during UST removal. Dames and Moore reportedly did not observe soil contamination (petroleum odors or staining) associated with the 550-gallon or 1,000-gallon UST. In addition, Dames and Moore reported analytical results confirming the absence of petroleum contamination in soil samples collected in the vicinities of the 550-gallon and 1,000-gallon UST cavities. Dames and Moore reportedly did observe soil contamination associated with the 2,000-gallon UST during the TCA.

Dames and Moore attempted to estimate the extent of soil contamination during the TCA by excavating the contaminated soils in the vicinity of the 2,000-gallon UST. Approximately 80 cubic yards of contaminated soils were excavated and subsequently transported to and disposed of at Metro Recycling and Disposal Facility (RDF) in Franklin, Wisconsin. Dames and Moore was unable to define the extent of contamination; therefore, a Remedial Investigation (RI) was considered necessary. Concrete Raising Corporation retained Drake Environmental, Inc. to conduct an RI to estimate the degree and extent of soil contamination and the degree of groundwater contamination in the vicinity of the former 2,000-gallon UST area, as well as develop recommendations for remediation (Drake Project No. J93169, RI report dated November 3, 1993).

The RI consisted of drilling nine borings, collecting soil samples from the borings, and constructing and sampling one groundwater monitoring well to evaluate the soil and

groundwater conditions at the site. Laboratory testing confirmed soil contamination at five borings drilled in the vicinity of the former 2,000-gallon gasoline UST. Slight contamination (108 parts per billion—ppb) due to diesel range organics (DRO) was detected in the groundwater sample collected from the monitoring well. Based on the RI results, excavation with landfill disposal of the contaminated soils was selected as the remediation method. This report describes the procedures and results of the remediation project and provides Drake's conclusions and recommendations regarding the effectiveness of remediation.

Site Description

The Wasco property is situated at the intersection of West Lincoln Avenue and 51st Street in the City of West Allis, Wisconsin. The site is located in the SW 1/4 of the SE 1/4 of Section 2, Township 6N, Range 21E (based on the Milwaukee Quadrangle map). Figure 1 in Appendix A illustrates the location of the site.

The property is developed with a slab-on-grade commercial building and parking lot. The majority of the property is occupied by the building, which contains a replacement window manufacturing and showcase facility (Wasco Company). A concrete parking lot and a concrete driveway are located west and north of the building, respectively. The 1,000-gallon gasoline UST was located adjacent to the north side of the building. A dispenser, which was removed in 1986, had been located directly above the 1,000-gallon UST. The 550-gallon gasoline UST was located adjacent to the west side of the building, and the 2,000-gallon gasoline UST was located approximately 10 feet south of the 550-gallon UST location in a loading dock area. The USTs were located in separate cavities. Based on the absence of piping observed during UST removal, it is likely that dispensers had also been located above the 550- and 2,000-gallon USTs. The dispensers were apparently removed prior to 1981. The property is serviced by municipal water and sewer. Figure 2 in Appendix A illustrates the general site features at the time of the RI.

The ground surface on the property is generally flat and level. In the general vicinity, the ground surface slopes downward to the east with an elevation difference of approximately 50 feet over a distance of approximately 1 mile (based on the Milwaukee and Greendale Quadrangle maps).

The property to the west is occupied by Grebe's Bakery. The property to the east is occupied by Capitol City Distributors. The property to the south (across West Lincoln Avenue) is occupied by an apartment building. Railroad tracks are located beyond the north property boundary. Commercial and industrial properties exist beyond the railroad tracks. The adjacent properties are also serviced by municipal water and sewer.

Surface water bodies in the area include the Menomonee River approximately 1 1/2 miles north of the property, a small pond located in Jackson Park approximately 1 mile southeast of the property, and the Kinnickinnic River approximately 3 1/2 miles east of the property.

Scope of Work

Concrete Raising Corporation retained Drake to document the soil remediation project and evaluate the effectiveness of remediation. Mr. Jim Delwiche of the Wisconsin Department of Natural Resources (DNR) verbally approved excavation with landfill disposal as the method of soil remediation prior to project initiation.

Drake completed the following services during the project:

- Coordinated the project with the selected environmental contractor
- Obtained landfill approval for disposal of the contaminated soils
- Documented the soil removal procedures
- Collected and screened representative soil samples to evaluate the conditions of the soils left in place and the soils excavated during the soil removal activities
- Submitted representative soil samples to an independent, certified laboratory for analyses
- Evaluated the results of the field and laboratory data and developed conclusions regarding the effectiveness of the project
- Prepared this Soil Remediation Documentation Report

Concrete Raising Corporation retained Peaches Trucking, Inc. as the environmental contractor for the project. Peaches Trucking coordinated the excavation and transportation of the contaminated soils to Metro RDF in Franklin, Wisconsin, for disposal. Peaches also coordinated backfilling the resulting excavation. Drake retained Enviroscan Corporation on behalf of Concrete Raising Corporation to provide laboratory services for the project.

PROCEDURES

Soil Removal Documentation Procedures

A Drake technician documented the procedures Peaches Trucking, Inc. followed to excavate and transport the contaminated soils. Documentation also included recording the extent of soil removal, the soil and groundwater conditions encountered, and the methods followed to sample and field screen soils. Photographs were taken during the soil remediation project.

Soil Sampling and Field Screening Procedures

Dames and Moore had previously collected and analyzed a sample representative of the contaminated soils and obtained landfill approval from Metro RDF. Drake obtained permission from Metro RDF to landfill the soils excavated for this remediation project under the landfill approval obtained by Dames and Moore. Consequently, it was not necessary to collect and analyze an additional soil sample to obtain landfill approval for this project.

During soil remediation activities, the Drake technician collected a total of seventy-seven soil samples, numbered consecutively from 1 to 77 in the order they were collected. Twenty-six samples were representative of the soils left in place, and the remaining fifty-one samples represented the excavated, landfilled soils.

The sampling procedure consisted of either scraping away approximately 2 inches of soil from the excavation walls and base or recovering representative soil samples from the backhoe bucket following the excavation sampling procedure described in Appendix B. The samples representative of the in-place and excavated soils were collected, where possible, from locations where petroleum odors and/or staining was present. The samples were collected with a stainless steel scoop, which was decontaminated before each use with an Alconox detergent and potable water solution, and rinsed with potable water.

Each soil sample was transferred to four separate containers: one 60-milliliter (ml) vial, two 4-ounce glass jars, and one 8-ounce glass jar (companion sampling). The 60-ml vials were new with Teflon-lined plastic screw-on lids, and the 4-ounce and

8-ounce jars were new with metal screw-on lids. The technician placed a maximum of 30 grams of soil into each 60-ml vial, filled the 4-ounce jars completely, and filled the 8-ounce jars approximately halfway (companion sampling). Methanol, a laboratory supplied preservative, was added to the 60-ml vials selected for gasoline range organics (GRO) analysis within 2 hours of sample collection. The 60-ml vials and 4-ounce jars were placed into a cooler filled with ice packs, returned to Drake's facility, and placed into a refrigerator until submittal to Enviroscan Corporation, an independent, certified laboratory, for analyses.

The technician field screened the 8-ounce samples for the presence of volatile organic compounds (VOCs) using an OVM Model 580B photoionization detector (PID) equipped with a 10.6 electron volt (eV) lamp calibrated to isobutylene. The PID screening procedure is described in Appendix B. PID screening provides a qualitative measurement of VOCs, which include compounds found in volatile petroleum products, such as gasoline. PID readings greater than 10 are generally considered an indication of contamination from products containing VOCs.

In addition to the PID screening, the excavated soils were evaluated for the presence of odors and staining to determine when removal could be terminated. The soils were also visually examined and classified on the basis of texture and plasticity in general accordance with the Unified Soil Classification System (USCS). A chart describing the USCS is included in Appendix B.

Based on the sample locations and the results of the PID screening and field observations, Drake selected a total of twelve soil samples collected during remediation for laboratory quantification of petroleum-related constituents. Ten of these samples were representative of the soils left in place at the walls and base of the final excavation, and the remaining two samples were representative of the excavated, landfilled soils. The sampling locations of the ten samples representative of the soils left in place are illustrated on Figure 3 in Appendix A; the sampling locations of the samples representative of the excavated, landfilled soils are not illustrated.

The selected samples were shipped to Enviroscan Corporation in a cooler filled with ice packs within 48 hours of sample collection. Drake adhered to Chain of Custody procedures as outlined in the DNR Leaking UST (LUST) Analytical Guidance dated July 1993 (PUBL-SW-130 93) throughout sample collection and laboratory submittal. Appendix C includes copies of the Chain of Custody forms.

Soil Sample Analytical Testing Procedures

The landfill approval previously obtained by Dames and Moore was utilized for disposal of the contaminated soils excavated during remediation. Therefore, no sample was collected to obtain landfill approval for this project.

Drake submitted twelve soil samples collected during remediation to Enviroscan for analyses of petroleum-related constituents. The ten samples collected from the walls and base of the final excavation were analyzed to quantify contaminant concentrations in the soils left in place. The two samples collected from the excavated, contaminated soils were analyzed to quantify contaminant concentrations in the soils disposed of at the landfill. The laboratory analyses consisted of quantifying the following petroleum-related parameters:

Parameter	Quantity	Method
GRO	12 samples	Wisconsin DNR Modified GRO Method
Petroleum VOCs (PVOCs)	3 samples	U.S. EPA Method 8020
Total lead	3 samples	U.S. EPA Method 6010

The samples submitted for PVOC and total lead analyses were selected from the in-place and landfilled soil samples that exhibited the highest PID readings of the samples submitted for analyses. The PVOC analyses consisted of quantifying seven individual compounds common in petroleum fuels. The scope of analytical testing followed guidelines established by the DNR's July 1993 guidance document (PUBL-SW-130 93).

NOTE: The soil samples not submitted for laboratory analyses will be retained at Drake's facility for a period of 60 days from the date of this report. If the samples should be retained for a longer period of time, written instructions should be submitted to Drake.

RESULTS AND ANALYSIS

Soil Removal Documentation

Peaches Trucking coordinated excavation of the contaminated soils on November 11 and 12, 1993. Soil removal began at the building corner, located approximately 35 feet west and 4 feet north of the northeast corner of the former 2,000-gallon UST cavity. Removal then advanced west and south. The final excavation was irregular in shape and approximately 1,500 square feet in plan size, with a depth ranging from approximately 7 to 10 feet. Figure 3 in Appendix A illustrates the approximate extent of the excavation.

Soils with petroleum odors, staining, and/or PID readings above 10 were excavated, where possible, and either stockpiled on plastic or loaded directly onto trucks. The excavation was terminated where soils did not exhibit these characteristics. Approximately 628.44 tons (approximately 450 cubic yards) of apparently contaminated soils were loaded directly onto trucks for disposal. Peaches Trucking transported the soils to Metro RDF in Franklin, Wisconsin. Seventeen truckloads of soils were disposed of at the landfill.

After soils with petroleum odors, staining, and/or PID readings above 10 were removed, Drake documented the soil profile at the excavation and collected representative soil samples. Peaches Trucking then coordinated the backfilling of the final excavation with imported 3/4-inch road gravel.

Representative photographs documenting the soil removal activities are included in Appendix D.

Soil Conditions

The excavation area underlay an approximate 6-inch thick concrete slab and an approximate 6-inch thick layer of base course gravel. The soil profile at the final excavation consisted of approximately 4 to 6 feet of fill materials comprised of silty clay with little sand and gravel. The former UST cavities were backfilled with clean imported stone. The underlying natural soils consisted of approximately 0 to 1.5 feet of organic clay (buried topsoil) overlying gray-brown silty clay to the maximum depth

of the excavation (10 feet). Petroleum odors or staining indicative of contamination was not observed in the soils left in place at the walls or base of the final excavation. Petroleum odors and/or staining was observed in the soils disposed of at the landfill.

Groundwater Conditions

As part of the previous RI, Drake constructed one groundwater monitoring well (designated as W-9) at the site. During the RI, groundwater was encountered at a depth of approximately 15 feet below ground surface at W-9. Groundwater was not encountered during soil remediation activities.

During the RI, a slight concentration of DRO (108 ppb), but no detectable concentrations of GRO, VOCs (including compounds regulated under NR 140), or lead were detected in a sample collected from W-9. The State of Wisconsin does not regulate DRO in groundwater. Because no significant groundwater contamination was detected, MW-9 was abandoned in general accordance with Wisconsin Administrative Code NR 141. A copy of the DNR well abandonment form is included in Appendix E.

Soil Screening Results

The Drake technician collected and screened a total of seventy-seven soil samples with a PID. Table 1 presents the results of the PID screening of the twenty-six samples representative of the soils left in place. The PID readings of the samples representing the soils disposed of at the landfill are presented in Appendix B.

TABLE 1
PID Screening Results — Soil Samples

Sample No.	Representative Location	Depth (ft.)	PID Reading (no units)
3	East wall	4	1
5	Base	9	3
9	East wall	4	3
10	South wall	5	9
19	Base	8.5	6
31	Base	10	7
41	East wall	5	**1**
44	Base	9	<1
50	South wall	7	1
51	Base	8	1
53	West wall	7	3
55	East wall	8	**3**
56	South wall	8	**1**
57	Base	9	**1**
60	West wall	6	2
61	East wall	6	3
62	East wall	6	1
66	Base	10	**<1**
67	West wall	8	5
69	West wall	8	1
70	West wall	8	<1
71	West wall	8	**<1**
72	West wall	2	**4**
73	East wall	5	**5**
74	Base	8	**4**
76	North wall	8	**1**

Note: The readings in bold represent samples submitted for laboratory analyses.

To evaluate the significance of the PID readings, Drake compared the results to the DNR guideline limit of 10. PID readings greater than 10 are generally considered an indication of contamination. The twenty-six samples representing the soils left in place at the walls and base of the excavation exhibited PID readings ranging from less than 1 to 9. None of the twenty-six samples exhibited petroleum odors or staining indicative of contamination. Based on the PID results and field observations during excavation, it appeared that adequate soil removal had been accomplished.

The PID readings of the samples representing the landfilled soils ranged from less than 1 to 607. (A table presenting the PID results for the landfilled soils is included in Appendix B.) Petroleum odors and/or staining was observed in the soils transported to the landfill. The PID results and field observations indicated that the landfilled soils were apparently contaminated.

Soil Sample Analytical Testing Results

Based on the sample locations and the results of the PID screening and field observations, Drake submitted a total of twelve soil samples to Enviroscan Corporation for analyses. Table 2 presents the results of the GRO analysis of the selected soil samples submitted to the laboratory. A copy of the laboratory report is included in Appendix C.

TABLE 2
GRO Results — Soil Samples

Sample No.	Depth (ft.)	Representative Location	PID Reading (nu)	GRO (ppm)
41	5	East wall	1	<5.0
55	8	East wall	8	<5.0
56	8	South wall	1	<5.0
57	9	Base	1	<5.0
66	10	Base	<1	<5.0
71	8	West wall	<1	<5.0
72	2	West wall	4	<5.0
73	5	East wall	5	<5.0
74	8	Base	4	<5.0
76	8	North wall	1	<5.0
42	6	Landfilled soils	139	**62.0**
63	5	Landfilled soils	541	**53.9**

nu = no units
ppm = parts per million
Note: Bold type indicates the concentration is greater than the DNR guideline limit of 10 ppm.

Drake compared the GRO results to the DNR guideline limit of 10 parts per million (ppm) which was in use at the time of the soil excavation. Concentrations greater than 10 ppm were considered an indication that petroleum contamination exists. GRO was not detected in the samples representative of the soils left in place, indicating that adequate soil removal was accomplished.

The GRO concentrations in the two samples representative of the landfilled soils were 53.9 and 62.0 ppm. The soils transported to the landfill exhibited petroleum odors and/or staining. The laboratory results and field observations confirm that the landfilled soils were contaminated.

Two soil samples representing the soils left in place (sample nos. 73 and 74) and one sample representing the landfilled soils (sample no. 63) were analyzed for PVOCs and

total lead. Table 3 presents the results of the PVOC and total lead analyses. A copy of the laboratory report is included in Appendix C.

TABLE 3
PVOC and Total Lead Results — Soil Samples

Parameters	Sample No. 73 (ppm)	Sample No. 74 (ppm)	Sample No. 63 (ppm)
PID Reading	5 (nu)	4 (nu)	<1 (nu)
GRO	<5.0	<5.0	<1.1
Benzene	0.0142	<0.0018	<0.04
Ethylbenzene	<0.0104	<0.0087	0.16
Methyl tert-butyl ether	<0.021	<0.017	<0.17
1,2,4-Trimethylbenzene	<0.0104	<0.0087	0.24
1,3,5-Trimethylbenzene	<0.0104	<0.0087	0.25
m & p Xylenes	0.013	<0.0087	0.24
o-xylene	<0.0104	<0.0087	0.33
Toluene	0.0350	0.0372	<0.17
Total PVOCs	0.0246	0.0372	1.22
Total Lead	29.4	16.7	23.7

ppm = parts per million
nu = no units

DNR standards did not exist for PVOCs or total lead in soils at the time of soil excavation. PVOCs and total lead were detected in the samples representative of the in-place soils. The total lead concentrations detected in the samples analyzed ranged from 16.7 to 29.4 ppm.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

A total of 449 cubic yards (628.44 tons) of contaminated soils associated with the former gasoline USTs at the Wasco property were excavated and transported to Metro RDF for landfill disposal. PID screening, field observations, and analytical testing results of samples representative of the soils left in place indicate adequate soil remediation was accomplished.

Groundwater was not encountered during soil removal activities. Analyses of a groundwater sample collected during the RI from a monitoring well formerly located within the extent of soil contamination indicated only a slight concentration of DRO and no detectable concentrations of GRO, VOCs, or lead. Furthermore, the source of groundwater contamination (the contaminated soils) has been removed. Therefore, it is Drake's opinion that continued evaluation of groundwater quality is not warranted.

Recommendations

It is recommended that no further investigation or remediation be completed at this time. A copy of this report should be submitted to the DNR for review and approval.

The majority of costs for remediation are likely eligible for reimbursement through the Petroleum Environmental Cleanup Fund Act (PECFA) program administered by the Wisconsin Department of Industry, Labor, and Human Relations (DILHR). Therefore, a copy of this report should be submitted to DILHR with the completed PECFA application.

General Qualifications

Drake conducts its services with that degree of care and skill ordinarily exercised by members of the engineering community practicing under similar conditions at the same time in the same or similar locality.

The field and engineering procedures Drake followed in completing this project were in general accordance with applicable regulations of the Wisconsin DNR and DILHR at

the time the work was conducted. If the applicable regulations change, the DNR may require further investigation.

The results, conclusions, and recommendations presented in this report are based on the data obtained from the specific sampling locations at the times and under the conditions stated in this report. Variations in soil and groundwater conditions typically exist at most sites between the sampling locations and, also, between specified periods of time, the extent of which may not become evident without further exploration or excavation. If variations are noted in the future, Drake should be informed. It may be necessary to conduct additional explorations and observations to determine the characteristics of these variations, and provide a re-evaluation of the conclusions in this report.

This study was also completed to identify potential economic liabilities. Drake assumes no responsibility for the discovery and elimination of hazards that could possibly cause accidents, injuries, or damage. Compliance with the recommendations and/or suggestions contained in this report in no way assures elimination of hazards or a fulfillment of a property owner's obligation under local, state, or federal laws. It is the responsibility of the property owner to notify authorities of any conditions that are in violation of the current legal standards.

Some of the factual information in this report was obtained from the client, client's agents, and third parties, and are assumed by Drake to be correct and in compliance. Because the facts stated in this report are subject to professional interpretation, they could result in differing conclusions. In addition, the findings and conclusions contained in this report are based on various factors as they existed at the time of this study. Changes or modifications to the site and/or facilities made after the site visit are not included.

Drake prepared this report at the request of its client. Drake assumes responsibility for the accuracy of the contents of this report subject to what is stated elsewhere in this section, but recommends the report be used only for the purpose intended by the client and Drake when the report was prepared. The report may be unsuitable for other uses and reliance on its contents by anyone other than the client is done at the sole risk of the user. Drake accepts no responsibility for application or interpretation of the results by anyone other than the client.

APPENDICES

Appendix A

Figure 1 - Vicinity Diagram
Figure 2 - Site Diagram
Figure 3 - Extent of Excavation Diagram

Appendix B

Excavation Sampling Procedure
PID Screening Procedure
Unified Soil Classification System Chart
Table of PID Results — Landfilled Soils

Appendix C

Analytical Laboratory Report
Chain of Custody Forms

Appendix D

Photograph View Diagram
Photographs

Appendix E

Well Abandonment Form

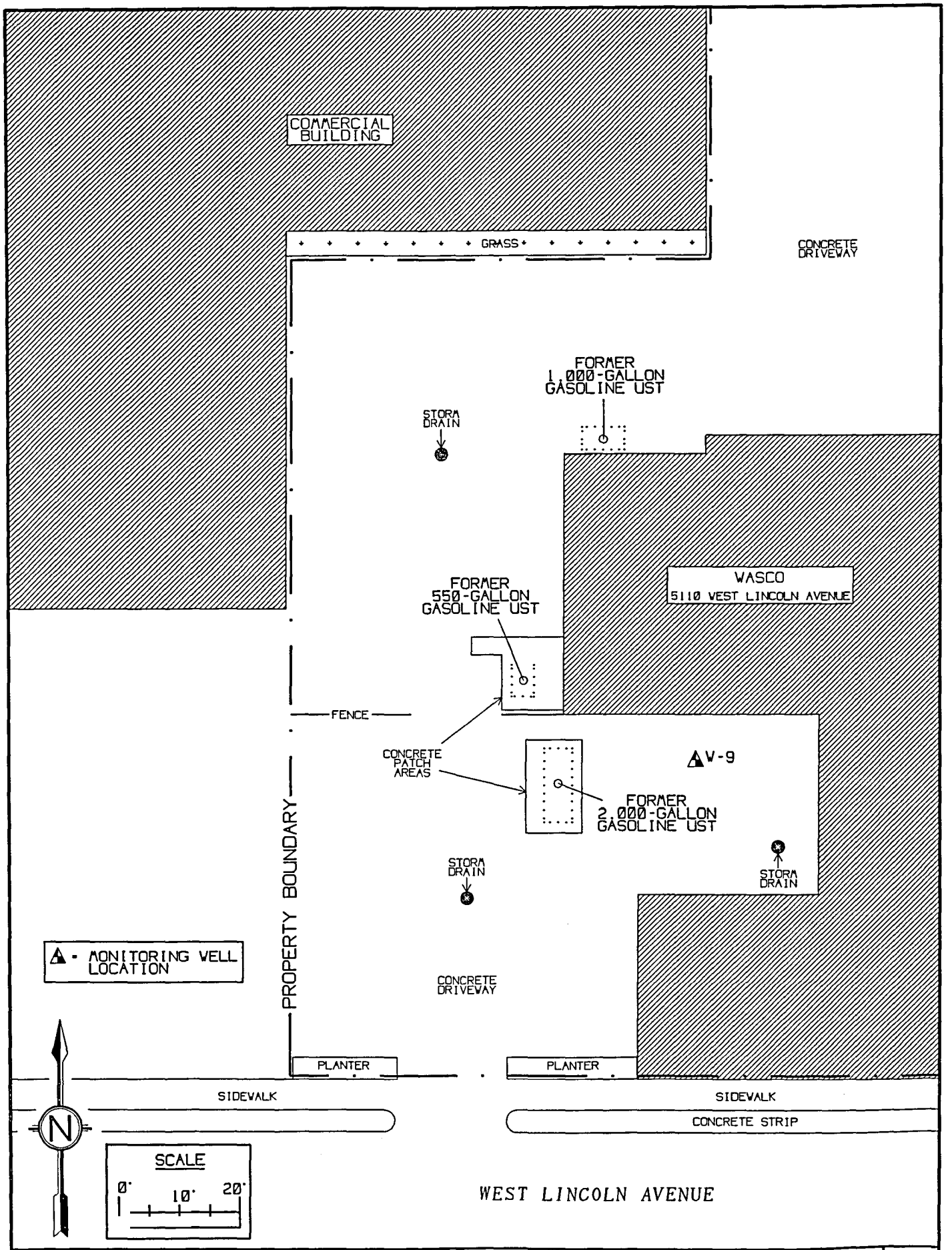
COPIED FROM U.S.G.S. QUADRANGLE - 7.5' SERIES

MILWAUKEE - GREENDALE

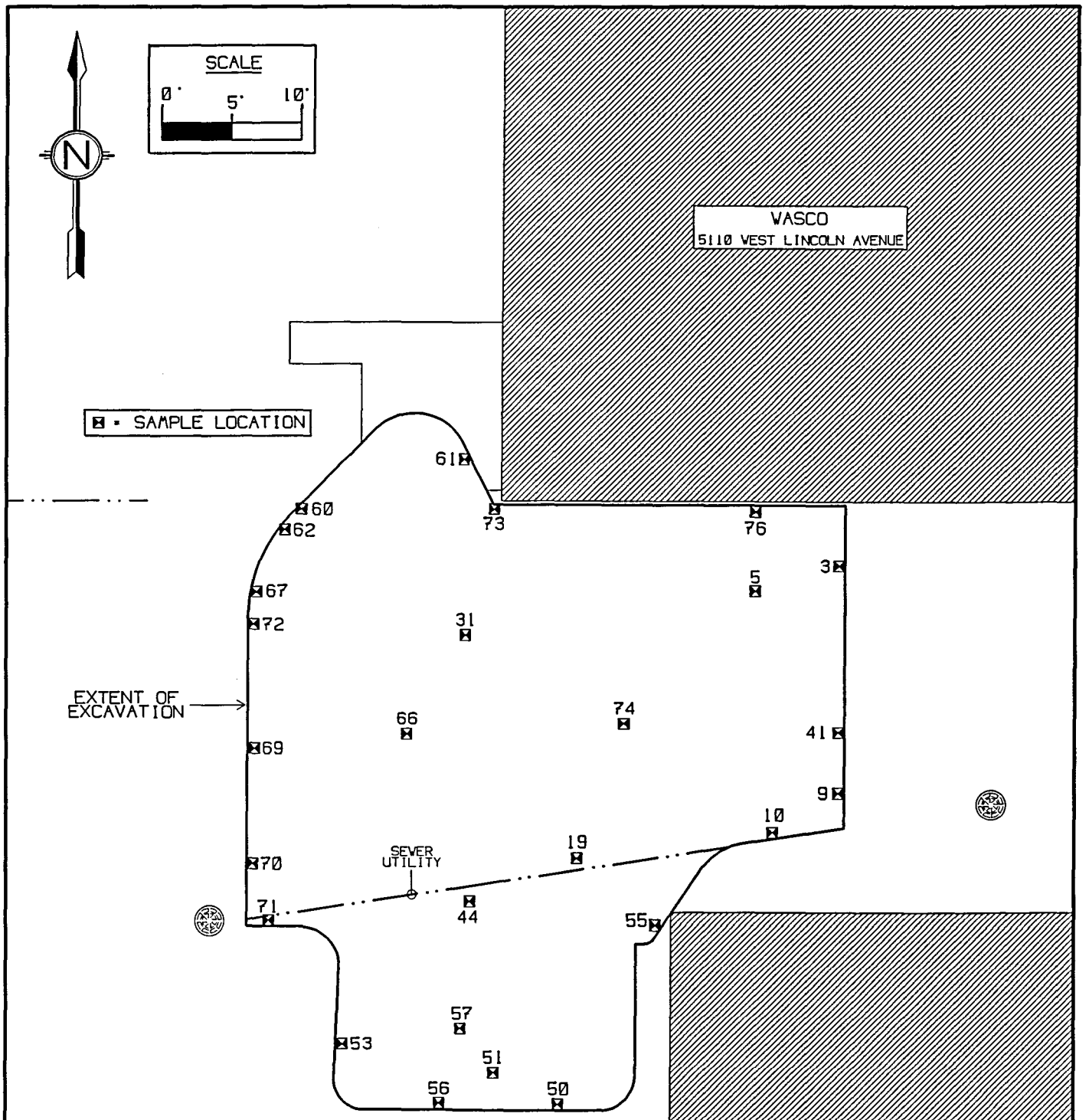
SCALE

0' 1000' 2000'

DRAKE Environmental, Inc. ENGINEERING CONSULTANTS	PROJECT NUMBER J93169 DRAWN BY AJO DATE: 08/16/93	WASCO PROPERTY REMEDIATION VICINITY DIAGRAM	FIGURE 1



DRAKE Environmental, Inc. ENGINEERING CONSULTANTS	PROJECT NUMBER J93169 DRAWN BY AJO DATE: 08/16/93	WASCO PROPERTY REMEDIATION SITE DIAGRAM	FIGURE 2



SAMPLE NUMBER	SAMPLE DEPTH	PID READING	SAMPLE NUMBER	SAMPLE DEPTH	PID READING	SAMPLE NUMBER	SAMPLE DEPTH	PID READING
3	4'	1	51	8'	1	67	8'	5
5	9'	3	53	7'	3	69	8'	1
9	4'	3	55	8'	3	70	8'	<1
10	5'	9	56	8'	1	71	8'	<1
19	8.5'	6	57	9'	1	72	2'	4
31	10'	7	60	6'	2	73	5'	5
41	5'	1	61	6'	3	74	8'	4
44	9'	<1	62	6'	1	76	8'	1
50	7	1	66	10'	<1			

NOTE: DIAGRAM ILLUSTRATES ONLY THE SAMPLES REPRESENTING SOILS LEFT IN PLACE.

DRAKE Environmental, Inc. *ENGINEERING CONSULTANTS*	PROJECT NUMBER J93169 DRAWN BY AJO DATE: 08/16/93	WASCO PROPERTY REMEDIATION EXTENT OF EXCAVATION DIAGRAM	FIGURE 3

EXCAVATION SAMPLING PROCEDURE

The excavation sampling procedure consists of collecting a soil sample from a newly exposed surface or from the bucket of the excavating equipment. If necessary, soils are scraped away to expose soils that have not been exposed to the atmosphere. The sample is recovered with a stainless steel scoop and is therefore disturbed. However, the sample is representative of soil at a discrete location and can be placed into a container for future classification, screening, and analysis.

PID SCREENING PROCEDURE

To determine if soils have been contaminated by volatile organic compounds (VOCs), soil samples are screened with a OVM Model 580B photoionization detector (PID) equipped with a 10.6 electron volt (eV) lamp calibrated to isobutylene. The PID provides a qualitative measure of VOCs with ionization potentials less than 10.6 eV, which include those present in the more volatile petroleum fuels and solvents.

A representative portion of soil is placed in an 8-ounce glass jar and sealed with a metal lid. The jar is filled about half full. The sealed container is allowed to warm to approximately 70° F for a minimum period of 15 minutes, dependent on the ambient air temperature. The actual time period the samples are allowed to warm is in general accordance with the Wisconsin Department of Natural Resources (DNR) guideline set forth in "LUST Field Screening Procedures," PUBL-SW-176, September 1992. The lid of the container is slightly opened, the PID tip inserted into the headspace (area in the jar above the soil), and the highest reading on the meter recorded.

The DNR considers PID readings greater than 10 an indication of contamination from VOCs. However, lower readings do not necessarily indicate the absence of contamination, because nonvolatile contaminants may be present. PID readings are not as meaningful in such cases. In addition, the PID does not identify the types of chemicals present. All results should be evaluated by considering the contaminants present and the limitations of the PID meter.

SOIL CLASSIFICATION SYSTEM CHART

UNIFIED SOIL CLASSIFICATION
INCLUDING IDENTIFICATION AND DESCRIPTION

FIELD IDENTIFICATION PROCEDURES (Excluding particles larger than 3 inches and basing fractions on estimated weights)				GROUP SYMBOLS [1]	TYPICAL NAMES
COARSE GRAINED SOILS. More than half of material is larger than No. 200 sieve size [2] (The No. 200 sieve size is about the smallest particle visible to the naked eye)	GRAVELS. More than half of coarse fraction is larger than No. 4 sieve size (For visual classifications, the ¼" size may be used as equivalent to the No. 4 sieve size)	CLEAN GRAVELS (Little or no fines)	Wide range in grain size and substantial amounts of all intermediate particle sizes.	GW	Well graded gravels, gravel-sand mixtures, little or no fines.
			Predominantly one size or a range of sizes with some intermediate sizes missing.	GP	Poorly graded gravels, gravel-sand mixtures, little or no fines.
		GRAVELS WITH FINES (Appreciable amount of fines)	Non-plastic fines (for identification procedures see ML below).	GM	Silty gravels, poorly graded gravel-sand-silt mixtures.
			Plastic fines (for identification procedures see CL below).	GC	Clayey gravels; poorly graded gravel-sand-clay mixtures.
	SANDS. More than half of coarse fraction is smaller than No. 4 sieve size	CLEAN SANDS (Little or no fines)	Wide range in grain sizes and substantial amounts of all intermediate particle sizes.	SW	Well graded sands, gravelly sands; little or no fines.
			Predominantly one size or a range of sizes with some intermediate sizes missing.	SP	Poorly graded sands, gravelly sands; little or no fines.
		SANDS WITH FINES (Appreciable amount of fines)	Non-plastic fines (for identification procedures see ML below).	SM	Silty sands, poorly graded sand-silt mixtures.
			Plastic fines (for identification procedures see CL below).	SC	Clayey sands, poorly graded sand-clay mixtures.
FINE GRAINED SOILS. More than half of material is smaller than No. 200 sieve size.	IDENTIFICATION PROCEDURES ON FRACTION SMALLER THAN No. 40 SIEVE SIZE				
		DRY STRENGTH (CRUSHING CHARACTERISTICS)	DILATANCY (REACTION TO SHAKING)	TOUGHNESS (CONSISTENCY NEAR PLASTIC LIMIT)	
	SILTS AND CLAYS. Liquid limit less than 50	None to slight	Quick to slow	None	ML — Inorganic silts and very fine sands, rock flour, silty or clayey fine sands with slight plasticity.
		Medium to high	None to very slow	Medium	CL — Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.
		Slight to medium	Slow	Slight	OL — Organic silts and organic silt-clays of low plasticity.
	SILTS AND CLAYS. Liquid limit greater than 50	Slight to medium	Slow to none	Slight to medium	MH — Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts.
		High to very high	None	High	CH — Inorganic clays of high plasticity, fat clays.
		Medium to high	None to very slow	Slight to medium	OH — Organic clays of medium to high plasticity.
HIGHLY ORGANIC SOILS		Readily identified by color, odor, spongy feel and frequently by fibrous texture.			Pt — Peat and other highly organic soils.

INFORMATION REQUIRED FOR DESCRIBING SOILS

Give typical name; indicate approximate percentages of sand and gravel; max. size; angularity, surface condition, and hardness of the coarse grains; local or geologic name and other pertinent descriptive information; and symbol in parentheses.

For undisturbed soils add information on stratification, degree of compactness, cementation, moisture conditions and drainage characteristics.

EXAMPLE:- Silty sand, gravelly; about 20% hard, angular gravel particles ½-in maximum size; rounded and subangular sand grains coarse to fine; about 15% non-plastic fines with low dry strength; well compacted and moist in place; alluvial sand; (SM)

Give typical name; indicate degree and character of plasticity, amount and maximum size of coarse grains; color in wet condition, odor if any, local or geologic name, and other pertinent descriptive information; and symbol in parentheses.

For undisturbed soils add information on structure, stratification, consistency in undisturbed and remolded states, moisture and drainage conditions.

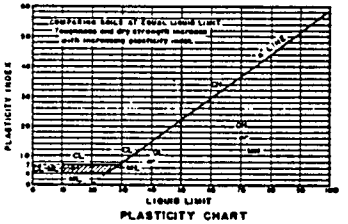
EXAMPLE:- Clayey silt, brown; slightly plastic; small percentage of fine sand; numerous vertical root holes; firm and dry in place; loess; (ML)

LABORATORY CLASSIFICATION CRITERIA

Use grain size curve in identifying the fractions as given under field identification.

Determine percentages of gravel and sand from grain size curve. Depending on percentage of fines (fraction smaller than No. 200 sieve size) coarse grained soils are classified as follows:-
GW, GP, SW, SP.
GM, GC, SM, SC.
Borderline cases requiring use of dual symbols.
Less than 5%
More than 12%
5% to 12%

Coarse grained soils	Criteria	
GW	$C_u = \frac{D_{60}}{D_{10}}$ Greater than 4; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ Between one and 3	
GP	Not meeting all gradation requirements for GW	
GM	Atterberg limits below "A" line, or PI less than 4	Above "A" line with PI between 4 and 7 are borderline cases requiring use of dual symbols.
GC	Atterberg limits above "A" line with PI greater than 7	
SW	$C_u = \frac{D_{60}}{D_{10}}$ Greater than 6; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ Between one and 3	
SP	Not meeting all gradation requirements for SW	
SM	Atterberg limits below "A" line or PI less than 4	Above "A" line with PI between 4 and 7 are borderline cases requiring use of dual symbols.
SC	Atterberg limits above "A" line with PI greater than 7	



PLASTICITY CHART
FOR LABORATORY CLASSIFICATION OF FINE GRAINED SOILS

1 Boundary classifications:- Soils possessing characteristics of two groups are designated by combinations of group symbols. For example GW-GC, well graded gravel-sand mixture with clay binder.
2 All sieve sizes on the chart are U.S. standard.

FIELD IDENTIFICATION PROCEDURES FOR FINE GRAINED SOILS OR FRACTIONS

These procedures are to be performed on the minus No. 40 sieve size particles, approximately 1/64 in. For field classification purposes, screening is not intended; simply remove by hand the coarse particles that interfere with the tests.

DEFINITIONS

COMPONENT SIZE

Cobble = 3-12 in.
Gravel = 0.19-3 in.
Sand = 0.0003-0.19 in.
Silt = 0.0002-0.003 in.
Clay = <0.0002 in.

COMPONENT PERCENTAGES

Trace = 5-15%
Few = 15-25%
Some = 25-35%
And = 35-50%

CONSISTENCY (CLAY SOILS)

Soft = <0.5 tsf
Firm = 0.5-1 tsf
Stiff = 1-2 tsf
Very Stiff = 2-4 tsf
Hard = >4 tsf
tsf = Tons per Square Foot

RELATIVE DENSITY (GRANULAR SOIL)

Very Loose = 1-5 bpf
Loose = 5-9 bpf
Medium = 10-29 bpf
Dense = 30-49 bpf
Very Dense = >50 bpf
bpf = Blows per Foot

TABLE of
PID Screening Results — Landfilled Soils

Sample No.	Representative Location	Depth (ft.)	PID Reading (no units)
1	Landfilled soils	4	1
2	Landfilled soils	4	57
4	Landfilled soils	5	2
6	Landfilled soils	6	495
7	Landfilled soils	5	579
8	Landfilled soils	5	225
11	Landfilled soils	6	607
12	Landfilled soils	4	575
13	Landfilled soils	7	27
14	Landfilled soils	6	248
15	Landfilled soils	7	15
16	Landfilled soils	6	26
17	Landfilled soils	7	457
18	Landfilled soils	3	12
20	Landfilled soils	3	<1
21	Landfilled soils	6	2
22	Landfilled soils	5	308
23	Landfilled soils	5	544
24	Landfilled soils	6	524
25	Landfilled soils	6	442
26	Landfilled soils	6	442
27	Landfilled soils	7	494
28	Landfilled soils	7	453
29	Landfilled soils	5	23
30	Landfilled soils	7	537
32	Landfilled soils	8	26
33	Landfilled soils	7	20
34	Landfilled soils	7.5	19
35	Landfilled soils	7	93
36	Landfilled soils	7	3
37	Landfilled soils	8	10
38	Landfilled soils	7	77
39	Landfilled soils	6	266
40	Landfilled soils	6	25
42	Landfilled soils	6	**139**
43	Landfilled soils	6	22
45	Landfilled soils	5	508
46	Landfilled soils	6	379
47	Landfilled soils	6	65
48	Landfilled soils	4	282
49	Landfilled soils	5	15
52	Landfilled soils	5	11
54	Landfilled soils	6	71
58	Landfilled soils	5	1
59	Landfilled soils	5	7
63	Landfilled soils	5	**54**
64	Landfilled soils	8	39
65	Landfilled soils	7	31

Note: The readings in bold represent samples submitted for laboratory analyses.

TABLE (Cont'd.)
PID Screening Results — Landfilled Soils

Sample No.	Representative Location	Depth (ft.)	PID Reading (no units)
68	Landfilled soils	5	11
75	Landfilled soils	8	75
77	Landfilled soils	6	39

ENVIROSCAN

ENVIRONMENTAL AND
ANALYTICAL SERVICES

December 9, 1993

Drake Environmental,Inc.
N91 W17194 Appleton Ave.
Menomonee Falls, WI 53051

Attn: Jeff Tracy

Re: Project #J93169

Please find enclosed the analytical results for the samples received November 16, 1993.

The Gasoline Range Organics (GRO) analysis was completed using the WI. DNR Modified GRO Method. All other analyses were done in accordance with EPA Methods (EPA-600/4-79-020, March, 1983 or SW-846, Third Edition).

The chain of custody document is enclosed.

If you have any questions about the results, please call. Thank you for using Enviroscan Corp. for your analytical needs.

Sincerely,

Enviroscan Corp.

Cindy K Calvert

Cindy K. Calvert
Senior Analytical Chemist

RECEIVED
DEC 13 1993

303 West Military Road Rothschild, WI 54474 (715) 359-7226
An Affiliate of the Black Clawson Co.

ANALYTICAL REPORT

Drake Environmental,Inc.
N91 W17194 Appleton Ave.
Menomonee Falls, WI 53051

CUST NUMBER: J93169
SAMPLED BY: Client
DATE REC'D: 11/16/93
REPORT DATE: 12/09/93
PREPARED BY: CKC
REVIEWED BY:

Attn: Jeff Tracy

Modified Gasoline Range Organics (GRO)
Parameter # 78920

	GRO	Date Analyzed	Analytical No.
SAMPLE 41 (EW)	X	11/19/93	95694
SAMPLE 55 (EW)	X	11/19/93	95695
SAMPLE 56 (SW)	X	11/19/93	95696
SAMPLE 71 (WW)	X	11/19/93	95697
SAMPLE 72 (WW)	X	11/19/93	95698
SAMPLE 73 (NW)	X	11/19/93	95699
SAMPLE 76 (NW)	X	11/19/93	95700
SAMPLE 57 BASE	X	11/19/93	95701
SAMPLE 66 BASE	X	11/19/93	95702
SAMPLE 74 BASE	X	11/19/93	95703
SAMPLE 42 TRUCK	62.0 (3,6)	11/19/93	95704
SAMPLE 63 TRUCK	53.9 (3,6)	11/19/93	95705
Detection Limit	5.0		
Units	µg/g		
MEOH BLANK	X	11/19/93	95706
Detection Limit	2.5		
Units	mg/l		

X = Analyzed but not detected.
Results calculated on a dry weight basis.

Notes: Only above indicates notes apply.

(1) The chromatogram is distinct for gasoline.
(2) The chromatogram is not distinct for gasoline. It has more characteristics of aged gasoline.
(3) The chromatogram is not distinct for gasoline. It has characteristics of a product which has significant peaks within the GRO window.
(4) The chromatogram is distinct in showing that the contaminant is a mixture of both gasoline and diesel. All peaks within the GRO window were quantitated.
(5) The chromatogram is not distinct for gasoline. All peaks within the GRO window were quantitated.
(6) The chromatogram also contained significant unidentified peaks outside the GRO window.

The replicate spike recovery of this batch of samples was found to be 97.0%, 92.2% and 106%, 104%.

All analyses conducted in accordance with Enviroscan Quality Assurance Program.

ANALYTICAL REPORT

Drake Environmental,Inc.
N91 W17194 Appleton Ave.
Menomonee Falls, WI 53051

CUST NUMBER: J93169
SAMPLED BY: Client
DATE REC'D: 11/16/93
REPORT DATE: 12/08/93
PREPARED BY: LMP
REVIEWED BY:

Attn: Jeff Tracy

EPA 8020	Units	Detection Limit	SAMPLE 73 (NW) 11/12/93	Analyzed Date
Benzene	ng/g	5.2	14.2	11/24/93
Ethylbenzene	ng/g	10.4	X	11/24/93
Methyl tert Butyl Ether	ng/g	21.0	X	11/24/93
1,2,4-Trimethylbenzene	ng/g	10.4	X	11/24/93
1,3,5-Trimethylbenzene	ng/g	10.4	X	11/24/93
m- & p-Xylene	ng/g	10.4	13.0	11/24/93
o-Xylene	ng/g	10.4	X	11/24/93
Toluene	ng/g	21.0	35.0	11/24/93
EPA 6010				
Lead	µg/g	2.0	29.4	11/29/93
Analytical No.:			95699	

X = Analyzed but not detected.
Results calculated on a dry weight basis.

ANALYTICAL REPORT

Drake Environmental,Inc.
N91 W17194 Appleton Ave.
Menomonee Falls, WI 53051

CUST NUMBER: J93169
SAMPLED BY: Client
DATE REC'D: 11/16/93
REPORT DATE: 12/08/93
PREPARED BY: LMP
REVIEWED BY:

Attn: Jeff Tracy

EPA 8020	Units	Detection Limit	SAMPLE 74 BASE 11/12/93	Analyzed Date
Benzene	ng/g	1.8	X	11/24/93
Ethylbenzene	ng/g	8.7	X	11/24/93
Methyl tert Butyl Ether	ng/g	17.0	X	11/24/93
1,2,4-Trimethylbenzene	ng/g	8.7	X	11/24/93
1,3,5-Trimethylbenzene	ng/g	8.7	X	11/24/93
m- & p-Xylene	ng/g	8.7	X	11/24/93
o-Xylene	ng/g	8.7	X	11/24/93
Toluene	ng/g	17.0	37.2	11/24/93
EPA 6010				
Lead	µg/g	1.9	16.7	11/29/93
Analytical No.:			95703	

X = Analyzed but not detected.
Results calculated on a dry weight basis.

ANALYTICAL REPORT

ENVIROSCAN

Drake Environmental,Inc.
N91 W17194 Appleton Ave.
Menomonee Falls, WI 53051

CUST NUMBER: J93169
SAMPLED BY: Client
DATE REC'D: 11/16/93
REPORT DATE: 12/08/93
PREPARED BY: LMP lmp
REVIEWED BY:

Attn: Jeff Tracy

EPA 8020	Units	Detection Limit	SAMPLE 63 TRUCK 11/12/93	Analyzed Date
Benzene	µg/g	0.04	X	11/23/93
Ethylbenzene	µg/g	0.08	0.16	11/23/93
Methyl tert Butyl Ether	µg/g	0.17	X	11/23/93
1,2,4-Trimethylbenzene	µg/g	0.08	0.24	11/23/93
1,3,5-Trimethylbenzene	µg/g	0.08	0.25	11/23/93
m- & p-Xylene	µg/g	0.08	0.24	11/23/93
o-Xylene	µg/g	0.08	0.33	11/23/93
Toluene	µg/g	0.17	X	11/23/93
EPA 6010				
Lead	µg/g	1.9	23.7	11/29/93
Analytical No.:			95705	

X = Analyzed but not detected.
Results calculated on a dry weight basis.

ENVIROSCAN

REQUEST FOR SERVICES

303 W. MILITARY RD. ROTHSCHILD, WI 54474 1-800-338-SCAN

CLIENT INFORMATION

Name: JEFF TRACY
Company: DRAKE ENVIRONMENTAL, INC
Address: N91 W17194 APPLETON AVENUE
MENOMONEE FALLS, WI 53051
Phone: (414) 253-1440
P.O. # / Project #: J93169
Quote / Reference #: 1721-9 LUST SITE
Note: Terms and conditions printed on back apply. Page 1 of 2

21-0753

Turnaround Time
☒ Normal
☐ Rush
Date Needed _____
(Preapproved by Lab)

Sample Type (Check all that apply)
☐ Groundwater
☐ Wastewater
☒ Soil
☐ Solid Waste
☐ Oil
☐ Other _____

Sample Handling
☒ Nonhazardous
☐ Flammable
☐ Skin Irritant
☐ Highly Toxic
☒ Other (specify) MeOH Preserv
☒ Refrigerate
☐ Work in Hood
☐ Wear Gloves

ANALYTICAL REQUESTS
(use separate sheet if necessary)

LAB USE ONLY	DATE	TIME	No. of Containers COMP	No. of Containers GRAB	SAMPLE ID	SOIL GRO (WDNR modified GRO Method)	DRO (GRO Method)	PVOCs (EPA Method 8020)	Pb, MRL (EPA Method 6010)	PID	REMARKS
4095694	11-12-93	8:03		2	Sample 41 (EW)	X	S			1	
4095695	11-12-93	10:28		2	Sample 55 (EW)	X				3	
4095696	11-12-93	10:31		2	Sample 56 (SW)	X				1	
4095697	11-12-93	12:35		2	Sample 71 (WW)	X				<1	
4095698	11-12-93	12:38		2	Sample 72 (WW)	X				4	
4095699	11-12-93	12:41		3	Sample 73 (NW)	X	X	X		5	
4095700	11-12-93	2:20		2	Sample 76 (NW)	X				1	
4095701	11-12-93	10:35		2	Sample 57 (Base)	X				1	
4095702	11-12-93	12:00		2	Sample 66 (Base)	X				<1	
4095703	11-12-93	2:00		3	Sample 74 (Base)	X	X	X		4	

DRAKE

Del'v: Hand Comm.
Ship. Cont. OK? Y N N/A
Rec'd Refrig.? Y N N/A
Seals OK? Y N N/A
Samples leaking? Y N N/A
Comments: Rec'd ok/ice

CHAIN OF CUSTODY RECORD

SAMPLERS: (Signature)		
RELINQUISHED BY: (Signature)	DATE/TIME 11/15/93 3:00pm	RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED FOR LABORATORY BY: (Signature) / DATE/TIME 11/15/93

ENVIROSCAN

REQUEST FOR SERVICES

303 W. MILITARY RD. ROTHSCHILD, WI 54474 1-800-338-SCAN

CLIENT INFORMATION

Name: Jeff Tracy
Company: Drake Environmental, Inc
Address: N91 W17144 Appleton Avenue
Menomonee Falls, WI 53051
Phone: (414) 253-1440
P.O. # / Project #: J93169
Quote / Reference #: 1721-9 LUST Site
Note: Terms and conditions printed on back apply. Page 2 of 2

Turnaround Time
☒ Normal
☐ Rush
Date Needed _____
(Preapproved by Lab)

Sample Type (Check all that apply)
☐ Groundwater
☐ Wastewater
☒ Soil
☐ Solid Waste
☐ Oil
☐ Other _____

Sample Handling
☒ Nonhazardous
☐ Flammable
☐ Skin Irritant
☐ Highly Toxic
☒ Other (specify) MeOH Preserv.
☒ Refrigerate
☐ Work in Hood
☐ Wear Gloves

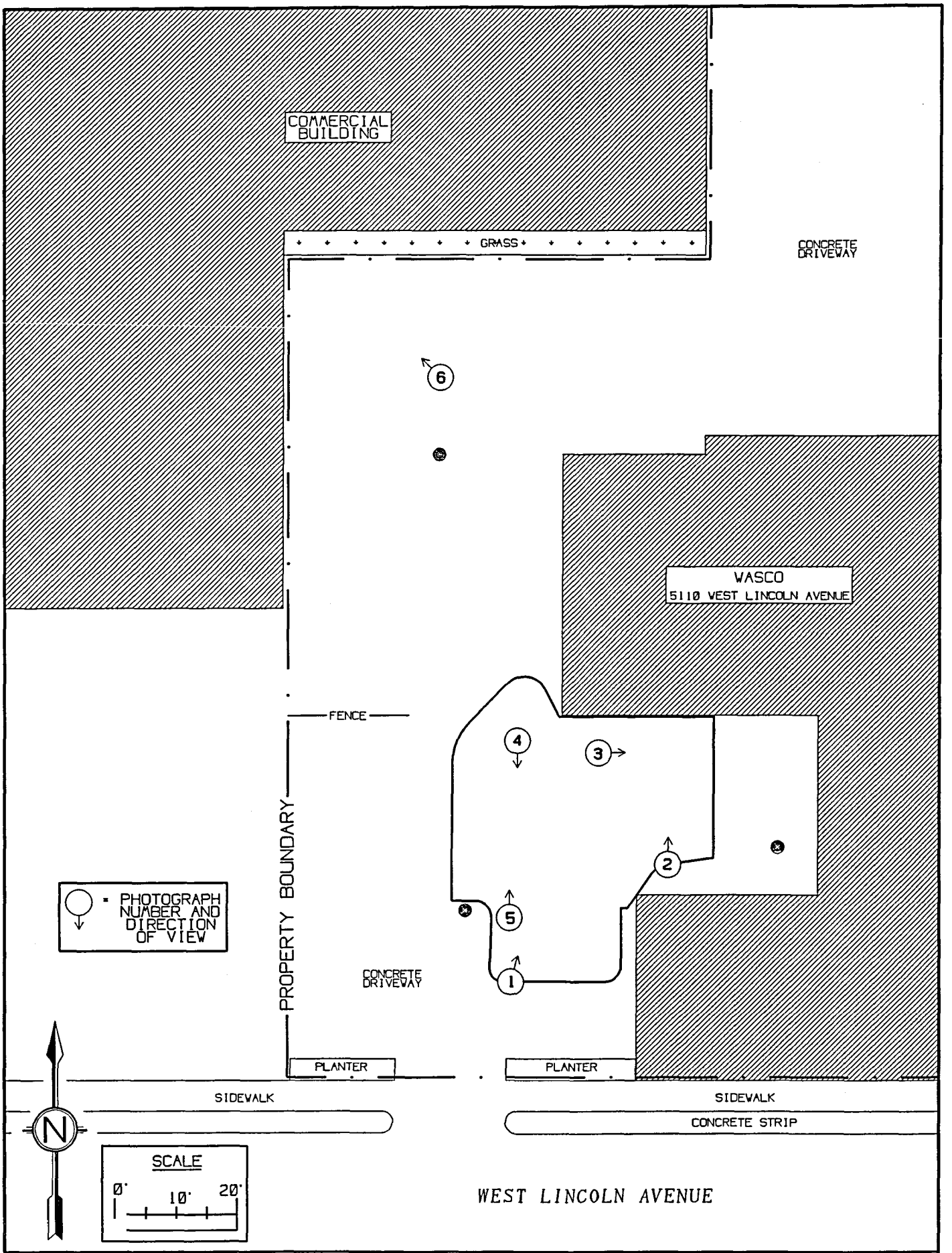
ANALYTICAL REQUESTS
(use separate sheet if necessary)

LAB USE ONLY	DATE	TIME	No. of Containers COMP	No. of Containers GRAB	SAMPLE ID	SOIL GRO (Modified GAS Method)	SOIL RVO (EPA Method 8020)	MTBE Pb (EPA Method 6010)		PID	REMARKS
4095704	11-12-93	8:05		2	Sample 42 (Truck) ✓	X	X			139	
4095705	11-12-93	11:29		3	Sample 63 (Truck) ✓	X	X	X		541	
4095706	"	6:15 Am		1	MeOH Blank	X				—	GRO, GRO
				1	Temperature Blank						

CHAIN OF CUSTODY RECORD

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
[signature]	11-15-93 3:00pm	
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED FOR LABORATORY BY: (Signature) / DATE/TIME

Del'v: Hand Comm.
Ship. Cont. OK? Y N N/A
Rec'd Refrig.? Y N N/A
Seals OK? Y N N/A
Samples leaking? Y N N/A
Comments: Rec'd on ice



DRAKE Environmental. Inc. ENGINEERING CONSULTANTS	PROJECT NUMBER J93169 DRAWN BY TRT DATE: 02/03/94	WASCO PROPERTY REMEDIATION PHOTOGRAPH VIEW DIAGRAM

Photograph 1 - Looking northeast from photograph location number 1.

Peaches Trucking, Inc. is removing the concrete slab over the excavation area at the Wasco property.

Photograph 2 - Looking north from photograph location number 2.

The north wall and the base of the eastern portion of the excavation. The white sewer pipe which was later removed and the water line (right) are also illustrated.

Photograph 3 - Looking east from photograph location number 3.

The east wall and the base of the eastern portion of the excavation. The water in the excavation drained from the sewer line, a small leak in the water line, and backfill material along those lines.

Photograph 4 - Looking southeast from photograph location number 4.

The west and south walls and the base of the western portion of the excavation.

Photograph 5 - Looking north from photograph location number 5.

The north wall and the base of the western portion of the excavation. The water in the excavation drained from the utility lines.

Photograph 6 - Looking northwest from photograph location number 6.

The soil cuttings from the borings drilled during the previous RI have been stockpiled along the Wasco building. The soil cuttings were later landfilled with the excavated contaminated soils.

DRAKE Environmental, Inc.

Engineering Consultants

November 3, 1993

RECEIVED

NOV 0 8 1993

D.N.R. SED Hqtrs.
Milwaukee, WI

Mr. Robert Zidar
Concrete Raising Corporation
2121 South 55th Street
West Allis, WI 53219

RE: Remedial Investigation at the Wasco property in West Allis, Wisconsin — Project No. J93169

Dear Mr. Zidar:

We have completed the field and engineering analysis for the above-referenced site. The attached report presents the results of the field and laboratory testing, a discussion of the results, and our conclusions and recommendations.

With your approval, a copy of this report will be submitted to the following agency:

Mr. Jim Delwiche, DNR
4041 North Richards Street
P.O. Box 12436
Milwaukee, WI 53212

In addition, a copy of this report should be submitted with the completed Petroleum Environmental Cleanup Fund Act (PECFA) application to the following agency:

UST Program
DILHR
P.O. Box 7969
Madison, WI 53707

We appreciated this opportunity to provide professional environmental engineering services. If you have any concerns regarding this report, please feel free to contact us.

Respectfully,

DRAKE Environmental, Inc.

Jeffrey G. Tracy
Assistant Level Geologist

Michael D. Frede, P.E.
Principal Level Engineer

Attachments
13/J93169H

N91 W17194 Appleton Avenue, Menomonee Falls, WI 53051 ♦ Telephone: (414) 253-1440

PO Box 610, Minocqua, WI 54548 ♦ Telephone: (715) 358-7018

REPORT

PROJECT
Remedial Investigation
Wasco Property
West Allis, Wisconsin
PECFA File No. 53219-5010-16

CLIENT
Mr. Robert Zidar
Concrete Raising Corporation
2121 South 55th Street
West Allis, WI 53219

Project Number
J93169

Date
November 3, 1993

DRAKE Environmental, Inc.
N91 W17194 Appleton Avenue
Menomonee Falls, WI 53051

REPORT CONTENTS

Report Summary

Project Scope

- Project Description
- Site Description
- Scope of Work

Procedures

- Soil Sampling and Drilling Procedures
- Soil Screening Procedures
- Soil Classification Procedures
- Soil Sample Analytical Testing Procedures
- Groundwater Monitoring Well Construction Procedures
- Groundwater Sampling and Analytical Testing Procedures

Results and Analysis

- Regional Geological Review
- Soil Conditions
- Regional Hydrogeological Review
- Groundwater Conditions
- PID Screening Results
- Soil Sample Analytical Results
- Groundwater Sample Analytical Results

Conclusions and Recommendations

- Conclusions
- Recommendations
- General Qualifications

Appendices

REPORT SUMMARY

The Wasco property is located at 5116 West Lincoln Avenue in West Allis, Wisconsin. Three gasoline underground storage tank (UST) systems were utilized at the site during former business operations. The USTs were 550 gallons, 1,000 gallons, and 2,000 gallons in capacity. The UST systems were removed from the property in September 1992. Obvious soil contamination associated with the 2,000-gallon UST was encountered during a Tank Closure Assessment (TCA) conducted by Dames and Moore, Inc. Drake Environmental, Inc. was subsequently retained to conduct a Remedial Investigation (RI) in the vicinity of the 2,000-gallon UST. The purpose of an RI is to estimate the approximate extent and degree of contamination and to provide recommendations for remediation, if warranted.

The RI included collecting soil samples from nine borings in the vicinity of the former 2,000-gallon UST to evaluate the soil conditions. Drake screened soil samples recovered from the borings and submitted selected samples for laboratory analysis. A groundwater monitoring well was constructed in the ninth boring to collect a representative groundwater sample. The sample was submitted for laboratory analysis to evaluate the groundwater conditions. The laboratory analysis focused on identifying and quantifying petroleum contamination associated with the former 2,000-gallon UST system.

Soil contamination was detected during the field screening and observation of samples collected from four of the nine borings. However, laboratory testing confirmed soil contamination at five borings drilled in the vicinity of the former 2,000-gallon gasoline UST. The approximate volume of contaminated soils on-site is estimated to be 450 cubic yards.

Groundwater was measured at depths ranging from approximately 4 1/2 to 15 feet, approximately 3 1/2 to 6 1/2 hours following the drilling activities. Slight DRO contamination was detected in the groundwater sample collected from the groundwater monitoring well. However the laboratory chemist indicated the chromatogram was not distinct for gasoline or diesel, and that significant peaks were observed outside the diesel range.

Soil remediation is considered warranted. The recommended method of soil remediation is excavation with landfill disposal; however, the client should evaluate the

alternatives after considering criteria such as cost, liability, time, and site disruption. Groundwater quality should be re-evaluated following soil remediation to evaluate the effectiveness of soil remediation and the necessity for groundwater remediation.

Please refer to the attached report for a detailed discussion of the project.

REMEDIAL INVESTIGATION
WASCO PROPERTY
WEST ALLIS, WISCONSIN

PROJECT SCOPE

Project Description

Mr. Robert Zidar owns the Concrete Raising Corporation. Mr. Zidar manages the Wasco Company property located at 5116 West Lincoln Avenue in West Allis, Wisconsin, through Concrete Raising Corporation. The Wasco property is developed with a commercial building and previously contained three underground storage tank (UST) systems. The USTs were 550-gallons, 1,000-gallons, and 2,000-gallons in capacity and stored gasoline. The USTs were removed in September 1992. Concrete Raising Corporation retained Dames and Moore, Inc. to provide Tank Closure Assessment (TCA) services during UST removal. Dames and Moore did not observe obvious soil contamination (petroleum odors or staining) associated with the 550-gallon and 1,000-gallon USTs. In addition, analytical results confirmed the absence of petroleum contamination in soil samples collected in the vicinity of the 550-gallon UST and the 1,000-gallon UST cavities. Obvious soil contamination associated with the 2,000-gallon UST was observed during the TCA. However, laboratory analysis did not detect the presence of petroleum contamination in two soil samples collected in the vicinity of the 2,000-gallon UST.

Dames and Moore attempted to estimate the extent of soil contamination during the TCA by excavating the contaminated soils in the vicinity of the 2,000-gallon UST. Approximately 80 cubic yards of contaminated soils were excavated and stockpiled on-site. The stockpiled soils were subsequently transported to and disposed of at Metro Recycling and Disposal Facility in Franklin, Wisconsin. Dames and Moore was unable to define the extent of contamination during the TCA; therefore, a Remedial Investigation (RI) was considered necessary. Concrete Raising Corporation retained Drake Environmental, Inc. to conduct an RI to estimate the degree and extent of soil contamination and the degree of groundwater contamination in the vicinity of the former 2,000-gallon UST area, as well as develop recommendations for remediation.

Site Description

The Wasco property is situated at the intersection of West Lincoln Avenue and 51st Street in the City of West Allis, Wisconsin. The site is located in the SW 1/4 of the SE 1/4 of Section 2, Township 6N, Range 21E (based on the Milwaukee Quadrangle map). Figure 1 in Appendix A illustrates the location of the site.

The property is developed with a slab-on-grade commercial building and parking lot. The majority of the property is occupied by the commercial building. The building contains a replacement window manufacturing and showcase facility (Wasco Company). A concrete parking lot and a concrete driveway are located west and north of the building, respectively. The USTs were located in separate cavities. The 1,000-gallon gasoline UST was located adjacent to the north side of the building. A dispenser, which was removed in 1986, was located directly above the 1,000-gallon UST. The 550-gallon gasoline UST was located adjacent to the west side of the building, and the 2,000-gallon gasoline UST was located approximately 10 feet south of the 550-gallon UST location in a loading dock area. Based on the absence of piping observed during UST removal, dispensers were likely located above the 550- and 2,000-gallon USTs. The dispensers were removed prior to 1986. The property is serviced by municipal water and sewer. Figure 2 in Appendix A illustrates the general site features at the time of the RI.

The ground surface on the property is generally flat and level. In the general vicinity, the ground surface slopes downward to the east with an elevation difference of approximately 50 feet over a distance of approximately 1 mile (based on the Milwaukee and Greendale Quadrangle maps).

The property to the west is occupied by Grebe's Bakery. The property to the east is occupied by Coral Printing Ink Corporation. The property to the south (across West Lincoln Avenue) is occupied by an apartment building. Railroad tracks are located beyond the north property boundary. Commercial and industrial properties exist beyond the railroad tracks. The adjacent properties are also serviced by municipal water and sewer.

Surface water bodies in the area include the Menomonee River approximately 1 1/2 mile north of the property, a small pond located in Jackson Park approximately 1 mile

southeast of the property, and the Kinnickinnic River approximately 3 1/2 miles east of the property.

Scope of Work

The purpose of the RI was to estimate the extent and degree of the soil contamination and the degree of groundwater contamination, and develop recommendations for remediation, if warranted. Drake completed the following services during the RI:

- Reviewed the data generated by Dames and Moore, Inc.
- Collected representative soil samples from nine soil borings in the former 2,000-gallon UST area
- Screened the soil samples to preliminarily estimate the degree and extent of soil contamination in the vicinity of the former UST area
- Constructed a groundwater monitoring well in one boring to collect a representative groundwater sample
- Submitted nine soil samples and the groundwater sample to a laboratory for analysis of selected petroleum parameters
- Prepared this RI report

Drake evaluated the results of the field and laboratory testing and developed conclusions regarding the on-site environmental conditions. This report describes the procedures followed during the RI, the results of the field and laboratory testing, an analysis of the collected data, and recommendations for remediation.

Concrete Raising Corporation retained Sauter Drilling, Inc. to drill the soil borings and construct a groundwater monitoring well near the former 2,000-gallon UST cavity. Concrete Raising Corporation also retained Enviroscan Corporation to provide laboratory analysis.

PROCEDURES

Soil Sampling and Drilling Procedures

To allow for the collection of representative soil samples at the site, Sauter Drilling, Inc. drilled eight soil borings (designated as B-1 through B-8) on August 12, 1993. On September 9, 1993, Sauter drilled a ninth boring (B-9), in which a groundwater monitoring well (W-9) was constructed. Sauter utilized a truck-mounted drill rig with continuous flight, hollow-stem augers to drill the borings. The nine borings were drilled around the perimeter of the former 2,000-gallon UST area. Borings B-1 through B-8 were drilled to a depth of 16.5 feet; B-9 was advanced to a depth of 20 feet. Figure 3 in Appendix A illustrates the boring locations.

Drake collected a total of sixty-four soil samples from the nine borings at 2.5-foot vertical intervals. The samples were collected following the split-barrel sampling procedure described in Appendix B. The technician hand washed the split-barrel samplers prior to each use to avoid cross-contamination. The samplers were scrubbed in an Alconox detergent and municipal water solution, rinsed in a separate container with municipal water, and allowed to air dry between each use.

The downhole drilling equipment was also decontaminated prior to conducting the fieldwork to avoid the introduction of contaminants or cross-contamination between borings. The decontamination procedure consisted of cleaning all augers and rods with a hot water pressure washer.

The technician transferred each sample to three separate containers: one 40-milliliter (ml) preweighed glass jar, a 4-ounce glass jar, and an 8-ounce glass jar (the individual jars containing samples collected from one sampling location are referred to as companion samples). All jars were new with Teflon-lined plastic or metal screw-on lids. Approximately 20 grams of soil were placed into each 40-ml preweighed jar, which was provided by Enviroscan Corporation. The 4-ounce jars were filled completely, and the 8-ounce jars were filled approximately halfway. The 4-ounce and 40-ml jars were placed in a cooler filled with ice packs. Within 2 hours of sampling, the technician added 25 ml of methanol (a laboratory supplied preservative) to one 40-ml jar from each boring selected for analytical testing. Methanol is required when

testing for gasoline compounds (Wisconsin Department of Natural Resources—DNR, Leaking Underground Storage Tank Analytical Guidance, July 1993, PUBL-SW-130). The selected samples were chosen based on photoionization detector (PID) screening results and the depths from which they were collected. In general, the sample from each boring exhibiting the highest PID reading was submitted for analysis. The 8-ounce companion samples were returned to Drake's field vehicle for screening. Following screening, the 8-ounce samples were returned to Drake's facility for storage. The 40-ml and 4-ounce samples were returned to Drake's facility and refrigerated.

Soils excavated from the borings were placed on and covered with 4-mil plastic sheeting on the parking lot pending the selection of an appropriate remediation method. Eight of the borings (B-1 through B-8) were backfilled with bentonite chips. Borehole Abandonment Forms are included in Appendix C. A groundwater monitoring well (designated W-9) was constructed in boring B-9.

The technician maintained logs of the drilling and soil sampling activities to document the general soil types and groundwater conditions observed in the borings. These logs were used to prepare the final boring logs.

Soil Screening Procedures

The 8-ounce companion samples were screened with a PID following the PID screening procedure described in Appendix B. PID screening provides a qualitative and semi-quantitative measure of volatile organic compounds (VOCs) in soils. PID readings greater than 10 are generally a reliable indicator of contamination from products containing VOCs, such as gasoline.

Soil Classification Procedures

A Drake engineer visually examined and classified the 8-ounce set of soil samples on the basis of texture and plasticity in general accordance with the Unified Soil Classification System (USCS). A chart describing the USCS method is included in Appendix C. The engineer selected the soil stratifications presented on the logs based on Drake's field logs and sample observations. The stratification lines are considered approximate boundaries; the transitions between soil types in-situ may be gradual in both the horizontal and vertical directions.

The engineer also completed olfactory and visual observations of the soil samples to detect the presence of obvious petroleum products. These observations are included in the soil descriptions on the boring logs in Appendix C.

Soil Sample Analytical Testing Procedures

Drake submitted a total of nine sets of companion samples (40-ml and 4-ounce) of those samples exhibiting the highest PID readings, petroleum odors, or staining to Enviroscan Corporation (a certified, analytical laboratory) for analysis. The samples were submitted to quantify the degree of contamination at each boring location. The samples were submitted for laboratory analysis within 1 day following sample collection. Chain of Custody procedures were adhered to throughout sample collection, handling, and laboratory submittal as established by the DNR in a guidance document dated July 1993 (PUBL-SW-130 93). A copy of the Chain of Custody form is included in Appendix D.

The analysis of soil samples consisted of quantifying the following petroleum-related parameters:

Parameter	Quantity
Gasoline range organics (GRO)	9 samples
Petroleum VOCs (PVOCs)	2 samples
Total lead	2 samples

The laboratory analyzed the nine samples for gasoline range organics (GRO) following the Wisconsin DNR Modified GRO Method. Two samples were also analyzed for petroleum VOCs (PVOCs) using a gas chromatograph following EPA Method 8020 and total lead following EPA Method 6010. The laboratory report in Appendix D presents a complete list of the PVOC parameters quantified.

Note: The soil samples not submitted for laboratory analysis will be retained at Drake's facility for a period of 60 days from the date of this report. If the samples should be retained for a longer period of time, written instructions should be submitted to Drake.

Groundwater Monitoring Well Construction Procedures

A groundwater monitoring well (designated as W-9) was constructed in B-9. The location of the well is illustrated on Figure 4 in Appendix A. The well was constructed in general accordance with DNR requirements as presented in Wisconsin Administrative Code NR 141. The monitoring well consisted of a 10-foot length of 2-inch diameter, machine slotted PVC pipe. A 2-inch diameter threaded-joint solid PVC riser pipe extended from the screened portion of the well to the ground surface. A Drake technician cut off the well pipe near the ground surface and fitted the top of the PVC pipe with a locking cap for security. The annulus between the PVC pipe and outer wall of the borehole was backfilled with a commercially packaged sand (to serve as a filter pack) from the base of the borehole to an elevation of approximately 1/4 foot above the screened portion of the well. A 1-foot layer of fine sand was placed above the filter pack, and a bentonite annular space seal was placed above the fine sand to a depth of 1 foot below the ground surface. A concrete seal was placed from the top of the bentonite to the surface. The technician embedded a metal protector cover in the concrete surface seal for security. The protective cover consisted of a flush mount, watertight, steel unit 9 inches in diameter and 12 inches in length. The monitoring well construction details are included in Appendix C.

Wisconsin Administration Code NR 141.21 requires that well development consist of the removal of ten well volumes of water or a sufficient volume to produce sediment-free water from wells which all of the water cannot be removed (purged), or removing all the stagnant water in a well which can be purged dry. In accordance with a guidance document published by the DNR (Groundwater Sampling Procedures Guidelines, PUBL-WR-153 87, dated February 1987), wells which are purged dry should be allowed to recover and, if time permits, should be purged a second time prior to sample collection. Drake developed and sampled W-9 during the RI. W-9 can be purged dry; therefore, Drake pumped the well dry twice utilizing a Red Lion Model RL 150 electric pump. To avoid the introduction of contaminants into the well, the equipment used to develop the well was washed in an Alconox detergent and municipal water solution, double rinsed with municipal water, and allowed to air dry before and after use. The monitoring well development form is included in Appendix C.

Groundwater Sampling and Analytical Testing Procedures

Drake collected a groundwater sample from W-9 on September 9, 1993, in general accordance with the DNR's guidance document dated February 1987 (Groundwater Sampling Procedures Guidelines, PUBL-WR-153 87). The well was allowed to recover following development and prior to sample collection. In addition, the Teflon bailer used to collect the sample was thoroughly washed in an Alconox detergent and municipal water solution, and double rinsed in municipal water prior to sampling. The field technician transferred the water sample from the Teflon bailer to six 40-ml acid-preserved vials, one 1-liter acid-preserved amber jar, and one 250-ml acid-preserved jar. In addition to the sample collected from the monitoring well, Drake submitted a trip blank to the laboratory for quality control analysis. The water sample was stored on ice in a cooler and submitted to the laboratory within 24 hours of collection. Drake followed Chain of Custody procedures established by the DNR in a guidance document dated July 1993 (PUBL-SW-130 93) throughout sample collection and laboratory delivery. Appendix D includes copies of the Chain of Custody form.

The technician field tested the water sample recovered from the monitoring well for pH, temperature, and conductivity. Drake reviewed and compared the data to typical measurements.

The laboratory analyzed the water sample for GRO following the Wisconsin DNR Modified GRO Method, VOCs following EPA Method 8021, and lead following EPA Method 200.9. In addition, the groundwater sample was analyzed for diesel range organics (DRO) following the Wisconsin DNR Modified DRO Method at the request of Mr. Bob Jennings of Firstar Bank in Milwaukee. The trip blank was tested for GRO and VOCs only.

RESULTS AND ANALYSIS

Regional Geological Review

Drake reviewed Wisconsin Geological and Natural History Survey and United States Geological Survey publications which indicate the Wasco site is located within the ground moraine deposits of the Lake Michigan glacier. These deposits were generally formed in an east-west direction and consist mainly of stratified mixtures of silts and clays with some sand and gravel, commonly known as glacial till. The soils are approximately 100 feet thick in the vicinity of the property and overlie the horizontally bedded Niagara Dolomite bedrock. The thickly bedded Niagara Dolomite bedrock exists in the vicinity of the site from a depth of approximately 100 feet. The bedrock is weathered and fractured near its surface and less weathered with increased depth.

Soil Conditions

The general soil profile encountered at the borings beneath the surface pavement consisted of fill materials to a depth of approximately 5 feet. The fill materials generally consisted of brown to black silty to sandy clays mixed with sand and gravel and trace amounts of cinders, topsoil, and glass. The natural soils beneath the fill consisted of an organic soil layer with a thickness of approximately 1 foot. Brown to dark gray-brown silty clay with traces of sand and gravel exists beneath the organic soils to depths ranging from approximately 12 1/2 feet to 16 1/2 feet below ground surface. Dark gray silty clay with traces of sand and gravel exists beneath the brown silty clay at a depth of approximately 19 feet at B-9. The clay soils generally exhibited stiff to very hard consistencies. A petroleum odor was noted in samples collected from B-2, B-3, B-4, B-7, and B-9 at depths ranging from 2 1/2 to 9 feet. Petroleum odors or staining were not observed in samples collected from B-1, B-5, B-6, or B-8.

The natural clay soils prevalent on-site are expected to exhibit low permeabilities. The fill materials above the natural soils may exhibit low to moderate permeabilities. Consequently, the migration of petroleum contaminants in the vicinity of the former 2,000-gallon gasoline UST would likely be inhibited in both the horizontal and vertical directions.

The general soil profile is based on the boring log descriptions. The specific conditions encountered at each boring location are indicated on the soil boring logs, which are included in Appendix C.

Regional Hydrogeological Review

Drake reviewed Wisconsin Geological and Natural History Survey and United States Geological Survey publications which indicate an unconfined groundwater aquifer (water-bearing media) exists within the glacial soils at depths approximately 20 feet below ground surface in the area of the site. The groundwater aquifer within the glacial soils discharges to local rivers and streams. Based on published geologic and hydrogeologic data, groundwater flow is likely northeast to east and likely occurs at depths within 20 feet of the ground surface. A separate groundwater system exists within the Niagara Dolomite bedrock. The Niagara Dolomite is weathered and fractured (highly permeable) near its surface and becomes less weathered with increased depth. Groundwater movement within such bedrock occurs preferentially within the fractures. Based on the published data, groundwater within both aquifers apparently flows northeast to east.

Groundwater Conditions

Groundwater was not encountered at borings B-1 through B-8 during drilling. However, Drake measured the water levels in the boreholes prior to abandonment. Water was measured at a depth of approximately 4 1/2 feet at B-1, 6 1/2 hours following drilling; approximately 9 feet at B-2, 5 1/2 hours following drilling; and approximately 13 feet at B-4, 3 1/2 hours following drilling. Groundwater was encountered at a depth of approximately 15 feet following construction of W-9. Water was not encountered in the remaining borings (B-3, B-5, B-6, B-7, and B-8) prior to abandonment. Construction of additional monitoring wells and long-term monitoring would be necessary to accurately define the direction and gradient of groundwater flow.

No petroleum product was observed floating on the groundwater table at the borings.

PID Screening Results

Table 1 presents the results of the PID screening of the sixty-four samples collected from the borings drilled during the RI.

TABLE 1
PID Screening Results

Sample No.	Depth (ft.)	B-1	B-2	B-3	B-4	B-5	B-6	B-7	B-8	B-9
S-1	1-2.5	3	NR	2	6	8	<1	<1	<1	3
S-2	2.5-4	<1	*2	**84**	4	2	<1	<1	<1	**34**
S-3	5-6.5	*<1	<1	***738**	***44**	*6	<1	***526**	*2	***398**
S-4	7.5-9	<1	<1	7	**34**	<1	*<1	**15**	<1	1
S-5	10-11.5	<1	<1	3	2	<1	<1	6	<1	1
S-6	12.5-14	<1	<1	2	<1	<1	<1	<1	<1	<1
S-7	15-16.5	<1	<1	2	<1	<1	<1	<1	<1	1
S-8	17.5-19	—	—	—	—	—	—	—	—	<1
S-9	20-21.5	—	—	—	—	—	—	—	—	<1

*Indicates sample submitted for laboratory analysis.
NR = No sample recovered.
Notes: PID readings do not have a unit of measurement.
Bold type indicates results above the DNR guideline limit of 10.

To evaluate the significance of the PID screening, Drake compared the readings to 10, a guideline limit frequently used by the DNR to identify possible VOC contamination. Elevated PID readings were not detected in samples collected from B-1 or B-2, located 5 feet north and 5 feet west of the former 550-gallon UST location, respectively; or B-5, B-6, or B-8, located 20 feet east, 15 feet west, and 25 feet south of the former 2,000-gallon gasoline UST location, respectively; indicating VOC contamination apparently does not exist at these sample locations. Borings B-3 and B-4 were drilled approximately 10 feet east and 10 feet west, respectively, of the former 2,000-gallon UST location. The samples collected from depths of 2 1/2 to 6 1/2 feet from B-3 and 5 to 9 feet from B-4 exhibited PID readings greater than 10. Boring B-7 was drilled approximately 10 feet south of the former 2,000-gallon UST location. The samples collected from B-7 at depths of approximately 5 to 9 feet exhibited PID readings greater than 10. Boring B-9 was drilled approximately 20 feet east of the former 2,000-gallon UST location. The samples collected from B-9 at depths of 2 1/2 to 6 1/2 feet exhibited PID readings greater than 10. The elevated PID readings of these

samples indicate the presence of VOC contamination in the vicinity of the former 2,000-gallon UST location.

Soil Sample Analytical Results

Table 2 presents the analytical results for GRO. Appendix D includes a copy of the laboratory report.

TABLE 2
GRO Results — Soil Samples

Sample No.	Sample Depth (ft.)	PID Reading (no units)	GRO (ppm)
B-1:S-3	5-6.5	<1	<5
B-2:S-2	2.5-4	2	<5
B-3:S-3	5-6.5	738	***3,420**
B-4:S-3	5-6.5	44	***142**
B-5:S-3	5-6.5	6	***31.6**
B-6:S-4	7.5-9	<1	<5
B-7:S-3	5-6.5	526	***2,090**
B-8:S-3	5-6.5	2	<5
B-9-S-3	5-6.5	398	***208**

ppm = parts per million
*The laboratory chemist indicated the chromatogram was not distinct for gasoline or diesel. In addition, significant peaks outside the gasoline range were observed on the chromatogram.
Note: GRO concentrations that exceed the DNR guideline limit of 10 ppm are in bold type.

GRO concentrations in soils are not regulated in Wisconsin (Wisconsin DNR, Guidance for Conducting Environmental Response Action, PUBL SW-157-92, March 1992). However, the DNR has established guidelines for evaluating GRO concentrations. To assess the significance of the data, Drake compared the GRO results to the DNR guideline limit of 10 parts per million (ppm). Concentrations greater than 10 ppm indicate petroleum contamination is present and remediation will likely be required by the DNR. The GRO data confirms the presence of GRO contamination in the samples submitted for analysis from B-3 (3,420 ppm), B-4 (142 ppm), B-5 (31.6 ppm), B-7 (2,090 ppm), and B-9 (208 ppm). GRO was not detected in samples from the remaining borings (B-1, B-2, B-6, or B-8). The GRO results are consistent with the PID results and physical observations of the samples.

Table 3 presents PVOC and total lead analytical results of the samples collected from B-3 and B-7. A copy of the laboratory report is included in Appendix D.

TABLE 3
PVOC and Total Lead Results — Soil Samples

Parameter	B-3:S-3 (ppm)	B-7:S-3 (ppm)
PID Reading	738 (nu)	526 (nu)
GRO	3,420	2,090
Benzene	6.8	<0.4
Ethylbenzene	71.6	9.6
Methyl tert-Butyl Ether	<0.6	<1.5
1,2,4-Trimethylbenzene	169	65.8
1,3,5-Trimethylbenzene	45.5	5.3
Total Xylenes	153.2	9.9
Toluene	17.3	4.6
Total PVOCs	463.4	95.2
Total Lead	42.6	47.7

ppm = parts per million
nu = no units

Currently, PVOC standards for soil have not been published by the DNR. However, these results are utilized in evaluating remediation alternatives, if necessary. The PVOC results confirm the presence of six petroleum compounds in the sample collected from B-3, and five petroleum compounds in the sample from B-7. The total PVOC concentrations in sample nos. B-3:S-3 and B-7:S-3 were 463.4 ppm and 95.2 ppm, respectively. These concentrations are consistent with the GRO and PID results, and the physical observations of the samples. The compounds detected are common constituents in gasoline.

Total lead in soil is also not regulated by the DNR. However, total lead concentrations less than 100 ppm generally are not considered significant (Wisconsin DNR, Leaking Underground Storage Tank Analytical Guidance, July 1993, PUBL-SW-130 93). Therefore, the total lead concentrations detected in the sample collected from B-1 (42.6 ppm) and the sample from B-7 (47.7 ppm) are not considered significant.

Groundwater Sample Analytical Results

Table 5 presents the results of the GRO, DRO, and lead analysis of the groundwater sample recovered from W-9. A copy of the laboratory report is included in Appendix D.

TABLE 5
Analytical Results — Groundwater Sample
(Only the detected parameters are presented.)

Parameter	W-9 (ppb)	PAL (ppb)	ES (ppb)
GRO	<50	NL	NL
DRO	*108	NL	NL
Lead	<1.7	5	50

*The laboratory chemist indicated the chromatogram was not distinct for gasoline or diesel. In addition, significant peaks outside the diesel range were observed on the chromatogram.
ppb = parts per billion
PAL = Preventive Action Limit
ES = Enforcement Standard
NL = No established limit

In Wisconsin, standards exist to evaluate groundwater quality at regulated facilities. Chapter NR 140 of the Wisconsin Administrative Code establishes public health related standards for specific compounds known to cause health problems. For all standards, there are two limits: the Preventive Action Limit (PAL) and the Enforcement Standard (ES). If a concentration is above the PAL but below the ES, the DNR's response may range from "no action" to "further investigation is required." If an ES is exceeded, the DNR may require further investigation and remediation.

GRO and DRO in groundwater are not regulated in Wisconsin, but the DNR has indicated detectable GRO and DRO concentrations could suggest contamination, which may require further investigation or remediation. DRO was detected at a concentration of 108 parts per billion (ppb), indicating slight DRO contamination in the groundwater. The laboratory chemist indicated the chromatogram was not distinct for gasoline or diesel. In addition, significant peaks outside the diesel range were observed on the chromatogram. GRO was not detected in the sample collected from W-9 or the trip blank.

No VOCs were detected in the groundwater sample or trip blank.

Lead was not detected in the groundwater sample.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Soil contamination (indicated by petroleum odors, staining, and elevated PID results) exists in the vicinity of the former 2,000-gallon gasoline UST location at the Wasco property. Laboratory analysis results confirm the presence of contamination.

Based on the analytical data, the estimated extent of contamination related to the former 2,000-gallon UST is approximately 1,300 square feet, extending from the northwest corner of the backfilled UST cavity to approximately 30 feet east, 40 feet south, and 10 feet west of the cavity. The vertical extent of contamination is anticipated to be approximately 10 feet, because elevated PID readings were not detected in samples collected at depths greater than 10 feet. Soil contamination is not likely present within the former 2,000-gallon UST cavity, because the cavity was backfilled with imported gravel following removal of the UST and contaminated soils. Based on the field and analytical data, the volume of contaminated soils is estimated to be 450 cubic yards. The estimated extent of soil contamination is illustrated on Figure 5 in Appendix A.

It is anticipated that soil remediation will be required by the DNR. Therefore, Drake evaluated both in-place (in-situ) and excavation (ex-situ) treatment alternatives to identify technically feasible methods for soil remediation. Drake has also estimated costs for three remediation alternatives based on a soil volume of 450 cubic yards. Due to the clayey nature and relatively small volume of contaminated soils, in-situ remediation is not considered technically or economically feasible. Drake evaluated three ex-situ treatment alternatives: on-site bioremediation, thermal treatment, and landfill disposal. Bioremediation of the soils is not considered appropriate due to the limited space on-site and length of time likely needed to achieve adequate cleanup goals. The cost for on-site bioremediation is estimated to be $63,200. Thermal treatment is not considered economically feasible due to the high cost of operating the thermal unit on-site and relatively small volume of soils to be remediated. The cost for on-site thermal treatment is estimated to be $57,000. Excavation with landfill disposal is considered the most technically and economically feasible remediation alternative. Drake estimates the cost for excavation with landfill disposal to be $51,400. It should be noted that if the soils are disposed of at a landfill, the property owner will be a

generator of contaminated soils and a potentially responsible party (i.e., legally liable for investigation and cleanup costs) if contamination is caused by the landfilled where the soils are disposed of. To avoid this liability, the contaminated soils can be thermally treated at an asphalt plant or treated in-situ at a higher cost.

Based on laboratory analysis of the groundwater sample collected from W-9, slight DRO contamination may exist in the groundwater at the site. However, the laboratory chemist indicated the chromatogram was not distinct for gasoline or diesel. It is also likely GRO and VOC contamination exist within the area of greatest soil contamination. Removing the contaminated soils will likely significantly improve the groundwater quality on-site. However, the DNR will likely require the groundwater quality on-site be re-evaluated following the completion of soil remediation. The cost to evaluate the groundwater quality for 1 year is estimated to be $23,750.

Recommendations

Drake recommends that soil remediation be conducted. The most appropriate method of remediation is considered excavation with landfill disposal; however, the client should evaluate the alternatives after considering criteria such as cost, liability, time, and site disruption.

Groundwater monitoring should be conducted following soil remediation to evaluate groundwater quality on-site and determine the necessity for groundwater remediation. Because W-9 will be removed during soil remediation activities, a replacement well should be constructed within the extent of the backfilled excavation. A groundwater sample should be collected from the replacement well on a quarterly basis. The groundwater samples should be analyzed for GRO, DRO, and PVOCs. If the analytical results indicate groundwater remediation is necessary, groundwater remediation alternatives should then be considered.

It is recommended that this report be submitted to the DNR for review and approval. The majority of costs for the RI are likely eligible for reimbursement through the Petroleum Environmental Cleanup Fund Act (PECFA) program administered by the Wisconsin Department of Industry, Labor, and Human Relations (DILHR). Therefore, a copy of this report should be submitted to DILHR with the completed PECFA application.

General Qualifications

Drake conducts its services with that degree of care and skill ordinarily exercised by members of the engineering community practicing under similar conditions at the same time in the same or similar locality.

The field and engineering procedures Drake followed in completing this report are in general accordance with applicable regulations of the Wisconsin DNR and DILHR at the time the work was conducted. If the applicable regulations change, the DNR may require further investigation.

The results, conclusions, and recommendations presented in this report are based on the data obtained from the specific boring locations at the times and under the conditions stated in this report. Variations in soil and groundwater conditions typically exist at most sites between sampling locations and between specific periods of time, the extent of which may not become evident without further exploration or excavation. If variations are noted in the future, Drake should be informed. It may be necessary to conduct additional explorations and observations to determine the characteristics of these variations and provide a re-evaluation of the conclusions in this report.

This RI also was completed to identify potential economic liabilities. Drake assumes no responsibility for the discovery and elimination of hazards that could possibly cause accidents, injuries, or damage. Compliance with the recommendations and/or suggestions contained in this report in no way assures elimination of hazards or a fulfillment of a property owner's obligation under local, state, or federal laws. It is the responsibility of the property owner to notify authorities of any conditions that are in violation of the current legal standards.

Some of the factual information in this report was obtained from the client, client's agents, and third parties, and is assumed by Drake to be correct and complete. Because the facts stated in this report are subject to professional interpretation, they could result in differing conclusions. In addition, the findings and conclusions contained in this report are based on various factors as they existed at the time of the study. Changes or modifications to the site and/or facilities made after the site visit are not included.

Drake prepared this report at the request of its client. Drake assumes responsibility for the accuracy of the contents of this report subject to what is stated elsewhere in this section, but recommends the report be used only for the purpose intended by the client and Drake when the report was prepared. The report may be unsuitable for other uses and reliance of its contents by anyone other than the client is done at the sole risk of the user. Drake accepts no responsibility for application or interpretation of the results by anyone other than the client.

APPENDICES

Appendix A

Figure 1 - Vicinity Diagram
Figure 2 - Site Diagram
Figure 3 - Boring Locations Diagram
Figure 4 - Monitoring Well Location Diagram
Figure 5 - Extent of Contamination Diagram

Appendix B

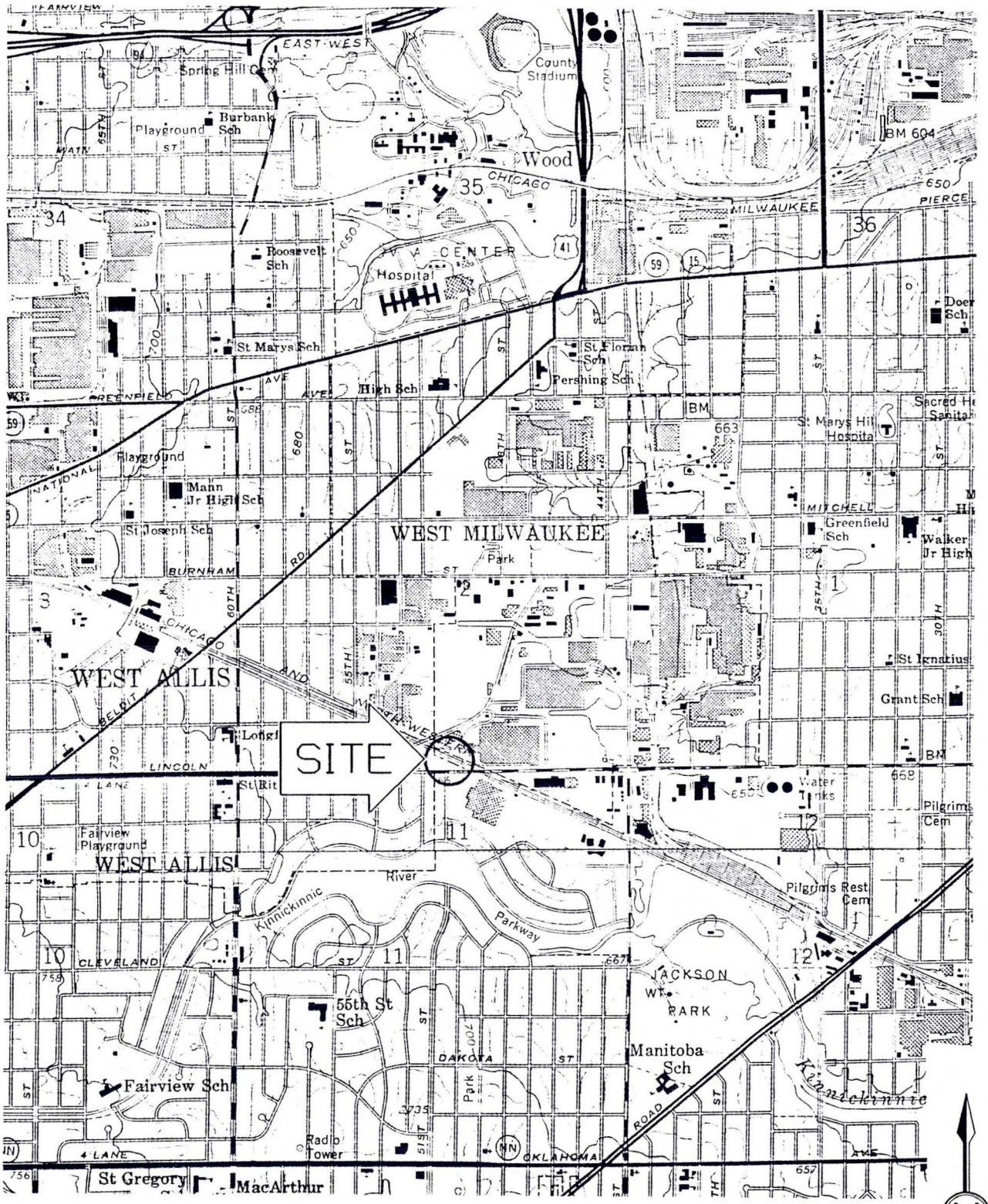
Split-Barrel Sampling Procedure
PID Screening Procedure

Appendix C

Borehole Abandonment Forms
Unified Soil Classification System (USCS) Chart
Boring Logs
Monitoring Well Construction Form
Monitoring Well Development Form

Appendix D

Analytical Laboratory Reports
Chain of Custody Forms



COPIED FROM U.S.G.S. QUADRANGLE - 7.5' SERIES

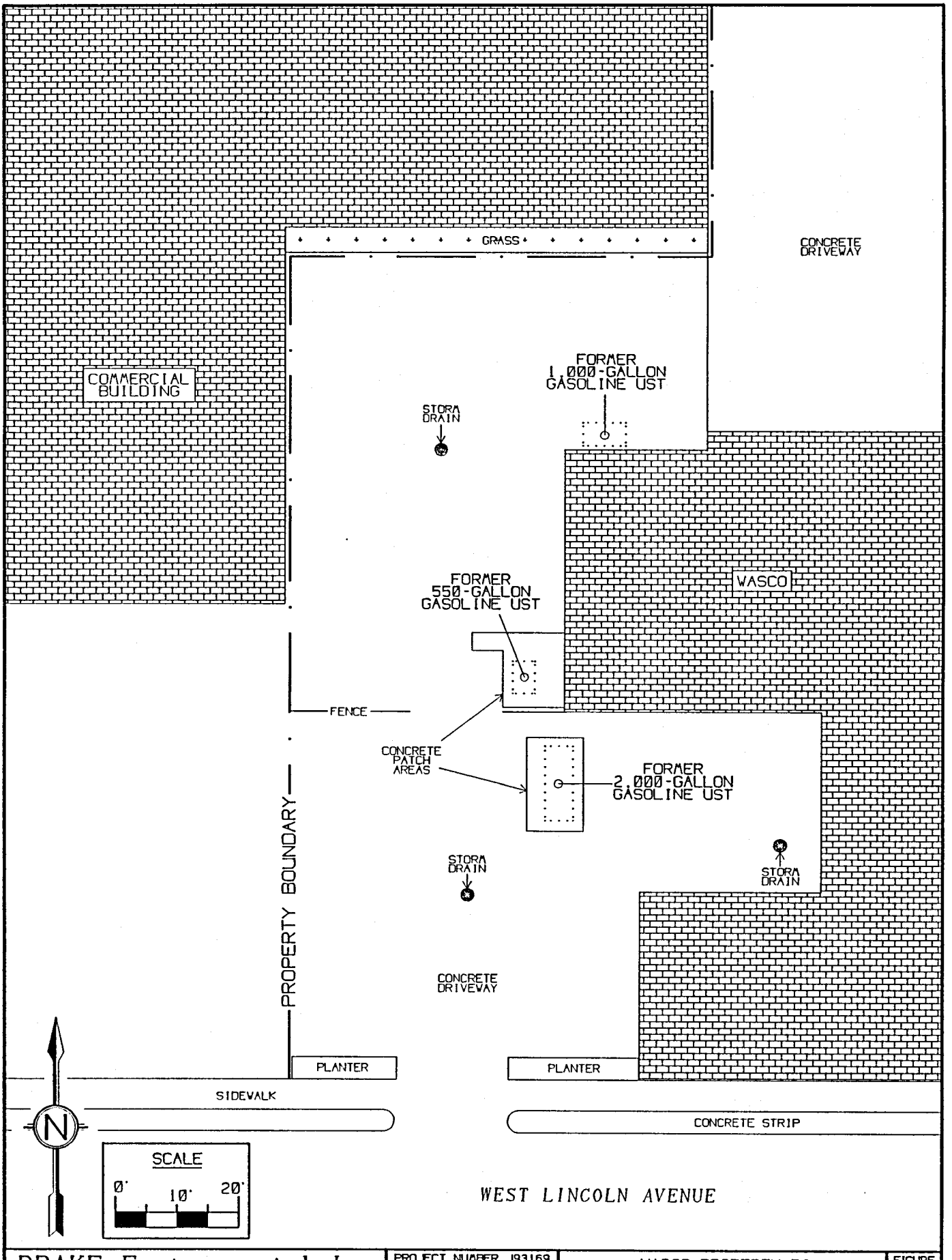
MILWAUKEE - GREENDALE

SCALE

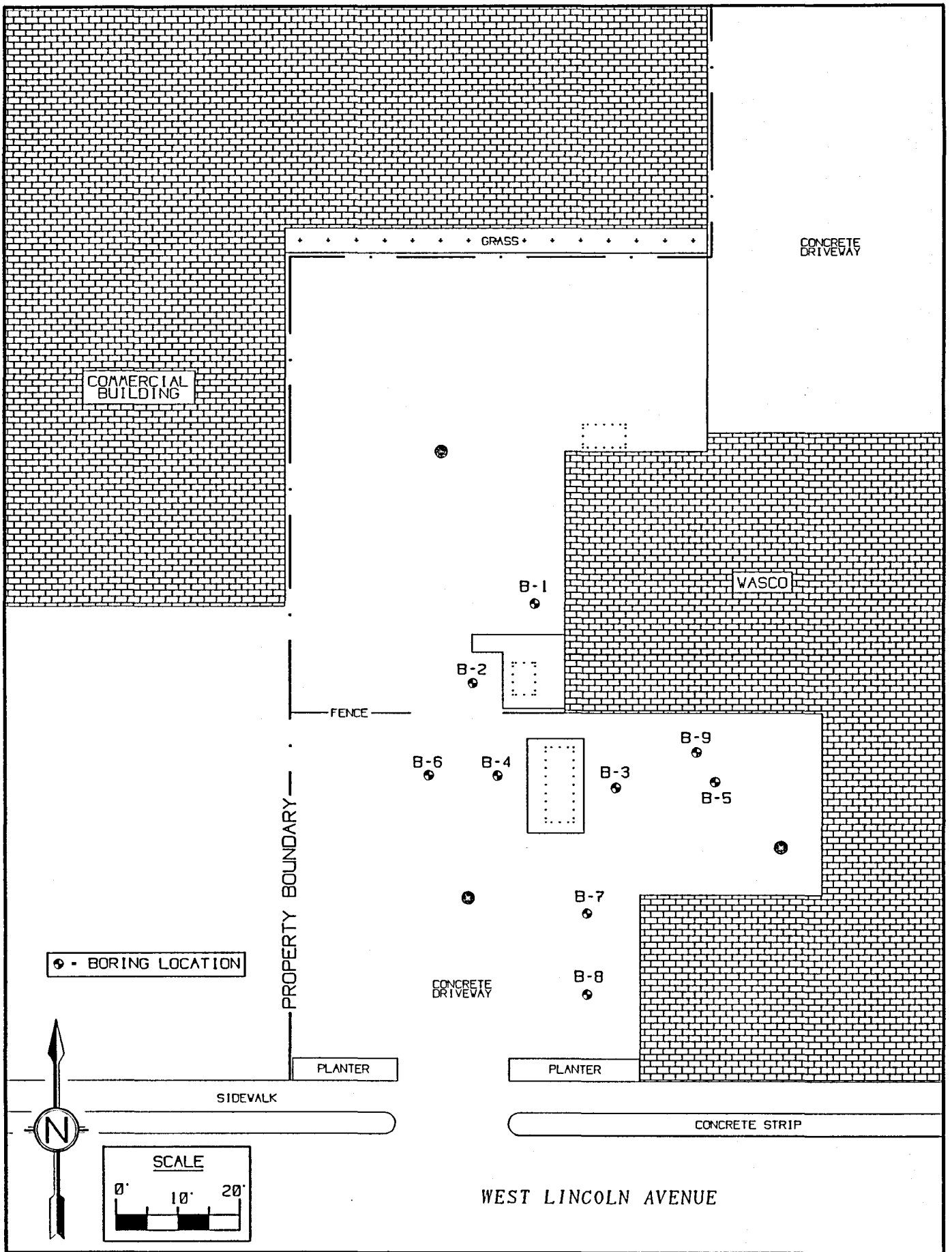
0' 1000' 2000'

N

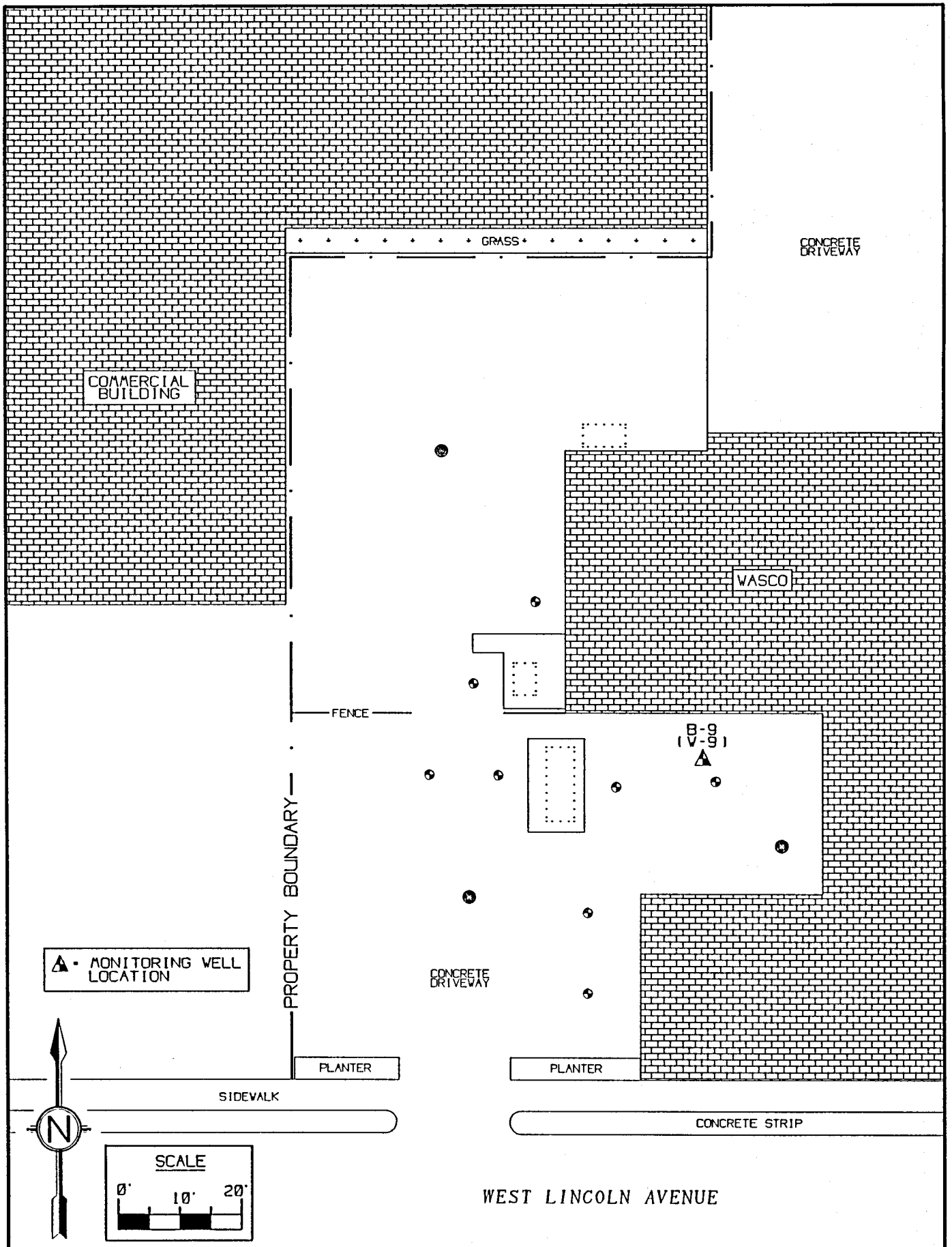
DRAKE Environmental. Inc. ENGINEERING CONSULTANTS	PROJECT NUMBER J93169 DRAWN BY JGT DATE: 08/16/93	WASCO PROPERTY RI VICINITY DIAGRAM	FIGURE 1



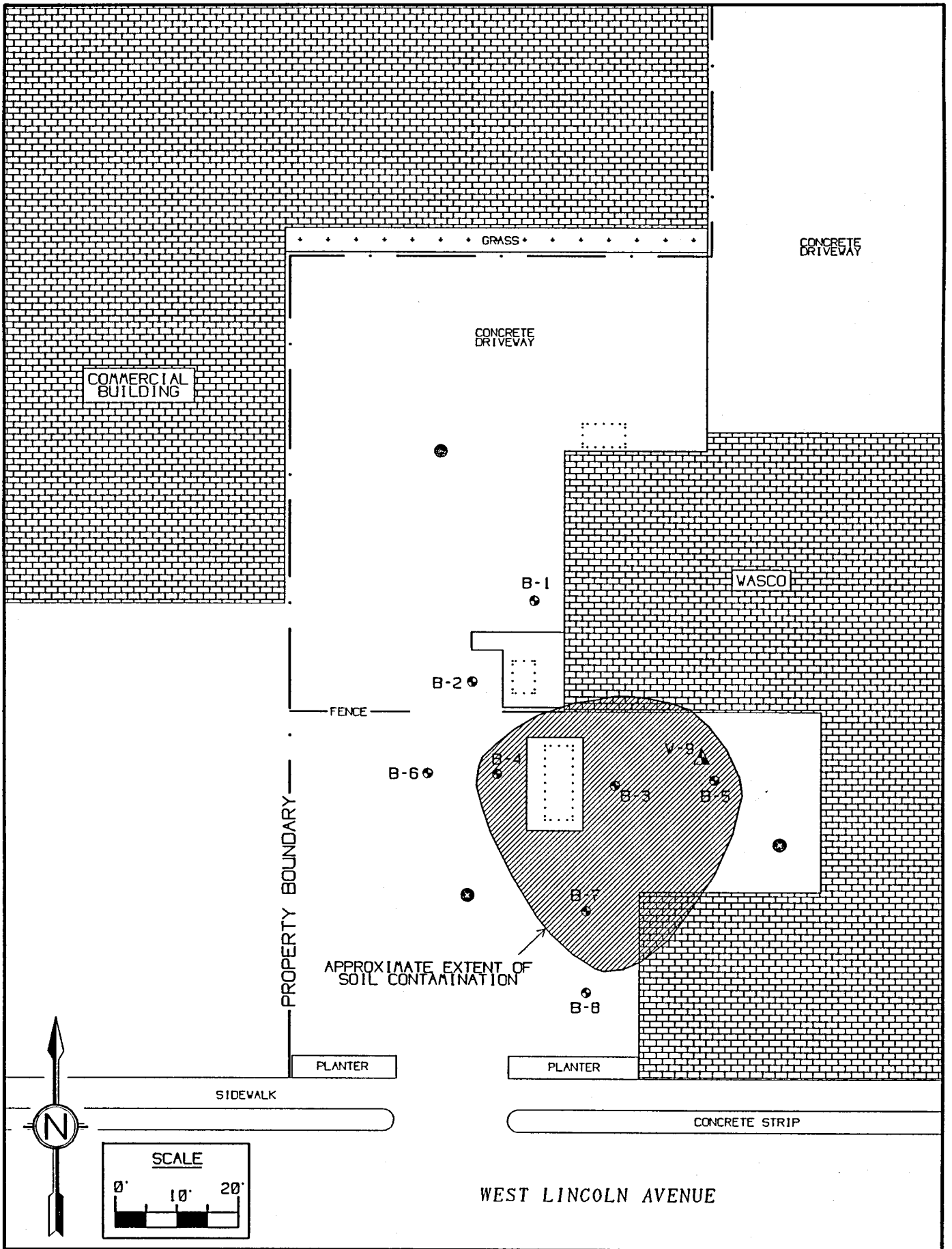
DRAKE Environmental, Inc. ENGINEERING CONSULTANTS	PROJECT NUMBER J93169 DRAWN BY AJO DATE: 08/16/93	WASCO PROPERTY RI SITE DIAGRAM	FIGURE 2



DRAKE Environmental, Inc. ENGINEERING CONSULTANTS	PROJECT NUMBER J93169 DRAWN BY AJO DATE: 08/16/93	WASCO PROPERTY RI BORING LOCATIONS DIAGRAM	FIGURE 3



DRAKE Environmental, Inc. *ENGINEERING CONSULTANTS*	PROJECT NUMBER J93169 DRAWN BY AJO DATE: 09/09/93	WASCO PROPERTY RI MONITORING WELL LOCATION DIAGRAM	FIGURE 4



DRAKE Environmental, Inc. *ENGINEERING CONSULTANTS*	PROJECT NUMBER J93169 DRAWN BY AJO DATE: 08/16/93	WASCO PROPERTY RI EXTENT OF CONTAMINATION DIAGRAM	FIGURE 5

SPLIT-BARREL SAMPLING PROCEDURE

The split-barrel sampling procedure as defined in ASTM D-1586 (84) consists of driving a 2-inch O.D. thick-walled, hollow sampler into the soil a distance of 18 inches with a 140-pound hammer falling 30 inches. The value of Standard Penetration Resistance (N) is obtained by adding the number of blows of the hammer during the final 1 foot. The N value provides a qualitative indication of the relative density of granular soils (silts, sands, and gravels). The sample recovered in the hollow sampler is relatively undisturbed and can be placed into a container for future classification, screening, and analysis.

PID SCREENING PROCEDURE

To determine if soils have been contaminated by volatile organic compounds (VOCs), soil samples are screened with a OVM Model 580B photoionization detector (PID) equipped with a 10.6 electron volt (eV) lamp calibrated to isobutylene. The PID provides a qualitative and semi-quantitative measure of VOCs with ionization potentials less than 10.6 eV, which include those present in the more volatile petroleum fuels and solvents.

A representative portion of soil is placed in an 8-ounce glass jar and the jar is sealed with a metal lid. The jar is filled about half full with the soil sample. The sealed container is allowed to warm to 70° F for a minimum period of 15 minutes, dependent on the ambient air temperature. The actual time period the samples are allowed to warm is in general accordance with the DNR guidelines set forth in "LUST Field Screening Procedures," PUBL-SW-176, September 1992. The lid of the container is slightly opened, the PID tip is inserted into the headspace (area in the jar above the soil), and the highest reading on the meter is recorded.

The Wisconsin Department of Natural Resources (DNR) considers PID readings greater than 10 an indication of contamination by volatile chemicals. However, lower readings do not necessarily indicate the absence of contamination, because a nonvolatile contaminant, such as motor oil, may be present. PID screening is not as meaningful in such cases. In addition, the PID does not identify the types of chemicals present. All results should be evaluated by considering the contaminants present and the limitations of the PID meter.

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT

Form 3300-5B Rev. 7-89

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location — County: Milwaukee

SW 1/4 of SE 1/4 of Sec. 2 ; T. 6 N; R. 21 [x] E [ ] W

(If applicable) Gov't Lot _____ Grid Number _____

Grid Location _____ ft. [ ] N. [ ] S., _____ ft. [ ] E. [ ] W.

Civil Town Name: Milwaukee

Street Address of Well: 5116 W. Lincoln Ave.

City, Village: Milwaukee

(2) FACILITY NAME

Original Well Owner (If Known): Concrete Raising Corporation

Present Well Owner: Concrete Raising Corporation

Street or Route: 2121 South 55th Street

City, State, Zip Code: West Allis, WI 53219

Facility Well No. and/or Name (If Applicable): B'-1

WI Unique Well No. _____

Reason For Abandonment: Completion of Borehole

Date of Abandonment: 8-12-93

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On

(Date) 8-12-93

[ ] Monitoring Well
[ ] Water Well
[ ] Drillhole
[x] Borehole

Construction Report Available? [ ] Yes [ ] No

Construction Type:
[x] Drilled [ ] Driven (Sandpoint) [ ] Dug
[ ] Other (Specify) _____

Formation Type:
[x] Unconsolidated Formation [ ] Bedrock

Total Well Depth (ft.) N/A (From groundsurface) Casing Diameter (ins.) N/A

Casing Depth (ft.) N/A

Was Well Annular Space Grouted? [ ] Yes [x] No [ ] Unknown
If Yes, To What Depth? _____ Feet

(4) Depth to Water (Feet) Ø

Pump & Piping Removed? [ ] Yes [ ] No [x] Not Applicable
Liner(s) Removed? [ ] Yes [ ] No [x] Not Applicable
Screen Removed? [ ] Yes [ ] No [x] Not Applicable
Casing Left In Place? [ ] Yes [x] No
If No, Explain None used

Was Casing Cut Off Below Surface? [ ] Yes [x] No
Did Sealing Material Rise to Surface? [x] Yes [ ] No
Did Material Settle After 24 Hours? [ ] Yes [x] No
If Yes, Was Hole Retopped? [ ] Yes [ ] No

(5) Required Method of Placing Sealing Material
[ ] Conductor Pipe-Gravity [ ] Conductor Pipe-Pumped
[ ] Dump Bailer [x] Other (Explain) Gravity

(6) Sealing Materials
[ ] Neat Cement Grout
[ ] Sand-Cement (Concrete) Grout
[ ] Concrete
[ ] Clay-Sand Slurry
[ ] Bentonite-Sand Slurry
[ ] Chipped Bentonite

For monitoring wells and monitoring well boreholes only
[ ] Bentonite Pellets
[x] Granular Bentonite

(7) Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume	Mix Ratio or Mud Weight
Bentonite Medium Gold Chips	Surface	16.5	2.5	

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT

Form 3300-5B
Rev. 7-89

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location

County: Milwaukee

SW 1/4 of SE 1/4 of Sec. 2 ; T. 6 N; R. 21 ☒ E ☐ W

(If applicable) Gov't Lot _____ Grid Number _____

Grid Location _____ ft. ☐ N. ☐ S., _____ ft. ☐ E. ☐ W.

Civil Town Name: Milwaukee

Street Address of Well: 5116 W. Lincoln Ave.

City, Village: Milwaukee

(2) FACILITY NAME

Original Well Owner (If Known): Concrete Raising Corporation

Present Well Owner: Concrete Raising Corporation

Street or Route: 2121 South 55th Street

City, State, Zip Code: West Allis, WI 53219

Facility Well No. and/or Name (If Applicable): B-2

WI Unique Well No.: _____

Reason For Abandonment: Completion of Borehole

Date of Abandonment: 8-12-93

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On

(Date) 8-12-93

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available? ☐ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify) _____

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft.) N/A (From groundsurface) Casing Diameter (ins.) N/A

Casing Depth (ft.) N/A

Was Well Annular Space Grouted? ☐ Yes ☒ No ☐ Unknown
If Yes, To What Depth? _____ Feet

(4) Depth to Water (Feet) Ø

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☐ Yes	☐ No	☒ Not Applicable
Screen Removed?	☐ Yes	☐ No	☒ Not Applicable
Casing Left in Place?	☐ Yes	☒ No	

If No, Explain None used

Was Casing Cut Off Below Surface?	☐ Yes	☒ No
Did Sealing Material Rise to Surface?	☒ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☒ No
If Yes, Was Hole Retopped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Dump Bailer ☒ Other (Explain) Gravity

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☐ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☒ Granular Bentonite

(7) Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume	Mix Ratio or Mud Weight
Bentonite Medium Gold Chips	Surface	16.5	3.5	

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT

Form 3300-5B
Rev. 7-89

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location

County: Milwaukee

SW 1/4 of SE 1/4 of Sec. 2 ; T. 6 N; R. 21 ☒ E ☐ W

(If applicable) Gov't Lot _____ Grid Number _____

Grid Location _____ ft. ☐ N. ☐ S., _____ ft. ☐ E. ☐ W.

Civil Town Name: Milwaukee

Street Address of Well: 5116 W. Lincoln Ave.

City, Village: Milwaukee

(2) FACILITY NAME

Original Well Owner (If Known): Concrete Raising Corporation

Present Well Owner: Concrete Raising Corporation

Street or Route: 2121 South 55th Street

City, State, Zip Code: West Allis, WI 53215

Facility Well No. and/or Name (If Applicable): B - 3

WI Unique Well No.: - - - - - -

Reason For Abandonment: Completion of Borehole

Date of Abandonment: 8-12-93

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On

(Date) 8-12-93

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available? ☐ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify) _____

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft.) N/A (From groundsurface) Casing Diameter (ins.) N/A

Casing Depth (ft.) N/A

Was Well Annular Space Grouted? ☐ Yes ☒ No ☐ Unknown
If Yes, To What Depth? _____ Feet

(4) Depth to Water (Feet) Ø

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☐ Yes	☐ No	☒ Not Applicable
Screen Removed?	☐ Yes	☐ No	☒ Not Applicable
Casing Left in Place?	☐ Yes	☒ No	

If No, Explain None used

Was Casing Cut Off Below Surface?	☐ Yes	☒ No
Did Sealing Material Rise to Surface?	☒ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☒ No
If Yes, Was Hole Retopped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Dump Bailer ☒ Other (Explain) Gravity

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☐ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☒ Granular Bentonite

(7)

Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume	Mix Ratio or Mud Weight
Bentonite Medium Gold Chips	Surface	16.5	2	

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT

Form 3300-5B
Rev. 7-89

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location — County: Milwaukee

SW 1/4 of SE 1/4 of Sec. 2 ; T. 6 N; R. 21 ☒ E ☐ W

(If applicable) _____ Gov't Lot _____ Grid Number

Grid Location _____ ft. ☐ N. ☐ S., _____ ft. ☐ E. ☐ W.

Civil Town Name: Milwaukee

Street Address of Well: 5116 W. Lincoln Ave.

City, Village: Milwaukee

(2) FACILITY NAME

Original Well Owner (If Known): Concrete Raising Corporation

Present Well Owner: Concrete Raising Corporation

Street or Route: 21 21 South 55th Street

City, State, Zip Code: West Allis, WI 53219

Facility Well No. and/or Name (If Applicable): B - 4

WI Unique Well No.: _____

Reason For Abandonment: Completion of Borehole

Date of Abandonment: 8-12-93

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On

(Date) 8-12-93

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available? ☐ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify) _____

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft.) N/A (From groundsurface) Casing Diameter (ins.) N/A

Casing Depth (ft.) N/A

Was Well Annular Space Grouted? ☐ Yes ☒ No ☐ Unknown
If Yes, To What Depth? _____ Feet

(4) Depth to Water (Feet) Ø

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☐ Yes	☐ No	☒ Not Applicable
Screen Removed?	☐ Yes	☐ No	☒ Not Applicable
Casing Left in Place?	☐ Yes	☒ No	

If No, Explain None used

Was Casing Cut Off Below Surface?	☐ Yes	☒ No
Did Sealing Material Rise to Surface?	☒ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☒ No
If Yes, Was Hole Retopped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Dump Bailer ☒ Other (Explain) Gravity

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☐ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☒ Granular Bentonite

(7) Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume	Mix Ratio or Mud Weight
Bentonite Medium Gold Chips	Surface	16.5	3.5	

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT

Form 3300-5B
Rev. 7-89

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location — County: Milwaukee

SW 1/4 of SE 1/4 of Sec. 2 ; T. 6 N; R. 21 ☒ E ☐ W

(If applicable) _____ Gov't Lot _____ Grid Number

Grid Location _____ ft. ☐ N. ☐ S., _____ ft. ☐ E. ☐ W.

Civil Town Name: Milwaukee

Street Address of Well: 5116 W. Lincoln Ave.

City, Village: Milwaukee

(2) FACILITY NAME

Original Well Owner (If Known): Concrete Raising Corporation

Present Well Owner: Concrete Raising Corporation

Street or Route: 2121 South 55th Street

City, State, Zip Code: West Allis, WI 53219

Facility Well No. and/or Name (If Applicable): B - 5

WI Unique Well No. _____

Reason For Abandonment: Completion of Borehole

Date of Abandonment: 8-12-93

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On

(Date) 8-12-93

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available? ☐ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify) _____

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft.) N/A Casing Diameter (ins.) N/A
(From groundsurface)

Casing Depth (ft.) N/A

Was Well Annular Space Grouted? ☐ Yes ☒ No ☐ Unknown
If Yes, To What Depth? _____ Feet

(4) Depth to Water (Feet) Ø

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☐ Yes	☐ No	☒ Not Applicable
Screen Removed?	☐ Yes	☐ No	☒ Not Applicable
Casing Left In Place?	☐ Yes	☒ No	

If No, Explain None used

Was Casing Cut Off Below Surface?	☐ Yes	☒ No
Did Sealing Material Rise to Surface?	☒ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☒ No
If Yes, Was Hole Retopped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Dump Bailer ☒ Other (Explain) Gravity

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☐ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☒ Granular Bentonite

(7) Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume	Mix Ratio or Mud Weight
Bentonite Medium Gold Chips	Surface	16.5	3.5	

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT

Form 3300-5B
Rev. 7-89

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location — County: Milwaukee

SW 1/4 of SE 1/4 of Sec. 2 ; T. 6 N; R. 21 [X] E [ ] W

(If applicable) Gov't Lot _____ Grid Number _____

Grid Location _____ ft. [ ] N. [ ] S., _____ ft. [ ] E. [ ] W.

Civil Town Name: Milwaukee

Street Address of Well: 5116 W. Lincoln Ave.

City, Village: Milwaukee

(2) FACILITY NAME

Original Well Owner (If Known): Concrete Raising Corporation

Present Well Owner: Concrete Raising Corporation

Street or Route: 2121 South 55th Street

City, State, Zip Code: West Allis, WI 53219

Facility Well No. and/or Name (If Applicable): B-6

WI Unique Well No. _____

Reason For Abandonment: Completion of Borehole

Date of Abandonment: 8-12-93

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On

(Date) 8-12-93

[ ] Monitoring Well
[ ] Water Well
[ ] Drillhole
[X] Borehole

Construction Report Available? [ ] Yes [ ] No

Construction Type:
[X] Drilled [ ] Driven (Sandpoint) [ ] Dug
[ ] Other (Specify) _____

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth (ft.) N/A Casing Diameter (ins.) N/A
(From groundsurface)

Casing Depth (ft.) N/A

Was Well Annular Space Grouted? [ ] Yes [X] No [ ] Unknown
If Yes, To What Depth? _____ Feet

(4) Depth to Water (Feet) Ø

Pump & Piping Removed?	[ ] Yes	[ ] No	[X] Not Applicable
Liner(s) Removed?	[ ] Yes	[ ] No	[X] Not Applicable
Screen Removed?	[ ] Yes	[ ] No	[X] Not Applicable
Casing Left in Place?	[ ] Yes	[X] No	

If No, Explain None used

Was Casing Cut Off Below Surface?	[ ] Yes	[X] No
Did Sealing Material Rise to Surface?	[X] Yes	[ ] No
Did Material Settle After 24 Hours?	[ ] Yes	[X] No
If Yes, Was Hole Retopped?	[ ] Yes	[ ] No

(5) Required Method of Placing Sealing Material
[ ] Conductor Pipe-Gravity [ ] Conductor Pipe-Pumped
[ ] Dump Bailer [X] Other (Explain) Gravity

(6) Sealing Materials
[ ] Neat Cement Grout
[ ] Sand-Cement (Concrete) Grout
[ ] Concrete
[ ] Clay-Sand Slurry
[ ] Bentonite-Sand Slurry
[ ] Chipped Bentonite

For monitoring wells and monitoring well boreholes only
[ ] Bentonite Pellets
[X] Granular Bentonite

(7) Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume	Mix Ratio or Mud Weight
Bentonite Medium Gold Chips	Surface	16.5	2.0	

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT

Form 3300-5B
Rev. 7-89

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location — County: Milwaukee

SW 1/4 of SE 1/4 of Sec. 2 ; T. 6 N; R. 21 ☒ E ☐ W

(If applicable) Gov't Lot _____ Grid Number _____

Grid Location _____ ft. ☐ N. ☐ S., _____ ft. ☐ E. ☐ W.

Civil Town Name: Milwaukee

Street Address of Well: 5116 W. Lincoln Ave.

City, Village: Milwaukee

(2) FACILITY NAME

Original Well Owner (If Known): Concrete Raising Corporation

Present Well Owner: Concrete Raising Corporation

Street or Route: 2121 South 55th Street

City, State, Zip Code: West Allis WI 53219

Facility Well No. and/or Name (If Applicable): B-7

WI Unique Well No.: _____

Reason For Abandonment: Completion of Borehole

Date of Abandonment: 8-12-93

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On

(Date) 8-12-93

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available? ☐ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify) _____

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft.) N/A Casing Diameter (ins.) N/A
(From groundsurface)

Casing Depth (ft.) N/A

Was Well Annular Space Grouted? ☐ Yes ☒ No ☐ Unknown
If Yes, To What Depth? _____ Feet

(4) Depth to Water (Feet) Ø

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☐ Yes	☐ No	☒ Not Applicable
Screen Removed?	☐ Yes	☐ No	☒ Not Applicable
Casing Left in Place?	☐ Yes	☒ No	

If No, Explain None used

Was Casing Cut Off Below Surface?	☐ Yes	☒ No
Did Sealing Material Rise to Surface?	☒ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☒ No
If Yes, Was Hole Retopped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Dump Bailer ☒ Other (Explain) GRAVITY

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☐ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☒ Granular Bentonite

(7) Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume	Mix Ratio or Mud Weight
Bentonite Medium Gold Chips	Surface	16.5	30	

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT

Form 3300-5B
Rev. 7-89

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location — County: Milwaukee

SW 1/4 of SE 1/4 of Sec. 2 ; T. 6 N; R. 21 [X] E [ ] W

(If applicable) Gov't Lot _____ Grid Number _____

Grid Location _____ ft. [ ] N. [ ] S., _____ ft. [ ] E. [ ] W.

Civil Town Name: Milwaukee

Street Address of Well: 5116 W. Lincoln Ave

City, Village: Milwaukee

(2) FACILITY NAME

Original Well Owner (If Known): Concrete Raising Corporation

Present Well Owner: Concrete Raising Corporation

Street or Route: 2121 South 65th Street

City, State, Zip Code: West Allis, WI 53219

Facility Well No. and/or Name (If Applicable): B-8

WI Unique Well No. _____

Reason For Abandonment: Completion of Boring

Date of Abandonment: 8 12 93

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On

(Date) 8 12 93

[ ] Monitoring Well
[ ] Water Well
[ ] Drillhole
[X] Borehole

Construction Report Available? [ ] Yes [ ] No

Construction Type:
[X] Drilled [ ] Driven (Sandpoint) [ ] Dug
[ ] Other (Specify) _____

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth (ft.) _____ Casing Diameter (ins.) _____
(From groundsurface)

Casing Depth (ft.) N/A

Was Well Annular Space Grouted? [ ] Yes [X] No [ ] Unknown
If Yes, To What Depth? _____ Feet

(4) Depth to Water (Feet) 0

Pump & Piping Removed?	[ ] Yes	[ ] No	[✓] Not Applicable
Liner(s) Removed?	[ ] Yes	[ ] No	[✓] Not Applicable
Screen Removed?	[ ] Yes	[ ] No	[✓] Not Applicable
Casing Left in Place?	[ ] Yes	[✓] No	

If No, Explain: None used

Was Casing Cut Off Below Surface?	[ ] Yes	[✓] No
Did Sealing Material Rise to Surface?	[✓] Yes	[ ] No
Did Material Settle After 24 Hours?	[ ] Yes	[✓] No
If Yes, Was Hole Retopped?	[ ] Yes	[ ] No

(5) Required Method of Placing Sealing Material
[ ] Conductor Pipe-Gravity [ ] Conductor Pipe-Pumped
[ ] Dump Bailer [✓] Other (Explain) Gravity

(6) Sealing Materials
[ ] Neat Cement Grout
[ ] Sand-Cement (Concrete) Grout
[ ] Concrete
[ ] Clay-Sand Slurry
[ ] Bentonite-Sand Slurry
[ ] Chipped Bentonite

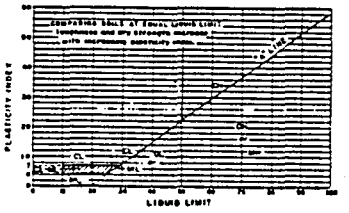
For monitoring wells and monitoring well boreholes only
[ ] Bentonite Pellets
[✓] Granular Bentonite

(7) Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume	Mix Ratio or Mud Weight
Bentonite Medium Gold Chips	Surface	16.5	3.5	

SOIL CLASSIFICATION SYSTEM CHART

UNIFIED SOIL CLASSIFICATION
INCLUDING IDENTIFICATION AND DESCRIPTION

FIELD IDENTIFICATION PROCEDURES (Excluding particles larger than 3 inches and basing fractions on estimated weights)				GROUP SYMBOLS [a]	TYPICAL NAMES	INFORMATION REQUIRED FOR DESCRIBING SOILS
COARSE GRAINED SOILS: More than half of material is larger than No 200 sieve size [b] (The No 200 sieve size is about the smallest particle visible to the naked eye)	GRAVELS: More than half of coarse fraction is larger than No 4 sieve size (For visual classifications, the ¼" size may be used as equivalent)	CLEAN GRAVELS (Little or no fines)	Wide range in grain size and substantial amounts of all intermediate particle sizes	GW	Well graded gravels, gravel-sand mixtures, little or no fines	Give typical name; indicate approximate percentages of sand and gravel, max. size; angularity, surface condition, and hardness of the coarse grains; local or geologic name and other pertinent descriptive information, and symbol in parentheses
			Predominantly one size or a range of sizes with some intermediate sizes missing	GP	Poorly graded gravels, gravel-sand mixtures, little or no fines	
		GRAVELS WITH FINES (Appreciable amount of fines)	Non-plastic fines (for identification procedures see ML below)	GM	Silty gravels, poorly graded gravel-sand-silt mixtures	For undisturbed soils add information on stratification, degree of compactness, cementation, moisture conditions and drainage characteristics.
			Plastic fines (for identification procedures see CL below).	GC	Clayey gravels; poorly graded gravel-sand-clay mixtures	
	SANDS: More than half of coarse fraction is smaller than No 4 sieve size (For visual classifications, the ¼" size may be used as equivalent)	CLEAN SANDS (Little or no fines)	Wide range in grain sizes and substantial amounts of all intermediate particle sizes.	SW	Well graded sands, gravelly sands; little or no fines.	EXAMPLE:- Silty sand, gravelly; about 20% hard, angular gravel particles ½-in maximum size; rounded and subangular sand grains coarse to fine; about 15% non-plastic fines with low dry strength; well compacted and moist in place; alluvial sand; (SM)
			Predominantly one size or a range of sizes with some intermediate sizes missing	SP	Poorly graded sands, gravelly sands; little or no fines	
		SANDS WITH FINES (Appreciable amount of fines)	Non-plastic fines (for identification procedures see ML below)	SM	Silty sands, poorly graded sand-silt mixtures	
			Plastic fines (for identification procedures see CL below).	SC	Clayey sands, poorly graded sand-clay mixtures	
FINE GRAINED SOILS: More than half of material is smaller than No 200 sieve size. (The No 200 sieve size is about the smallest particle visible to the naked eye)	IDENTIFICATION PROCEDURES ON FRACTION SMALLER THAN No 40 SIEVE SIZE					
		DRY STRENGTH (CRUSHING CHARACTERISTICS)	DILATANCY (REACTION TO SHAKING)	TOUGHNESS (CONSISTENCY NEAR PLASTIC LIMIT)		
	SILTS AND CLAYS: Liquid limit less than 50	None to slight	Quick to slow	None	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands with slight plasticity
		Medium to high	None to very slow	Medium	CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.
		Slight to medium	Slow	Slight	OL	Organic silts and organic silt-clays of low plasticity.
	SILTS AND CLAYS: Liquid limit greater than 50	Slight to medium	Slow to none	Slight to medium	MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts.
		High to very high	None	High	CH	Inorganic clays of high plasticity, fat clays.
		Medium to high	None to very slow	Slight to medium	OH	Organic clays of medium to high plasticity.
HIGHLY ORGANIC SOILS		Readily identified by color, odor, spongy feel and frequently by fibrous texture		Pt	Peat and other highly organic soils.	

LABORATORY CLASSIFICATION CRITERIA		
Use grain size curve in identifying the fractions as given under field identification	Determine percentages of gravel and sand from grain size curve. Depending on percentage of fines (fraction smaller than No 200 sieve size) coarse grained soils are classified as follows:- Less than 5% GW, GP, SW, SP. More than 12% GM, GC, SM, SC. 5% to 12% Borderline cases requiring use of dual symbols	$C_u = \frac{D_{60}}{D_{10}}$ Greater than 4; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ Between one and 3
		Not meeting all gradation requirements for GW
		Atterberg limits below "A" line, or PI less than 4 — Above "A" line with PI between 4 and 7 are borderline cases requiring use of dual symbols.
		Atterberg limits above "A" line with PI greater than 7
		$C_u = \frac{D_{60}}{D_{10}}$ Greater than 6; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ Between one and 3
		Not meeting all gradation requirements for SW
		Atterberg limits below "A" line or PI less than 4 — Above "A" line with PI between 4 and 7 are borderline cases requiring use of dual symbols.
		Atterberg limits above "A" line with PI greater than 7
		 PLASTICITY CHART FOR LABORATORY CLASSIFICATION OF FINE GRAINED SOILS

[a] Boundary classifications - Soils possessing characteristics of two groups are designated by combinations of group symbols. For example SW-SC, well graded gravel-sand mixture with clay binder.
[b] All sieve sizes on this chart are U.S. standard

FIELD IDENTIFICATION PROCEDURES FOR FINE GRAINED SOILS OR FRACTIONS

These procedures are to be performed on the minus No 40 sieve size particles, approximately ¼ in. For field classification purposes, screening is not intended; simply remove by hand the coarse particles that interfere with the tests.

DEFINITIONS

COMPONENT SIZE

Cobble : 3-12 in
Gravel : 0.19-3 in.
Sand : 0.0003-0.19 in.
Silt : 0.0002-0.003 in.
Clay : <0.0002 in.

COMPONENT PERCENTAGES

Trace : 5-15%
Few : 15-25%
Some : 25-35%
And : 35-50%

CONSISTENCY (CLAY SOILS)

Soft : <0.5 tsf
Firm : 0.5-1 tsf
Stiff : 1-2 tsf
Very Stiff : 2-4 tsf
Hard : >4 tsf
tsf = Tons per Square Foot

RELATIVE DENSITY (GRANULAR SOIL)

Very Loose : 1-5 bpf
Loose : 5-9 bpf
Medium : 10-29 bpf
Dense : 30-49 bpf
Very Dense : >50 bpf
bpf = Blows per Foot

CLIENT: CONCRETE RAISING CORPORATION		DRILL RIG: CME-45	BORING NUMBER
LOCATION: 5116 W. LINCOLN AVENUE, WEST ALLIS		DRILLED ON: 08/12/93	1
PROJECT: WASCO RI	PROJECT: J93169	FIELD PERSON: AJO	DRAWN BY DSP

DEPTH	ELEVATION	DESCRIPTION	USCS	SAMPLE	TYPE	N	OP	PID
0		7-INCH CONCRETE SLAB, 3/4-INCH BASE COURSE						
1		FILL:SILTY CLAY, TRACE TO FEW FINE TO COASE SAND AND GRAVEL, TRACE CINDERS, TRACE TOPSOIL - DARK GRAY (10YR 3/1) - DAMP - STIFF TO HARD	CL FILL	1	SS	20	4	3
2								
3				2	SS	7	1	<1
4								
5		ORGANIC CLAY (BURIED TOPSOIL) - TRACE TO FEW FINE TO MEDIUM GRAVEL AND SAND - BLACK (10YR 2/1) - MOIST - STIFF	OL	3	SS	7	1	<1
6								
7		SILTY CLAY, TRACE TO FEW FINE TO MEDIUM SAND, TRACE FINE GRAVEL - BROWN (10YR 4/3) MOTTLED WITH GRAY (10YR 5/1) AND BROWN (10YR 7/3) - MOIST - HARD	CL					
8				4	SS	20	4.5	<1
9								
10								
11				5	SS	32	4.5	<1
12								
13				6	SS	30	4.5	<1
14								
15								
16		SILTY CLAY, TRACE FINE SAND - DARK GRAY BROWN (10YR 4/2) - MOIST - VERY STIFF	CL	7	SS	23	2.5	<1
17		BORING TERMINATED AT 16.5 FEET						
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

NOTE: STRATIFICATION LINES ARE APPROXIMATE BOUNDARIES. THE ACTUAL TRANSITION MAY BE GRADUAL.

GROUNDWATER DATA		DRILLING REMARKS
WATER LEVEL ▽	DURING DRILLING	BORING DRILLED WITH 2.25 IN. I.D. HOLLOW STEM AUGERS
WATER LEVEL ▽ 4.5'	ON 08/12/92	BOREHOLE BACKFILLED WITH BENTONITE CHIPS
WATER LEVEL ▽	ON	DRAKE ENVIRONMENTAL, INC.
WATER LEVEL ▽	ON	*ENGINEERING CONSULTANTS*

CLIENT: CONCRETE RAISING CORPORATION	DRILL RIG: CME-45	BORING NUMBER
LOCATION: 5116 W. LINCOLN AVENUE, WEST ALLIS	DRILLED ON: 08/12/93	2
PROJECT: WASCO RI / PROJECT: J93169	FIELD PERSON: AJO	DRAWN BY DSP

DEPTH	ELEVATION	DESCRIPTION	USCS	SAMPLE	TYPE	N	OP	PID
0		7-INCH CONCRETE SLAB, 3/4-INCH BASE COURSE						
1		FILL: SILTY CLAY, TRACE TO FEW FINE TO MEDIUM SAND AND GRAVEL, TRACE TOPSOIL - - DARK BROWN (10YR 2/2) TO BLACK (10YR 2/1) - MOIST - VERY STIFF	CL FILL	1	SS		*	*
2								
3				2	SS	4	2	2
4								
5		SANDY ORGANIC CLAY (BURIED TOPSOIL), TRACE FINE GRAVEL - BLACK (10YR 2/1) - WET - SOFT	OL	3	SS	2	<0.5	<1
6								
7		SILTY CLAY, TRACE TO FEW FINE TO MEDIUM SAND, TRACE FINE GRAVEL - BROWN (10YR 4/3) MOTTLED WITH GRAY (10YR 5/1) AND BROWN (10YR 7/3) - MOIST - HARD	CL					
8				4	SS	16	4.5	<1
9								
10								
11				5	SS	21	4.5	<1
12								
13				6	SS	22	4	<1
14								
15								
16		SILTY CLAY, TRACE FINE SAND - BROWN (10YR 4/3) - MOIST - VERY STIFF TO HARD	CL	7	SS	15	3	<1
17		BORING TERMINATED AT 16.5 FEET						
18								
19		* = NO RECOVERY IN SPLIT SPOON SAMPLE						
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

NOTE: STRATIFICATION LINES ARE APPROXIMATE BOUNDARIES. THE ACTUAL TRANSITION MAY BE GRADUAL.

GROUNDWATER DATA		DRILLING REMARKS
WATER LEVEL ▫ >16.5'	DURING DRILLING	BORING DRILLED WITH 2.25 IN. I.D. HOLLOW STEM AUGERS
WATER LEVEL ▫	ON	BOREHOLE BACKFILLED WITH BENTONITE CHIPS
WATER LEVEL ▫	ON	DRAKE ENVIRONMENTAL, INC.
WATER LEVEL ▫	ON	*ENGINEERING CONSULTANTS*

CLIENT: CONCRETE RAISING CORPORATION		DRILL RIG: CME-45	BORING NUMBER
LOCATION: 5116 W. LINCOLN AVENUE, WEST ALLIS		DRILLED ON: 08/12/93	3
PROJECT: WASCO RI	PROJECT: J93169	FIELD PERSON: AJO	DRAWN BY DSP

DEPTH	ELEVATION	DESCRIPTION	USCS	SAMPLE	TYPE	N	OP	PID
0		7-INCH CONCRETE SLAB, 3/4-INCH BASE COURSE						
1		FILL: SILTY SANDY CLAY, TRACE TO FEW FINE TO MEDIUM SAND AND GRAVEL, FEW TO SOME TOPSOIL - DARK GRAY BROWN (2.5Y 3/2) TO DARK OLIVE GRAY (5Y 3/2) - MOIST - VERY STIFF	CL FILL	1	SS	14	3.5	2
2								
3				2	SS	21	3.5	84
4		(PETROLEUM ODOR NOTED IN SAMPLE NUMBER 2)						
5		ORGANIC CLAY (BURIED TOPSOIL), TRACE FINE TO MEDIUM SAND, TRACE FINE GRAVEL - BLACK (10YR 2/1) - MOIST - VERY STIFF (PETROLEUM ODOR)	OL	3	SS	8	2.5	738
6								
7		SILTY CLAY, TRACE TO FEW FINE TO MEDIUM SAND, TRACE FINE GRAVEL - BROWN (10YR 4/3) MOTTLED WITH GRAY (10YR 5/1) AND PALE BROWN (10YR 7/3) - MOIST - VERY STIFF TO HARD	CL					
8				4	SS	12	3.5	7
9								
10								
11				5	SS	23	4	3
12								
13				6	SS	31	4.5	2
14								
15								
16		SILTY CLAY, TRACE FINE SAND - BROWN (10YR 4/3) - MOIST - VERY STIFF	CL	7	SS	20	2	2
17		BORING TERMINATED AT 16.5 FEET						
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

NOTE: STRATIFICATION LINES ARE APPROXIMATE BOUNDARIES. THE ACTUAL TRANSITION MAY BE GRADUAL.

GROUNDWATER DATA		DRILLING REMARKS
WATER LEVEL ▫	)16.5' DURING DRILLING	BORING DRILLED WITH 2.25 IN. I.D. HOLLOW STEM AUGERS
WATER LEVEL ▫	ON	BOREHOLE BACKFILLED WITH BENTONITE CHIPS
WATER LEVEL ▫	ON	DRAKE ENVIRONMENTAL, INC.
WATER LEVEL ▫	ON	*ENGINEERING CONSULTANTS*

CLIENT: CONCRETE RAISING CORPORATION		DRILL RIG: CME-45	BORING NUMBER
LOCATION: 5116 W. LINCOLN AVENUE, WEST ALLIS		DRILLED ON: 08/12/93	4
PROJECT: WASCO RI	PROJECT: J93169	FIELD PERSON: AJO	DRAWN BY DSP

DEPTH	ELEVATION	DESCRIPTION	USCS	SAMPLE	TYPE	N	OP	PID
0		7-INCH CONCRETE SLAB, 3/4-INCH BASE COURSE						
1		FILL: CLAYEY SAND TO SANDY CLAY, FEW TO SOME FINE TO MEDIUM GRAVEL, TRACE CINDERS - BLACK (10YR 2/1) -DAMP TO MOIST - MEDIUM DENSE	SC/CL FILL	1	SS	14		6
2								
3				2	SS	10		4
4								
5		ORGANIC CLAY (BURIED TOPSOIL), TRACE FINE TO MEDIUM SAND, TRACE FINE GRAVEL - BLACK (10YR 2/1) - MOIST - FIRM	OL	3	SS	5	0.5	44
6								
7		SILTY CLAY, TRACE TO FEW FINE TO MEDIUM SAND, TRACE FINE GRAVEL - BROWN (10YR 4/3) MOTTLED WITH GRAY (10YR 5/1) - MOIST - VERY STIFF TO HARD	CL					
8				4	SS	15	3.5	34
9		(PETROLEUM ODOR NOTED IN SAMPLE NUMBERS 3 AND 4)						
10								
11				5	SS	31	4.5	2
12								
13				6	SS	33	4.5	(1
14								
15								
16		SILTY CLAY, TRACE FINE SAND - DARK GRAY BROWN (10YR 4/2) - MOIST - VERY STIFF	CL	7	SS	23	2.5	(1
17		BORING TERMINATED AT 16.5 FEET						
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

NOTE: STRATIFICATION LINES ARE APPROXIMATE BOUNDARIES. THE ACTUAL TRANSITION MAY BE GRADUAL.

GROUNDWATER DATA		DRILLING REMARKS
WATER LEVEL ▫	DURING DRILLING	BORING DRILLED WITH 2.25 IN. I.D. HOLLOW STEM AUGERS
WATER LEVEL ▫ 13.0'	ON 08/12/93	BOREHOLE BACKFILLED WITH BENTONITE CHIPS
WATER LEVEL ▫	ON	DRAKE ENVIRONMENTAL, INC.
WATER LEVEL ▫	ON	*ENGINEERING CONSULTANTS*

CLIENT: CONCRETE RAISING CORPORATION		DRILL RIG: CME-45	BORING NUMBER
LOCATION: 5116 W. LINCOLN AVENUE, WEST ALLIS		DRILLED ON: 08/12/93	5
PROJECT: WASCO RI	PROJECT: J93169	FIELD PERSON: AJO	DRAWN BY DSP

DEPTH	ELEVATION	DESCRIPTION	USCS	SAMPLE	TYPE	N	OP	PID
0		7-INCH CONCRETE SLAB, 3/4-INCH BASE COURSE						
1		FILL: SILTY SAND, TRACE CLAY, SOME TOPSOIL, FEW CINDERS, GLASS - BLACK (10YR 2/1) - DAMP - MEDIUM DENSE	SM FILL	1	SS	25		8
2								
3		FILL: SILTY CLAY, SOME FINE TO COARSE SAND, TRACE FINE GRAVEL - DARK GRAY BROWN (2.5Y 3/2) - DAMP TO MOIST - FIRM TO HARD	CL FILL	2	SS	13	4	2
4								
5								
6				3	SS	6	0.5	6
7		SILTY CLAY, TRACE TO FEW FINE TO MEDIUM SAND, TRACE FINE GRAVEL - BROWN (10YR 4/3) MOTTLED WITH GRAY (10YR 5/1) - MOIST - VERY STIFF	CL					
8				4	SS	9	2	(1
9								
10								
11				5	SS	15	3.5	(1
12		SILTY CLAY, TRACE FINE SAND - BROWN (10YR 4/3) - MOIST - VERY STIFF	CL					
13				6	SS	28	3.75	(1
14								
15								
16				7	SS	27	3.5	(1
17		BORING TERMINATED AT 16.5 FEET						
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

NOTE: STRATIFICATION LINES ARE APPROXIMATE BOUNDARIES. THE ACTUAL TRANSITION MAY BE GRADUAL.

GROUNDWATER DATA			DRILLING REMARKS
WATER LEVEL ▫		DURING DRILLING	BORING DRILLED WITH 2.25 IN. I.D. HOLLOW STEM AUGERS
WATER LEVEL ▫	8.3'	ON 08/12/93	BOREHOLE BACKFILLED WITH BENTONITE CHIPS
WATER LEVEL ▫		ON	DRAKE ENVIRONMENTAL, INC.
WATER LEVEL ▫		ON	*ENGINEERING CONSULTANTS*

CLIENT: CONCRETE RAISING CORPORATION		DRILL RIG: CME-45	BORING NUMBER
LOCATION: 5116 W. LINCOLN AVENUE, WEST ALLIS		DRILLED ON: 08/12/93	6
PROJECT: WASCO RI	PROJECT: J93169	FIELD PERSON: AJO	DRAWN BY DSP

DEPTH	ELEVATION	DESCRIPTION	USCS	SAMPLE	TYPE	N	OP	PID
0		7-INCH CONCRETE SLAB, 3/4-INCH BASE COURSE						
1		FILL: SANDT CLAY, FEW TO SOME FINE TO COARSE GRAVEL, FEW TOPSOIL, TRACE CINDERS - DARK BROWN (10YR 2/2) TO DARK YELLOW BROWN (10YR 3/4) - DAMP TO MOIST - STIFF	CL FILL	1	SS	8		(1
2								
3				2	SS	7	1.5	(1
4								
5		ORGANIC CLAY (BURIED TOPSOIL) - TRACE TO FEW FINE TO MEDIUM GRAVEL AND SAND - BLACK (10YR 2/1) - MOIST - STIFF	OL	3	SS	6		(1
6								
7		SILTY CLAY, TRACE TO FEW FINE TO MEDIUM SAND, TRACE FINE GRAVEL - BROWN (10YR 4/3) MOTTLED WITH GRAY (10YR 5/1) AND BROWN (10YR 7/3) - MOIST - VERY STIFF TO HARD	CL					
8				4	SS	30	4.5	(1
9								
10								
11				5	SS	31	4.5	(1
12								
13				6	SS	22	3.5	(1
14								
15								
16		SILTY CLAY, TRACE FINE SAND - BROWN (10YR 4/3) - MOIST - STIFF	CL	7	SS	15	1.5	(1
17		BORING TERMINATED AT 16.5 FEET						
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

NOTE: STRATIFICATION LINES ARE APPROXIMATE BOUNDARIES. THE ACTUAL TRANSITION MAY BE GRADUAL.

GROUNDWATER DATA		DRILLING REMARKS
WATER LEVEL ▫)16.5'	DURING DRILLING	BORING DRILLED WITH 2.25 IN. I.D. HOLLOW STEM AUGERS
WATER LEVEL ▫	ON	BOREHOLE BACKFILLED WITH BENTONITE CHIPS
WATER LEVEL ▫	ON	DRAKE ENVIRONMENTAL, INC.
WATER LEVEL ▫	ON	*ENGINEERING CONSULTANTS*

CLIENT: CONCRETE RAISING CORPORATION		DRILL RIG: CME-45	BORING NUMBER
LOCATION: 5116 W. LINCOLN AVENUE, WEST ALLIS		DRILLED ON: 08/12/93	7
PROJECT: WASCO RI	PROJECT: J93169	FIELD PERSON: AJO	DRAWN BY DSP

DEPTH	ELEVATION	DESCRIPTION	USCS	SAMPLE	TYPE	N	OP	PID
0		7-INCH CONCRETE SLAB, 3/4-INCH BASE COURSE						
1		FILL: CLAYEY SAND TO SANDY CLAY, FEW TO SOME FINE TO MEDIUM GRAVEL, TRACE CINDERS - DARK OLIVE BROWN (2.5Y 3/3) TO DARK YELLOW BROWN (10YR 4/4) - MOIST - VERY STIFF	SC/CL FILL	1	SS	11		(1
2								
3				2	SS	10	2	(1
4								
5		ORGANIC CLAY (BURIED TOPSOIL), TRACE FINE TO MEDIUM SAND, TRACE FINE GRAVEL - BLACK (10YR 2/1) - MOIST - FIRM (PETROLEUM ODOR	OL	3	SS	3	0.5	526
6								
7		SILTY CLAY, TRACE TO FEW FINE TO MEDIUM SAND, TRACE FINE GRAVEL - BROWN (10YR 4/3) MOTTLED WITH GRAY (10YR 5/1) - MOIST - VERY STIFF TO HARD	CL					
8				4	SS	11	2	15
9								
10								
11				5	SS	18	4	6
12								
13				6	SS	26	4.5	(1
14								
15								
16				7	SS	18	3.5	(1
17		BORING TERMINATED AT 16.5 FEET						
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

NOTE: STRATIFICATION LINES ARE APPROXIMATE BOUNDARIES. THE ACTUAL TRANSITION MAY BE GRADUAL.

GROUNDWATER DATA		DRILLING REMARKS
WATER LEVEL ▫	DURING DRILLING	BORING DRILLED WITH 2.25 IN. I.D. HOLLOW STEM AUGERS
WATER LEVEL ▫	ON	BOREHOLE BACKFILLED WITH BENTONITE CHIPS
WATER LEVEL ▫	ON	DRAKE ENVIRONMENTAL, INC.
WATER LEVEL ▫	ON	*ENGINEERING CONSULTANTS*

CLIENT: CONCRETE RAISING CORPORATION		DRILL RIG: CME-45	BORING NUMBER
LOCATION: 5116 W. LINCOLN AVENUE, WEST ALLIS		DRILLED ON: 08/12/93	8
PROJECT: WASCO RI	PROJECT: J93169	FIELD PERSON: AJO	DRAWN BY DSP

DEPTH	ELEVATION	DESCRIPTION	USCS	SAMPLE	TYPE	N	OP	PID
0		7-INCH CONCRETE SLAB, 3/4-INCH BASE COURSE						
1		FILL: SILTY CLAY, TRACE TO FEW FINE TO MEDIUM SAND, TRACE GRAVEL, TRACE TOPSOIL - DARK GRAY BROWN (10YR 3/2) TO OLIVE BROWN (2.5Y 4/3) - MOIST - VERY - STIFF	CL FILL	1	SS	9		(1
2								
3				2	SS	8	3.25	(1
4								
5		ORGANIC CLAY (BURIED TOPSOIL), TRACE FINE TO MEDIUM SAND - BLACK (5Y 2.5/1) - MOIST - STIFF	OL	3	SS	7	1	2
6								
7		SILTY CLAY, TRACE TO FEW FINE TO MEDIUM SAND, TRACE FINE GRAVEL - BROWN (10YR 4/3) MOTTLED WITH GRAY (10YR 5/1) - MOIST - VERY STIFF TO HARD	CL					
8				4	SS	16	3.5	(1
9								
10								
11				5	SS	26	4.5	(1
12								
13				6	SS	20	4.5	(1
14								
15								
16				7	SS	18	2.5	(1
17		BORING TERMINATED AT 16.5 FEET						
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

NOTE: STRATIFICATION LINES ARE APPROXIMATE BOUNDARIES. THE ACTUAL TRANSITION MAY BE GRADUAL.

GROUNDWATER DATA		DRILLING REMARKS
WATER LEVEL ▫	DURING DRILLING	BORING DRILLED WITH 2.25 IN. I.D. HOLLOW STEM AUGERS
WATER LEVEL ▫)16.5'	ON	BOREHOLE BACKFILLED WITH BENTONITE CHIPS
WATER LEVEL ▫	ON	DRAKE ENVIRONMENTAL, INC.
WATER LEVEL ▫	ON	*ENGINEERING CONSULTANTS*

CLIENT: CONCRETE RAISING CORPORATION		DRILL RIG: IRA-400	BORING NUMBER
LOCATION: 5116 W. LINCOLN AVENUE, WEST ALLIS		DRILLED ON: 09/09/93	9
PROJECT: WASCO RI	PROJECT: J93169	FIELD PERSON: AJO	DRAWN BY DSP

DEPTH	ELEVATION	DESCRIPTION	USCS	SAMPLE	TYPE	N	QP	PID
0		7-INCH CONCRETE SLAB, 3/4-INCH BASE COURSE						
1		FILL: CLAYEY SAND TO SANDY CLAY, FEW TO SOME FINE TO MEDIUM GRAVEL, TRACE CINDERS, WOOD, AND COAL - BLACK (10YR 2/1) TO DARK OLIVE BROWN (2.5Y 3/3) - MOIST - VERY STIFF	SC/CL FILL	1	SS	22	2.5	3
2								
3				2	SS	21	3.25	34
4								
5		ORGANIC CLAY (BURIED TOPSOIL), TRACE TO FEW FINE TO COARSE SAND, TRACE FINE GRAVEL - BLACK (10YR 2/1) - MOIST TO WET - FIRM (PETROLEUM ODOR)	OL	3	SS	12	0.5	398
6								
7		SILTY CLAY, TRACE TO FEW FINE TO MEDIUM SAND, TRACE FINE GRAVEL - BROWN (10YR 4/3) MOTTLED WITH GRAY (10YR 7/3) AND DARK YELLOW BROWN (10YR 4/6) - MOIST - STIFF TO HARD	CL					
8				4	SS	16	1.75	1
9								
10								
11				5	SS	22	4	1
12								
13		SILTY CLAY, TRACE FINE SAND - DARK GRAY (10YR 4/3) - MOIST - VERY STIFF TO HARD	CL	6	SS	35	4	<1
14								
15								
16				7	SS	21	3	1
17								
18				8	SS	27	3.5	<1
19		CLAY, TRACE FINE SAND - DARK GRAY (10YR 4/1) - MOIST TO WET - STIFF	CH					
20								
21				9	SS	14	1	<1
22		BORING TERMINATED AT 21.5 FEET						
23								
24								
25								
26								
27								
28								
29								
30								

NOTE: STRATIFICATION LINES ARE APPROXIMATE BOUNDARIES. THE ACTUAL TRANSITION MAY BE GRADUAL.

GROUNDWATER DATA		DRILLING REMARKS
WATER LEVEL ▫	DURING DRILLING	BORING DRILLED WITH 4.25 IN. I.D. HOLLOW STEM AUGERS
WATER LEVEL ▫ 16.5'	ON 09/09/93	MONITORING WELL CONSTRUCTED TO 21.5 FEET
WATER LEVEL ▫	ON	DRAKE ENVIRONMENTAL, INC.
WATER LEVEL ▫	ON	*ENGINEERING CONSULTANTS*

State of Wisconsin
Department of Natural Resources

NITORING WELL CONSTRUCTION

Form 4400-113A 8-89

Facility/Project Name: UASCO Property	Grid Location: ____ ft. ☐ N. ☐ S. ____ ft. ☐ E. ☐ W.	Well Name: MW-9
Facility License, Permit or Monitoring Number: ____		Wis. Unique Well Number / DNR Well Number
Type of Well: Water Table Observation Well ☒ 11; Piezometer ☐ 12	Section Location: SW 1/4 of SE 1/4 of Section 2, T 6 N, R 21 ☒ E ☐ W	Date Well Installed: 9/1/93 (m m d d y y)
Distance Well Is From Waste/Source Boundary: 20 ft.	Location of Well Relative to Waste/Source: ☐ Upgradient ☐ Sidegradient ☒ Downgradient ☐ Not Known	Well Installed By: (Person's Name and Firm): Rick Stucker Drilling
Is Well A Point of Enforcement Std. Application? ☒ Yes ☐ No		

A. Protective pipe, top elevation ____ ft. MSL

B. Well casing, top elevation ____ ft. MSL

C. Land surface elevation ____ ft. MSL

D. Surface seal, bottom ____ ft. MSL or 1.0 ft.

12. USCS classification of soil near screen:
☐ GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP
☐ SM ☐ SC ☐ ML ☐ MH ☐ CL ☒ CH
☐ Bedrock

13. Sieve analysis attached? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ 50; Hollow Stem Auger ☒ 41; Other ☐

15. Drilling fluid used: Water ☐ 02; Air ☐ 01; Drilling Mud ☐ 03; None ☒ 99

16. Drilling additives used? ☐ Yes ☒ No

Describe ____

17. Source of water (attach analysis): ____

E. Bentonite seal, top ____ ft. MSL or 1.0 ft.

F. Fine sand, top ____ ft. MSL or 7.11 ft.

G. Filter pack, top ____ ft. MSL or 7.3 ft.

H. Well screen, top ____ ft. MSL or 9.6 ft.

I. Well screen, bottom ____ ft. MSL or 19.6 ft.

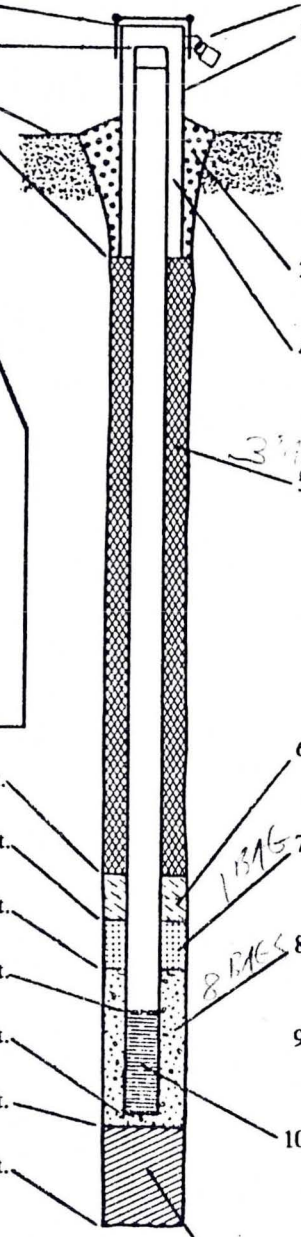
J. Filter pack, bottom ____ ft. MSL or 19.6 ft.

K. Borehole, bottom ____ ft. MSL or 21.5 ft.

L. Borehole, diameter 8.5 in.

M. O.D. well casing 2.35 in.

N. I.D. well casing 2.00 in.



1. Cap and lock? ☒ Yes ☐ No

2. Protective cover pipe:
a. Inside diameter: 2.0 in.
b. Length: 1.0 ft.
c. Material: Steel ☒ 04; Other ☐
d. Additional protection? ☐ Yes ☒ No
If yes, describe: ____

3. Surface seal: Bentonite ☐ 30; Concrete ☒ 01; Other ☐

4. Material between well casing and protective pipe: Bentonite ☐ 30; Annular space seal ☐; Other ☒ 3½ 25-35 mesh SAND

5. Annular space seal: Granular Bentonite ☒ 33
____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
____ % Bentonite . . . . . Bentonite-cement grout ☐ 50
3 Ft³ volume added for any of the above
How installed: Tremie ☐ 01; Tremie pumped ☐ 02; Gravity ☒ 08

6. Bentonite seal: Bentonite granules ☒ 33
☐ 1/4 in. ☐ 3/8 in. ☐ 1/2 in. Bentonite pellets ☐ 32
Other ☐

7. Fine sand material: Manufacturer, product name and mesh size
Badger Mining Corp 40-60 mesh
Volume added ____ ft³

8. Filter pack material: Manufacturer, product name and mesh size
Badger Mining 25-35 mesh
Volume added 8 ft³

9. Well casing: Flush threaded PVC schedule 40 ☒ 23; Flush threaded PVC schedule 80 ☐ 24; Other ☐

10. Screen material: PVC Sch 40
Screen type: Factory cut ☒ 11; Continuous slot ☐ 01; Other ☐
Manufacturer Johnson
Slot size: 0.010 in.
Slotted length: 12.2 ft.

11. Backfill material (below filter pack): None ☒; Other ☐

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature	Firm
[illegible]	Drake Engineering

Please complete and return both sides of this form as required by chs. 144, 147 and 160, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with ch. 144, Wis Stats., failure to file this form may result in a forfeiture of not less than $10, nor more than $5,000 for each day of violation. In accordance with ch. 147, Wis. Stats., failure to file this form may result in a forfeiture of not more than $10,000 for each day of violation.
NOTE: Shaded areas are for DNR use only. See instructions for more information.

State of Wisconsin
Department of Natural Resources

MONITORING WELL DEVELOPMENT
Form 4400-113B 8-89

Facility/Project Name: Wasco Property
Well Name: MW-9
License, Permit or Monitoring Number: _____
Wis. Unique Well Number: _____ DNR Well Number: _____

1. Can this well be purged dry? ☒ Yes ☐ No

2. Well development method

surged with bailer and bailed	☐	4 1
surged with bailer and pumped	☐	6 1
surged with block and bailed	☐	4 2
surged with block and pumped	☐	6 2
surged with block, bailed and pumped	☐	7 0
compressed air	☐	2 0
bailed only	☐	1 0
pumped only	☒	5 1
pumped slowly	☐	5 0
Other _____	☐	___

3. Time spent developing well: 15 min.
4. Depth of well (from top of well casisng): 19.2 ft.
5. Inside diameter of well: 2.00 in.
6. Volume of water in filter pack and well casing: ___.__ gal.
7. Volume of water removed from well: 8.5 gal.
8. Volume of water added (if any): ___.__ gal.
9. Source of water added _____
10. Analysis performed on water added? ☐ Yes ☒ No (If yes, attach results)

	Before Development	After Development
11. Depth to Water (from top of well casing)	14.86 ft.	___.__ ft.
Date	9/9/23 (m m d d y y)	9/9/23 (m m d d y y)
Time	12:50 ☐ a.m. ☒ p.m.	2:35 ☐ a.m. ☒ p.m.
12. Sediment in well bottom	Ø inches	Ø inches
13. Water clarity	Clear ☐ 10 Turbid ☒ 15 (Describe) Very Muddy	Clear ☐ 20 Turbid ☒ 25 (Describe) Slightly
Fill in if drilling fluids were used and well is at solid waste facility:		
14. Total suspended solids	____.__ mg/l	____.__ mg/l
15. COD	____.__ mg/l	____.__ mg/l

Additional comments on development:

Well developed by: Person's Name and Firm
Name: Al Olson
Firm: Drake Enviro.

I hereby certify that the above information is true and correct to the best of my knowledge.
Signature: [illegible]
Firm: [illegible]

NOTE: Shaded areas are for DNR use only. See instructions for more information.

ANALYTICAL REPORT

Drake Environmental,Inc.
N91 W17194 Appleton Ave.
Menomonee Falls, WI 53051

CUST NUMBER: J93169
SAMPLED BY: Client
DATE REC'D: 08/13/93
REPORT DATE: 09/02/93
PREPARED BY: DJB
REVIEWED BY:

Attn: Jeff Tracy

Modified Gasoline Range Organics (GRO)
Parameter # 78920

	GRO	Date Analyzed	Analytical No.
B-1 S-3	X	08/20/93	89658
B-2 S-2	X	08/20/93	89659
B-3 S-3	3,420. (4,5)	08/23/93	89660
B-4 S-3	142. (4,5)	08/20/93	89661
B-5 S-3	31.6 (4,5)	08/20/93	89662
B-6 S-4	X	08/20/93	89663
B-7 S-3	2,090. (4,5)	08/26/93	89664
B-8 S-3	X	08/20/93	89665
Detection Limit	5.0		
Units	µg/g		
MEOH BLANK	X	08/20/93	89666
Detection Limit	2.5		
Units	mg/l		

X = Analyzed but not detected.
Results calculated on a dry weight basis.

Notes: Only above indicated notes apply.

(1) The chromatogram is distinct for gasoline.
(2) The chromatogram is distinct in showing that the contaminant is a mixture of both gasoline and diesel. All peaks within the GRO window were quantitated.
(3) The chromatogram is not distinct for either gasoline or diesel. All peaks within the GRO window were quantitated.
(4) The chromatogram is not distinct for either gasoline or diesel. It has characteristics of a product which has significant peaks within the GRO window.
(5) The chromatogram also contained significant unidentified peaks outside the GRO window.

The replicate spike recovery of this batch of samples was found to be 86.8%, 82.2% and 96.5%, 85.2%.

ANALYTICAL REPORT

Drake Environmental,Inc.
N91 W17194 Appleton Ave.
Menomonee Falls, WI 53051

CUST NUMBER: J93169
SAMPLED BY: Client
DATE REC'D: 08/13/93
REPORT DATE: 09/03/93
PREPARED BY: JCH
REVIEWED BY:

Attn: Jeff Tracy

	Units	Detection Limit	B-3 S-3 08/12/93	Analyzed Date
EPA 8020				
Benzene	µg/g	0.2	6.8	08/20/93
Ethylbenzene	µg/g	0.3	71.6	08/23/93
Methyl tert Butyl Ether	µg/g	0.6	X	08/20/93
1,2,4-Trimethylbenzene	µg/g	0.3	169.	08/23/93
1,3,5-Trimethylbenzene	µg/g	0.3	45.5	08/23/93
m- & p-Xylene	µg/g	0.3	139.	08/23/93
o-Xylene	µg/g	0.3	14.2	08/20/93
Toluene	µg/g	0.2	17.3	08/20/93
EPA 6010				
Lead	µg/g	1.8	42.6	08/23/93

Analytical No.: 89660

X = Analyzed but not detected.
Results calculated on a dry weight basis.

ANALYTICAL REPORT

Drake Environmental,Inc.
N91 W17194 Appleton Ave.
Menomonee Falls, WI 53051

CUST NUMBER: J93169
SAMPLED BY: Client
DATE REC'D: 08/13/93
REPORT DATE: 09/03/93
PREPARED BY: JCH
REVIEWED BY:

Attn: Jeff Tracy

	Units	Detection Limit	B-7 S-3 08/12/93	Analyzed Date
EPA 8020				
Benzene	µg/g	0.4	X	08/24/93
Ethylbenzene	µg/g	0.8	9.6	08/24/93
Methyl tert Butyl Ether	µg/g	1.5	X	08/24/93
1,2,4-Trimethylbenzene	µg/g	0.8	65.8	08/24/93
1,3,5-Trimethylbenzene	µg/g	0.8	5.3	08/24/93
m- & p-Xylene	µg/g	0.8	3.2	08/24/93
o-Xylene	µg/g	0.8	6.7	08/24/93
Toluene	µg/g	0.4	4.6	08/24/93
EPA 6010				
Lead	µg/g	1.8	47.7	08/23/93
Analytical No.:			89664	

X = Analyzed but not detected.
Results calculated on a dry weight basis.

REQUEST FOR SERVICES

303 W. MILITARY RD. ROTHSCHILD, WI 54474 1-800-338-SCAN

CLIENT INFORMATION

Name: Mr. Bob Zidar
Company: Concrete Raising
Address: 2121 South 55th Street
West Allis, WI 53219
Phone: (414) 649-2000
P.O. # / Project #: Drake Environmental J93169
Quote / Reference #: See Attached
Note: Terms and conditions printed on back apply. Lilot Site
PECFA 1458-9 Please send a copy of the report to Jeff Tracy at Drake.

Turnaround Time
☒ Normal
☐ Rush
Date Needed September 3, 1993
(Preapproved by Lab)

Sample Type (Check all that apply)
☐ Groundwater
☐ Wastewater
☒ Soil
☐ Solid Waste
☐ Oil
☒ Other MeOH Blank

Sample Handling
☒ Nonhazardous
☐ Flammable
☐ Skin Irritant
☐ Highly Toxic
☒ Other (specify) Methanol Preservative
☐ Refrigerate
☐ Work in Hood
☐ Wear Gloves

ANALYTICAL REQUESTS
(use separate sheet if necessary)

[redacted]	DATE	TIME	No. of Containers COMP	No. of Containers GRAB	SAMPLE ID	SOILGRO	GRO (Wisconsin Modified)	PVOC (EPA 8020) S-PVOC, VOCRUN	LEAD (EPA 6010)	PB, MPREP	PVD	REMARKS
18089658	8/12/93	9:02		2	B-1 S-3 ✓	X					<1	
18089659	8/12/93	10:03		2	B-2 S-2 ✓	X					2	
18089660	8/12/93	10:55		3	B-3 S-3 ✓	X	X	X			738	
18089661	8/12/93	12:13		2	B-4 S-3 ✓	X					44	
18089662	8/12/93	1:52		2	B-5 S-3 ✓	X					6	
18089663	8/12/93	3:08		2	B-6 S-4 ✓	X					<1	
18089664	8/12/93	4:18		3	B-7 S-3 ✓	X	X	X			526	
18089665	8/12/93	5:26		2	B-8 S-3 ✓	X						
18089666				1	~~Temp~~ MeOH Blank ✓	X						GRO GRORUN
				1	Temp Blank							

DRAKE Bill to: Concrete

CHAIN OF CUSTODY RECORD

SAMPLERS: (Signature) [signature]

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
[signature]	8-12-93 6:15PM	Fed Ex
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED FOR LABORATORY BY: (Signature) / DATE/TIME
		Sheila Ryan 8-13-93 11:15a.m

Del'v: Hand Comm
Ship. Cont. OK? Y N N/A
Rec'd Refrig.? Y N N/A
Seals OK? Y N N/A
Samples leaking? Y N N/A
Comments:
Rec'd on ice

ANALYTICAL REPORT

Drake Environmental,Inc.
N91 W17194 Appleton Ave.
Menomonee Falls, WI 53051

CUST NUMBER: J93169
SAMPLED BY: Client
DATE REC'D: 09/10/93
REPORT DATE: 09/15/93
PREPARED BY: DJB
REVIEWED BY:

Attn: Jeff Tracy

Modified Gasoline Range Organics (GRO)
Parameter # 78920

	GRO	Date Analyzed	Analytical No.
B-9,S-3 5'-6.5'	208. (4,5)	09/12/93	91280
Detection Limit	5.0		
Units	µg/g		
MW-9	X	09/12/93	91282
Detection Limit	50.		
Units	µg/l		
MEOH BLANK	X	09/12/93	91281
Detection Limit	2.5		
Units	mg/l		

Notes: Only above indicated notes apply.

(1) The chromatogram is distinct for gasoline.
(2) The chromatogram is distinct in showing that the contaminant is a mixture of both gasoline and diesel. All peaks within the GRO window were quantitated.
(3) The chromatogram is not distinct for either gasoline or diesel. All peaks within the GRO window were quantitated.
(4) The chromatogram is not distinct for either gasoline or diesel. It has characteristics of a product which has significant peaks within the GRO window.
(5) The chromatogram also contained significant unidentified peaks outside the GRO window.

The replicate spike recovery of this batch of samples was found to be 106% and 108%.

ANALYTICAL REPORT

Drake Environmental,Inc.
N91 W17194 Appleton Ave.
Menomonee Falls, WI 53051

CUST NUMBER: J93169
SAMPLED BY: Client
DATE REC'D: 09/10/93
REPORT DATE: 09/15/93
PREPARED BY: DJB
REVIEWED BY:

Attn: Jeff Tracy

Modified Diesel Range Organics (DRO)
Parameter # 78919

	DRO	Date Ext	Date Analyzed	Analytical No.
MW-9	108. (4,5)	09/13/93	09/14/93	91282
Detection Limit	50.			
Units	µg/l			

Notes: Only above indicated notes apply.

(1) The chromatogram is distinct for diesel.
(2) The chromatogram is distinct in showing that the contaminant is a mixture of both gasoline and diesel. All peaks within the DRO window were quantitated.
(3) The chromatogram is not distinct for either gasoline or diesel. It is being reported as diesel, but there is the possibility it is aged or degraded gasoline.
(4) The chromatogram is not distinct for either gasoline or diesel. All peaks within the DRO window were quantitated.
(5) The chromatogram also contained significant peaks outside the DRO window.
(6) The chromatogram did not have any peaks, but the baseline was found to be raised.
(7) The DRO window was quantitated, but the peaks represent less than 10 % of the elevated baseline.
(8) The baseline was found to be raised and the peaks represent more than 10 % of the elevated baseline.

The replicate spike recovery of this batch of samples was found to be 118% and 101%.

ANALYTICAL REPORT

Drake Environmental,Inc.
N91 W17194 Appleton Ave.
Menomonee Falls, WI 53051

CUST NUMBER: J93169
SAMPLED BY: Client
DATE REC'D: 09/10/93
REPORT DATE: 09/15/93
PREPARED BY: DJP
REVIEWED BY:

Attn: Jeff Tracy

EPA 8021	Units	Detection Limit	MW-9	TRIP BLANK-BR
Benzene	µg/l	0.2	X	X
Bromobenzene	µg/l	0.5	X	X
Bromodichloromethane	µg/l	0.5	X	X
Carbon Tetrachloride	µg/l	0.5	X	X
Chlorobenzene	µg/l	2.0	X	X
Chloroethane	µg/l	2.0	X	X
Chloroform	µg/l	0.5	X	X
Chloromethane	µg/l	2.0	X	X
o-Chlorotoluene	µg/l	1.0	X	X
p-Chlorotoluene	µg/l	1.0	X	X
Chlorodibromomethane	µg/l	0.5	X	X
1,2-Dibromo-3-chloropropane	µg/l	13.3	X	X
1,2-Dichlorobenzene	µg/l	1.0	X	X
1,3-Dichlorobenzene	µg/l	1.0	X	X
1,4-Dichlorobenzene	µg/l	0.5	X	X
1,1-Dichloroethane	µg/l	0.5	X	X
1,2-Dichloroethane	µg/l	0.5	X	X
1,1-Dichloroethylene	µg/l	0.4	X	X
cis-1,2-Dichloroethylene	µg/l	0.5	X	X
trans-1,2-Dichloroethylene	µg/l	0.5	X	X
Methylene Chloride	µg/l	2.5	X	X
1,2-Dichloropropane	µg/l	0.5	X	X
1,3-Dichloropropane	µg/l	0.5	X	X
2,2-Dichloropropane	µg/l	2.0	X	X
Ethylbenzene	µg/l	1.0	X	X
1,2-Dibromoethane	µg/l	1.0	X	X
1,1,2,2-Tetrachloroethane	µg/l	1.0	X	X
Tetrachloroethylene	µg/l	0.5	X	X
Toluene	µg/l	0.5	X	X
1,1,1-Trichloroethane	µg/l	0.5	X	X
1,1,2-Trichloroethane	µg/l	0.5	X	X
Trichloroethylene	µg/l	0.2	X	X
Vinyl Chloride	µg/l	0.2	X	X
o-Xylene	µg/l	1.0	X	X
m- & p-Xylene	µg/l	1.0	X	X
Analytical No.:			91282	91283

X = Analyzed but not detected.

ANALYTICAL REPORT

Drake Environmental,Inc.
N91 W17194 Appleton Ave.
Menomonee Falls, WI 53051

CUST NUMBER: J93169
SAMPLED BY: Client
DATE REC'D: 09/10/93
REPORT DATE: 09/15/93
PREPARED BY: DJP
REVIEWED BY:

Attn: Jeff Tracy

	Units	Detection Limit	MW-9	TRIP BLANK-BR
Methyl tert Butyl Ether	µg/l	2.0	X	X
1,3,5-Trimethylbenzene	µg/l	1.0	X	X
1,2,4-Trichlorobenzene	µg/l	1.0	X	X
1,2,3-Trichlorobenzene	µg/l	1.0	X	X
Isopropylbenzene	µg/l	1.0	X	X
Dichlorodifluoromethane	µg/l	2.0	X	X
Naphthalene	µg/l	1.0	X	X
Trichlorofluoromethane	µg/l	1.0	X	X
Hexachlorobutadiene	µg/l	1.0	X	X
n-Propylbenzene	µg/l	1.0	X	X
n-Butylbenzene	µg/l	1.0	X	X
1,2,4-Trimethylbenzene	µg/l	1.0	X	X
sec-Butylbenzene	µg/l	1.0	X	X
tert-Butylbenzene	µg/l	1.0	X	X
p-Isopropyltoluene	µg/l	1.0	X	X
Isopropyl Ether	µg/l	1.0	X	X
Date of VOC Analysis:			9/12/93	9/13/93
EPA 200.9				
Lead	µg/l	1.7	X	NA
Date of Lead Analysis:			9/14/93	
Analytical No.:			91282	91283

NA = Not Analyzed.
X = Analyzed but not detected.

REQUEST FOR SERVICES

303 W. MILITARY RD. ROTHSCHILD, WI 54474 1-800-338-SCAN

CLIENT INFORMATION

Name: Jeff Tracy
Company: Drake Enviro Inc
Address: N91 W17194 Appleton Ave
Menomonee Falls Wi 53051
Phone: (414) 253 1440
P.O. # / Project #: J93169
Quote / Reference #: 1721-9
Note: Terms and conditions printed on back apply. L.U.S.T.S.
Please send bill to Concrete Raising Corporation.
21-0753
Pecfa

Turnaround Time
☐ Normal
☒ Rush
Date Needed September 15th
(Preapproved by Lab)

Sample Type (Check all that apply)
☒ Groundwater
☐ Wastewater
☒ Soil
☐ Solid Waste
☐ Oil
☐ Other

Sample Handling
☐ Nonhazardous ☒ Refrigerate
☐ Flammable ☐ Work in Hood
☐ Skin Irritant ☐ Wear Gloves
☐ Highly Toxic
☒ Other (specify) MEOH

ANALYTICAL REQUESTS
(use separate sheet if necessary)

LAB USE ONLY	DATE	TIME	No. of Containers MATRIX COMP	No. of Containers GRAB	SAMPLE ID	Rush Code 2 SOILGRO	GRO (W.S. Mod. Matrix)	DRO (DROEXT (W.S. Mod. Matrix))	VOC (S8021, VOCRUN (EPA 8021))	PB (PB-Pb (EPA 3020))	Code E	Code E	Code E	REMARKS
17091280	9.9.93	10:29	Soil	2	B-9 S-3 5'-6½'	X								398
17091281	~	-	MEOH	1	MEOH TRIP BLANK	X								→ GRO, GRORUN
17091282	9.9.93	2:35	Water	8	MW-9	X	X	X	X					CODE C GRO, GRORUN
17091283	9.01.93	8:5	water	1	Trip BLANK-BR			X						CODE C
	9-9-93	~	water	1	Temp BLANK									

DRAKE — bill to CONCRETE

CHAIN OF CUSTODY RECORD

SAMPLERS: (Signature)

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
	9.9.93 4:00pm	
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED FOR LABORATORY BY: (Signature) Maria Retzinger — DATE/TIME 9/10/93 9:40 AM

Del'v: Hand Comm.
Ship. Cont. OK? Y N N/A
Rec'd Refrig.? Y N N/A
Seals OK? Y N N/A
Samples leaking? Y N N/A
Comments:
Rec'd on ice

FID # 241558130
ER LUST

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Southeast District - Annex building
Post Office Box 12436
4041 N. Richards St.
Milwaukee, Wisconsin 53212
TELEPHONE: 414-961-2727
TELEFAX # : 414-961-2770

WISCONSIN
DEPT. OF NATURAL RESOURCES

George E. Meyer
Secretary

November 3, 1993

File Ref: 4440

Peggy Slind
Waste Management
N96 W13475 County Line Road
Menomonee Falls, WI 53051

Dear Ms. Slind,

RE: Wisconsin Department of Natural Resources Approval for Acceptance of Petroleum Contaminated Soil at:

Wasco Property, 5116 W. Lincoln Ave., West Allis, WI 53219

The Wisconsin Department of Natural Resources hereby approves the landfilling of soil generated at the above referenced address. The soils are characterized by the Waste Profile Sheet Code MET MW 003758.

Approximately 450 cubic yards of petroleum contaminated soils will be removed, some of which have been found to contain petroleum contamination above the WDNR LUST Program guideline acceptance limit of 2000 parts per million petroleum hydrocarbons. Due to the demonstrated limits of alternative remedial or disposal outlets, the WDNR LUST Program will waive the guideline acceptance limit for the referenced characterized soils.

The soils are to be transported to Metro Landfill for disposal pending approval by Waste Management.

Sincerely,

James C. Delwiche

James C. Delwiche
Hydrogeologist
Leaking Underground Storage Tank Unit

cc: Jeff Tracy - Drake
SED Case File

Printed on Recycled Paper

FID # 241558130
ERST

DRAKE Environmental, Inc.

Engineering Consultants

October 4, 1993

RECEIVED

OCT 6 1993

D.N.R. SED Hqtrs.
Milwaukee, WI

Mr. Jim Delwiche
Wisconsin Department of Natural Resources
4041 North Richards Street
P.O. Box 12436
Milwaukee, WI 53212

RE: Variance request for landfill disposal of petroleum-contaminated soils from the Wasco property in West Allis, Wisconsin — Project No. J93169

Dear Mr. Delwiche:

On behalf of our client, Concrete Raising Corporation, we are requesting a variance to dispose of approximately 600 cubic yards of gasoline-contaminated soils. This letter provides information you requested during our telephone conversation on September 24, 1993.

Concrete Raising Corporation owns the Wasco property located at 5116 West Lincoln Avenue in West Allis, Wisconsin. Three underground storage tanks (USTs) were removed from the property in September 1992. Obvious soil contamination (indicated by petroleum odors, staining, and elevated photoionization detector (PID) readings) associated with a 2,000-gallon gasoline UST was observed during a Tank Closure Assessment (TCA) conducted by Dames and Moore, Inc. Dames and Moore excavated beyond the original UST cavity to determine the extent of contamination, by removing approximately 80 cubic yards of contaminated soils and stockpiling the soils on-site. The UST cavity was backfilled with imported stone and the contaminated, stockpiled soils on-site were disposed of at Metro Recycling and Disposal Facility in Franklin, Wisconsin. The soils were approved for landfill disposal under waste profile number MET MW 003758. Because the contamination appeared to be widespread, Dames and Moore was unable to determine the extent of contamination. Therefore, a Remedial Investigation (RI) was considered necessary. We were retained to conduct the RI.

As part of the RI, we drilled nine soil borings in the vicinity of the former 2,000-gallon UST. One soil sample from each boring was submitted to an independent, certified

N91 W17194 Appleton Avenue, Menomonee Falls, WI 53051 ♦ Telephone: (414) 253-1440

PO Box 610, Minocqua, WI 54548 ♦ Telephone: (715) 358-7018

laboratory for analysis. The laboratory results confirmed that soil contamination associated with the 2,000-gallon gasoline UST exists at the property. Elevated concentrations of gasoline range organics (GRO) were detected in samples collected from five borings. Based on these results, we estimate that approximately 450 cubic yards (600 tons) of contaminated soils exist on-site; therefore, soil remediation is considered necessary. We recommended excavation with landfill disposal as the method of soil remediation. However, the detected GRO concentrations (3,420 parts per million — ppm and 2,090 ppm) of two soil samples collected during the RI exceed the DNR's allowable limit (2,000 ppm) for accepting soils at a landfill. Therefore, we are requesting a variance to dispose of the contaminated soils at Metro Recycling and Disposal Facility. Copies of the laboratory reports are attached.

Please respond in writing with your determination. If you have any questions or need additional information, please do not hesitate to call.

NOV. 11, 12, 13th

Respectfully,

DRAKE Environmental, Inc.

Jeffrey G. Tracy
Assistant Level Geologist

Michael D. Frede, P.E.
Principal Level Engineer

cc: Mr. Bob Zidar
Ms. Peggy Slind

Attachments
13/J93169I

ANALYTICAL REPORT

ENVIROSCAN

Drake Environmental, Inc.
N91 W17194 Appleton Ave.
Menomonee Falls, WI 53051

CUST NUMBER: J93169
SAMPLED BY: Client
DATE REC'D: 08/13/93
REPORT DATE: 09/02/93
PREPARED BY: DJB
REVIEWED BY:

Attn: Jeff Tracy

Modified Gasoline Range Organics (GRO)
Parameter # 78920

	GRO	Date Analyzed	Analytical No.
B-1 S-3	X	08/20/93	89658
B-2 S-2	X	08/20/93	89659
B-3 S-3	3,420. (4,5)	08/23/93	89660
B-4 S-3	142. (4,5)	08/20/93	89661
B-5 S-3	31.6 (4,5)	08/20/93	89662
B-6 S-4	X	08/20/93	89663
B-7 S-3	2,090. (4,5)	08/26/93	89664
B-8 S-3	X	08/20/93	89665
Detection Limit	5.0		
Units	µg/g		
MEOH BLANK	X	08/20/93	89666
Detection Limit	2.5		
Units	mg/l		

RECEIVED
OCT 6 1993
D.N.R. SED Hqtrs.
Milwaukee, WI

X = Analyzed but not detected.
Results calculated on a dry weight basis.

Notes: Only above indicated notes apply.

(1) The chromatogram is distinct for gasoline.
(2) The chromatogram is distinct in showing that the contaminant is a mixture of both gasoline and diesel. All peaks within the GRO window were quantitated.
(3) The chromatogram is not distinct for either gasoline or diesel. All peaks within the GRO window were quantitated.
(4) The chromatogram is not distinct for either gasoline or diesel. It has characteristics of a product which has significant peaks within the GRO window.
(5) The chromatogram also contained significant unidentified peaks outside the GRO window.

The replicate spike recovery of this batch of samples was found to be 86.8%, 82.2% and 96.5%, 85.2%.

ANALYTICAL REPORT

ENVIROSCAN

Drake Environmental, Inc.
N91 W17194 Appleton Ave.
Menomonee Falls, WI 53051

CUST NUMBER: J93169
SAMPLED BY: Client
DATE REC'D: 08/13/93
REPORT DATE: 09/03/93
PREPARED BY: JCH
REVIEWED BY:

Attn: Jeff Tracy

	Units	Detection Limit	B-3 S-3 08/12/93	Analyzed Date
EPA 8020				
Benzene	µg/g	0.2	6.8	08/20/93
Ethylbenzene	µg/g	0.3	71.6	08/23/93
Methyl tert Butyl Ether	µg/g	0.6	X	08/20/93
1,2,4-Trimethylbenzene	µg/g	0.3	169.	08/23/93
1,3,5-Trimethylbenzene	µg/g	0.3	45.5	08/23/93
m- & p-Xylene	µg/g	0.3	139.	08/23/93
o-Xylene	µg/g	0.3	14.2	08/20/93
Toluene	µg/g	0.2	17.3	08/20/93
EPA 6010				
Lead	µg/g	1.8	42.6	08/23/93
Analytical No.:			89660	

X = Analyzed but not detected.
Results calculated on a dry weight basis.

ANALYTICAL REPORT

ENVIROSCAN

Drake Environmental, Inc.
N91 W17194 Appleton Ave.
Menomonee Falls, WI 53051

CUST NUMBER: J93169
SAMPLED BY: Client
DATE REC'D: 08/13/93
REPORT DATE: 09/03/93
PREPARED BY: JCH
REVIEWED BY:

Attn: Jeff Tracy

	Units	Detection Limit	B-7 S-3 08/12/93	Analyzed Date
EPA 8020				
Benzene	µg/g	0.4	X	08/24/93
Ethylbenzene	µg/g	0.8	9.6	08/24/93
Methyl tert Butyl Ether	µg/g	1.5	X	08/24/93
1,2,4-Trimethylbenzene	µg/g	0.8	65.8	08/24/93
1,3,5-Trimethylbenzene	µg/g	0.8	5.3	08/24/93
m- & p-Xylene	µg/g	0.8	3.2	08/24/93
o-Xylene	µg/g	0.8	6.7	08/24/93
Toluene	µg/g	0.4	4.6	08/24/93
EPA 6010				
Lead	µg/g	1.8	47.7	08/23/93
Analytical No.:			89664	

X = Analyzed but not detected.
Results calculated on a dry weight basis.

REQUEST FOR SERVICES

303 W. MILITARY RD. ROTHSCHILD, WI 54474 1-800-338-SCAN

CLIENT INFORMATION

Name: Mr. Bob Zidar
Company: Concrete Raising
Address: 2121 South 55th Street
West Allis, WI 53219
Phone: (414) 649-2000
P.O. # / Project #: Drake Environmental 93169
Quote / Reference #: See Attached
Note: Terms and conditions printed on back apply. LIST SITE
PECFA 1458-9
Please send a copy of the report to Jeff Tracy at Drake.

Turnaround Time
☒ Normal
☐ Rush
Date Needed September 3, 1993
(Preapproved by Lab)

Sample Type (Check all that apply)
☐ Groundwater
☐ Wastewater
☒ Soil
☐ Solid Waste
☐ Oil
☒ Other MEOH BLANK

Sample Handling
☒ Nonhazardous
☐ Flammable
☐ Skin Irritant
☐ Highly Toxic
☒ Other (specify) Methanol Preservative
☐ Refrigerate
☐ Work In Hood
☐ Wear Gloves

ANALYTICAL REQUESTS
(use separate sheet if necessary)

[redacted]	DATE	TIME	No. of Containers COMP	No. of Containers GRAB	SAMPLE ID	SOILGRO	GRO (Wisconsin Modified)	PVOC (EPA 8020)	LEAD (EPA 6010)	PB, MPREP	PID	REMARKS
18089658	8/12/93	9:02		2	B-1 S-3	X					41	
18089659	8/12/93	10:03		2	B-2 S-2	X					2	
18089660	8/12/93	10:55		3	B-3 S-3	X	X	X			738	
18089661	8/12/93	12:13		2	B-4 S-3	X					44	
18089662	8/12/93	1:52		2	B-5 S-3	X					6	
18089663	8/12/93	3:08		2	B-6 S-4	X					<1	
18089664	8/12/93	4:18		3	B-7 S-3	X	X	X			526	
18089665	8/12/93	5:26		2	B-8 S-3	X						
18089666				1	~~TRIP~~ MEOH BLANK	X						GRO GRORUN
				1	TRIP BLANK							

DRAKE Bill to: Concrete

CHAIN OF CUSTODY RECORD

SAMPLERS: (Signature)

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
	8-12-93 6:15PM	Fed. Ex
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED FOR LABORATORY BY: (Signature) / DATE/TIME
		Sheila Ryan 8-13-93 11:15a.m

Del'v: Hand Comm
Ship. Cont. OK? Y N N/A
Rec'd Refrig.? Y N N/A
Seals OK? Y N N/A
Samples leaking? Y N N/A
Comments: Rec'd on ice

ANALYTICAL REPORT

ENVIROSCAN

Drake Environmental, Inc.
N91 W17194 Appleton Ave.
Menomonee Falls, WI 53051

CUST NUMBER: J93169
SAMPLED BY: Client
DATE REC'D: 09/10/93
REPORT DATE: 09/15/93
PREPARED BY: DJB DJB
REVIEWED BY: JRB

Attn: Jeff Tracy

Modified Gasoline Range Organics (GRO)
Parameter # 78920

	GRO	Date Analyzed	Analytical No.
B-9,S-3 5'-6.5'	208. (4,5)	09/12/93	91280
Detection Limit	5.0		
Units	µg/g		
MW-9	X	09/12/93	91282
Detection Limit	50.		
Units	µg/l		
MEOH BLANK	X	09/12/93	91281
Detection Limit	2.5		
Units	mg/l		

Notes: Only above indicated notes apply.

(1) The chromatogram is distinct for gasoline.
(2) The chromatogram is distinct in showing that the contaminant is a mixture of both gasoline and diesel. All peaks within the GRO window were quantitated.
(3) The chromatogram is not distinct for either gasoline or diesel. All peaks within the GRO window were quantitated.
(4) The chromatogram is not distinct for either gasoline or diesel. It has characteristics of a product which has significant peaks within the GRO window.
(5) The chromatogram also contained significant unidentified peaks outside the GRO window.

The replicate spike recovery of this batch of samples was found to be 106% and 108%.

ANALYTICAL REPORT

ENVIROSCAN

Drake Environmental,Inc.
N91 W17194 Appleton Ave.
Menomonee Falls, WI 53051

CUST NUMBER: J93169
SAMPLED BY: Client
DATE REC'D: 09/10/93
REPORT DATE: 09/15/93
PREPARED BY: DJB DJB
REVIEWED BY: JPS

Attn: Jeff Tracy

Modified Diesel Range Organics (DRO)
Parameter # 78919

	DRO	Date Ext	Date Analyzed	Analytical No.
MW-9	108. (4,5)	09/13/93	09/14/93	91282
Detection Limit	50.			
Units	µg/l			

Notes: Only above indicated notes apply.

(1) The chromatogram is distinct for diesel.
(2) The chromatogram is distinct in showing that the contaminant is a mixture of both gasoline and diesel. All peaks within the DRO window were quantitated.
(3) The chromatogram is not distinct for either gasoline or diesel. It is being reported as diesel, but there is the possibility it is aged or degraded gasoline.
(4) The chromatogram is not distinct for either gasoline or diesel. All peaks within the DRO window were quantitated.
(5) The chromatogram also contained significant peaks outside the DRO window.
(6) The chromatogram did not have any peaks, but the baseline was found to be raised.
(7) The DRO window was quantitated, but the peaks represent less than 10 % of the elevated baseline.
(8) The baseline was found to be raised and the peaks represent more than 10 % of the elevated baseline.

The replicate spike recovery of this batch of samples was found to be 118% and 101%.

ANALYTICAL REPORT

Drake Environmental, Inc.
N91 W17194 Appleton Ave.
Menomonee Falls, WI 53051

CUST NUMBER: J93169
SAMPLED BY: Client
DATE REC'D: 09/10/93
REPORT DATE: 09/15/93
PREPARED BY: DJP
REVIEWED BY:

Attn: Jeff Tracy

EPA 8021	Units	Detection Limit	MW-9	TRIP BLANK-BR
Benzene	µg/l	0.2	X	X
Bromobenzene	µg/l	0.5	X	X
Bromodichloromethane	µg/l	0.5	X	X
Carbon Tetrachloride	µg/l	0.5	X	X
Chlorobenzene	µg/l	2.0	X	X
Chloroethane	µg/l	2.0	X	X
Chloroform	µg/l	0.5	X	X
Chloromethane	µg/l	2.0	X	X
o-Chlorotoluene	µg/l	1.0	X	X
p-Chlorotoluene	µg/l	1.0	X	X
Chlorodibromomethane	µg/l	0.5	X	X
1,2-Dibromo-3-chloropropane	µg/l	13.3	X	X
1,2-Dichlorobenzene	µg/l	1.0	X	X
1,3-Dichlorobenzene	µg/l	1.0	X	X
1,4-Dichlorobenzene	µg/l	0.5	X	X
1,1-Dichloroethane	µg/l	0.5	X	X
1,2-Dichloroethane	µg/l	0.5	X	X
1,1-Dichloroethylene	µg/l	0.4	X	X
cis-1,2-Dichloroethylene	µg/l	0.5	X	X
trans-1,2-Dichloroethylene	µg/l	0.5	X	X
Methylene Chloride	µg/l	2.5	X	X
1,2-Dichloropropane	µg/l	0.5	X	X
1,3-Dichloropropane	µg/l	0.5	X	X
2,2-Dichloropropane	µg/l	2.0	X	X
Ethylbenzene	µg/l	1.0	X	X
1,2-Dibromoethane	µg/l	1.0	X	X
1,1,2,2-Tetrachloroethane	µg/l	1.0	X	X
Tetrachloroethylene	µg/l	0.5	X	X
Toluene	µg/l	0.5	X	X
1,1,1-Trichloroethane	µg/l	0.5	X	X
1,1,2-Trichloroethane	µg/l	0.5	X	X
Trichloroethylene	µg/l	0.2	X	X
Vinyl Chloride	µg/l	0.2	X	X
o-Xylene	µg/l	1.0	X	X
m- & p-Xylene	µg/l	1.0	X	X
Analytical No.:			91282	91283

X = Analyzed but not detected.

ANALYTICAL REPORT

Drake Environmental, Inc.
N91 W17194 Appleton Ave.
Menomonee Falls, WI 53051

CUST NUMBER: J93169
SAMPLED BY: Client
DATE REC'D: 09/10/93
REPORT DATE: 09/15/93
PREPARED BY: DJP
REVIEWED BY:

Attn: Jeff Tracy

	Units	Detection Limit	MW-9	TRIP BLANK-BR
Methyl tert Butyl Ether	µg/l	2.0	X	X
1,3,5-Trimethylbenzene	µg/l	1.0	X	X
1,2,4-Trichlorobenzene	µg/l	1.0	X	X
1,2,3-Trichlorobenzene	µg/l	1.0	X	X
Isopropylbenzene	µg/l	1.0	X	X
Dichlorodifluoromethane	µg/l	2.0	X	X
Naphthalene	µg/l	1.0	X	X
Trichlorofluoromethane	µg/l	1.0	X	X
Hexachlorobutadiene	µg/l	1.0	X	X
n-Propylbenzene	µg/l	1.0	X	X
n-Butylbenzene	µg/l	1.0	X	X
1,2,4-Trimethylbenzene	µg/l	1.0	X	X
sec-Butylbenzene	µg/l	1.0	X	X
tert-Butylbenzene	µg/l	1.0	X	X
p-Isopropyltoluene	µg/l	1.0	X	X
Isopropyl Ether	µg/l	1.0	X	X
Date of VOC Analysis:			9/12/93	9/13/93
EPA 200.9				
Lead	µg/l	1.7	X	NA
Date of Lead Analysis:			9/14/93	
Analytical No.:			91282	91283

NA = Not Analyzed.
X = Analyzed but not detected.

REQUEST FOR SERVICES

303 W. MILITARY RD. ROTHSCHILD, WI 54474 1-800-338-SCAN

CLIENT INFORMATION

Name: Jeff Tracy
Company: Drake Environ Inc
Address: N91 W17194 Appleton Ave
Menomonee Falls Wi 53051
Phone: (414) 253 1440
P.O. # / Project #: J93169
Quote / Reference #: 1721-9
Note: Terms and conditions printed on back apply. L.U.S.T.S.
Please send bill to Concrete Raising Corporation.
21-0753
Pedfa

Turnaround Time
☐ Normal
☒ Rush
Date Needed [redacted]
(Preapproved by Lab)

Sample Type (Check all that apply)
☒ Groundwater
☐ Wastewater
☒ Soil
☐ Solid Waste
☐ Oil
☐ Other _____

Sample Handling
☐ Nonhazardous
☐ Flammable
☐ Skin Irritant
☐ Highly Toxic
☒ Other (specify) MEOH
☒ Refrigerate
☐ Work In Hood
☐ Wear Gloves

ANALYTICAL REQUESTS
(use separate sheet if necessary)

LAB USE ONLY	DATE	TIME	No. of Containers MATRIX COMP	GRAB	SAMPLE ID	Rush SOILGRO	GRO (W.S. Mod. matrix)	DRO (W.S. Mod. Matrix)	8021 vacuum VOC (EPA 8021)	PB-Pb (EPA 3020)	[redacted]	REMARKS
17091280	9-9-93	10:2[redacted]		2	B-9, S-3 5'-6½'	X					[redacted]	
17091281	~	-	MEOH	1	IN EOH TRIP BLANK	X						→ GRO, GRORU
17091282	9-9-93	2:35	[redacted]	8	MW-9	X	X	X	X			CODE C. GRO, GROKUN
17091283	9-01-93	8:5	wtr HCL	1	Trip BLANK-BR			X				CODE C
	9-9-93	~	wtr	1	Temp BLANK							

DRAKE — bill to CONCRETE

CHAIN OF CUSTODY RECORD

SAMPLERS: (Signature)

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
	9-9-93 4:00pm	
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED FOR LABORATORY BY: (Signature) Doris Retzinger — DATE/TIME 9/10/93 9:40 AM

Del'v: Hand Comm.
Ship. Cont. OK? Y N N/A
Rec'd Refrig.? Y N N/A
Seals OK? Y N N/A
Samples leaking? Y N N/A
Comments:
Rec'd on ice

CRC

DRAKE Environmental, Inc.

Engineering Consultants

October 4, 1993

RECEIVED

OCT 6 1993

D.N.R. SED Hqtrs.
Milwaukee, WI

Mr. Eric Scott
Department of Industry, Labor, and Human Relations
201 East Washington Avenue
P.O. Box 7969
Madison, WI 53201

RE: Remedial Action Alternatives for Soil Remediation at the Wasco property in West Allis, Wisconsin (PECFA file no. 53219-5010-16) — Drake Project No. J93169

FID# 241558130
ER
LUST

Dear Mr. Scott:

In September 1992, three gasoline underground storage tanks (USTs) were removed from the Wasco property, located at 5116 West Lincoln Avenue in West Allis, Wisconsin. The USTs were 550 gallons, 1,000 gallons, and 2,000 gallons in capacity. The 550- and 2,000-gallon USTs were located in a common cavity. The analytical results of samples collected during a Tank Closure Assessment (TCA) conducted by Dames and Moore, Inc. did not indicate the presence of contamination at the 1,000-gallon UST cavity. However, during the TCA obvious soil contamination indicated by petroleum odors, staining, and elevated photoionization detector (PID) readings was encountered at the common cavity. During a subsequent Remedial Investigation (RI), we estimated the extent and degree of contamination and provided recommendations for remediation (Drake Project No. J93123, report pending). The extent of contamination is illustrated on the attached figure. This letter presents our evaluation of soil remediation alternatives and provides cost estimates for soil remediation and groundwater monitoring.

Project History

We conducted soil sampling as part of the RI. We drilled nine soil borings in the vicinity of the common cavity. Selected soil samples collected from the borings were submitted to an independent, certified laboratory for analyses. The laboratory results indicate that soil contamination exists in the vicinity of the former 2,000-gallon UST. Elevated concentrations of gasoline range organics (GRO) were detected in samples collected from five borings. In addition, seven petroleum volatile organic compounds (PVOCs) were detected in a sample collected from one boring, and six PVOCs were detected in a sample collected from a second

N91 W17194 Appleton Avenue, Menomonee Falls, WI 53051 ♦ Telephone: (414) 253-1440

PO Box 610, Minocqua, WI 54548 ♦ Telephone: (715) 358-7018

boring. Based on the laboratory analyses, we concluded approximately 450 cubic yards (675 tons) of petroleum-contaminated soils require remediation.

Also during the RI, a groundwater sample was collected from a groundwater monitoring well constructed in the vicinity of the common cavity (within the area of soil contamination) and submitted to an independent, certified laboratory for analyses. GRO, volatile organic compounds (VOCs), and lead were not detected in the groundwater sample; however, slightly elevated concentrations of diesel range organics (DRO) were detected in the sample.

Soil Remediation Alternatives

In accordance with ILHR 47, we evaluated passive bioremediation as a soil remediation alternative. Passive bioremediation is not considered an appropriate remediation alternative due to the low permeability of the clay soils on-site.

Due to the clay soils on-site, in-situ remediation alternatives are not considered feasible. Consequently, we evaluated three ex-situ soil remediation alternatives: soil excavation with either on-site bioremediation, on-site thermal treatment, or landfill disposal. The estimated costs for these remediation alternatives are presented in Table 1.

TABLE 1
Soil Remediation Costs

Alternative	Estimated Cost
On-site bioremediation	$63,200
On-site thermal treatment	$57,000
Landfill disposal	$51,400

Landfill disposal is the least costly, most feasible remediation alternative considered. Mr. Jim Delwiche of the DNR has verbally approved this remediation alternative. A detailed cost for landfill disposal is presented in Table 2.

TABLE 2
Remediation Costs — Landfill Disposal

Task	Estimated Cost
Soil excavation and transportation to landfill	$ 8,100
Landfill disposal	$22,000
Laboratory analysis	$ 2,300
Backfilling	$ 4,200
Consulting documentation	$12,500
Total	$51,400

Groundwater Remediation Alternatives

The removal of the petroleum-contaminated soils will likely result in a significant improvement in groundwater quality. Consequently, groundwater quality will be monitored following the completion of soil remediation. Because the existing monitoring well will likely be removed during soil excavation, a replacement well will be constructed in the area of soil removal. If monitoring indicates groundwater remediation is necessary, remedial alternatives will then be considered. The cost for 1 year of quarterly groundwater monitoring is presented in Table 3.

TABLE 3
Groundwater Monitoring Costs

Task	Estimated Cost
Monitoring well construction	$1,000
Laboratory analysis	$10,250
Consulting documentation	$12,500
Total	$23,750

The total cost for soil remediation and groundwater monitoring is estimated to be $75,150. Included in this total estimate is $25,000 for consulting services. If you have any questions or concerns regarding these alternatives, please feel free to call.

Respectfully,

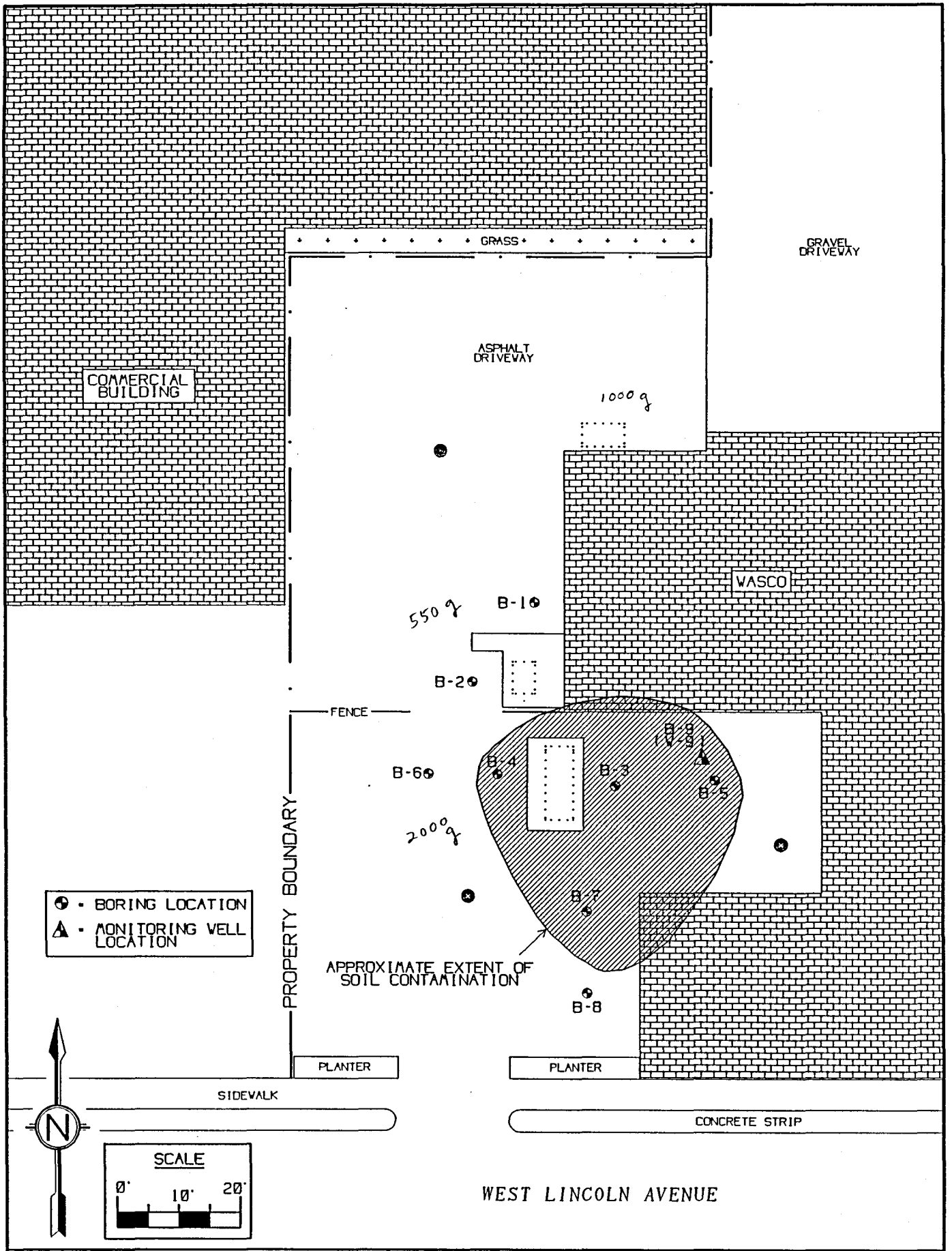
DRAKE Environmental, Inc.

Jeffrey G. Tracy
Assistant Level Geologist

Michael D. Frede, P.E.
Principal Level Engineer

cc: Mr. Jim Delwiche, DNR
Mr. Bob Zidar

Attachment
13/J93169G



DRAKE Environmental, Inc. ENGINEERING CONSULTANTS	PROJECT NUMBER J93169 DRAWN BY AJO DATE: 09/09/93	WASCO PROPERTY RI SITE DIAGRAM	FIGURE 1

[redacted]is form to:
[redacted]consin Department of Natural Resources
[redacted]k Response Unit - Annual Report SW/3
[redacted] Box 7921
[redacted]adison, WI 53707

ANNUAL SITE STATUS FORM
LEAKING UNDERGROUND STORAGE TANK (LUST) SITE
Form 4400-161 5-93

INSTRUCTIONS: The information on this form will be used to monitor progress on site clean up, and to determine whether action by the Department is necessary to attain compliance with s. 144.76, Wis. Stats., Hazardous Substance Spills. Personally identifiable information on this form will be used by the Department for no other purpose. This voluntary form is for actions taken in the preceding calendar year. Actions taken at LUST sites in other years are not to be included, unless specified below. A separate form is to be completed for each site. This form is to be completed in addition to technical reports which have been submitted to the Department.

SED-2703 241558130

SITE IDENTIFICATION

Site Name: CRC PLASA Lincoln Ave	Site Owner's Name: Robert & Sandra Zidan
Site Address: 5116 W. Lincoln Ave	Site Owner's Telephone Number: (414) 649-2000
City, State, Zip Code (Site Address): WEST Allis, Wi 53219	Environmental Consulting Firm: DAMES & MOORE
County in Which Site is Located: Milwaukee	DNR Site Identification Number: WPD982204620 (from DNR correspondence)

SITE STATUS - Check all which apply, enter yards and gallons in the spaces provided. **Definitions are on back of page.**

___ Field Investigation - This site was still being investigated in the preceding calendar year to identify the extent of contamination.

___ Soil Excavation in preceding calendar year.
(Indicate cubic yards for each below.)

80 yds^3 Landfilled
___ yds^3 Mixed into asphalt
___ yds^3 Thermal treatment process ("incineration")
___ yds^3 Thinspead
___ yds^3 Excavated and placed into active bioremediation
___ yds^3 Landspread (Ch. NR 518, Wis. Adm. Code)
___ yds^3 Placed in a stockpile awaiting treatment or disposal
___ yds^3 Other: ___

___ In-situ (in place) Soil Treatment in preceding calendar year.
(Indicate systems active in 1992, regardless of the year started.)

___ (est.) yds^3 Soil vapor extraction system
___ (est.) yds^3 Natural (passive) contaminant biodegradation
___ (est.) yds^3 Active bioremediation
___ (est.) yds^3 Other: ___

___ Groundwater Treatment in preceding calendar year

___ gals. Pumped and airstripped
X gals. Pumped and other aboveground treatment
Type of treatment unit - NATIONAL TANK Service
___ (est.) gals. Air sparging
___ (est.) gals. Active groundwater bioremediation
___ gals. Other: ___

___ Free Product Recovery - 0 gallons of petroleum product were removed from the water table at this site in the preceding calendar year.

Signature: Robert Zidan Date Signed: 6/23/93

X Site owner
___ Other (indicate your relationship to this site) ___

Please use this space and the back of the page to provide any additional information you would like the Department to have regarding the status of this site.

Thank You.

Definitions:

FIELD INVESTIGATION - The initial investigation to determine the extent and degree of contamination in soil and groundwater was in progress.

SOIL EXCAVATION - Contaminated soil was excavated and stored, treated or disposed. This may be a partial or total response to contamination. This definition does not include removal of clean tank backfill material. Enter the cubic yards of soil which went to each destination.

LANDFILLED - Excavated contaminated soil was disposed of at a licensed landfill.

MIXED INTO ASPHALT - Excavated contaminated soil was mixed into asphalt as a plant which is permitted to accept petroleum contaminated soil.

THERMAL TREATMENT - Excavated contaminated soil was treated in a unit which heats soil to volatilize contaminants and controls emissions of contaminants to the atmosphere.

THIN SPREAD - Excavated contaminated soil was spread on an impermeable surface and remediated by exposure to the atmosphere and naturally occurring microbes.

ACTIVE BIOREMEDIATION - Oxygen and/or nutrients were added to soil or groundwater to promote the breakdown of contaminants by microbes. Active bioremediation may be an in-situ or ex-situ treatment method.

LANDSPREAD - Excavated contaminated soil was spread on the land surface to promote natural degradation of the contaminants through exposure to the atmosphere and naturally occurring microbes. Landspreading must be conducted in accordance with the requirements of Ch. NR 518, Wis. Adm. Code.

IN-SITU TREATMENT - Contaminated soil and/or groundwater was remediated without removal from its original location. Soil vapor extraction is an example of in-situ soil treatment.

SOIL VAPOR EXTRACTION - A system consisting of vapor recovery wells, pumps and, in some cases, an off-gas treatment system, was installed to remove contamination from the soil.

NATURAL BIODEGRADATION - The rate of natural breakdown of petroleum compounds by naturally occurring microbes in soil or groundwater was monitored.

GROUNDWATER TREATMENT - Contaminated groundwater was treated in compliance with applicable state and federal requirements to remove contaminants.

PUMPED AND AIRSTRIPPED - Contaminated groundwater was pumped from the aquifer and treated to remove the contaminants by mixing the water with air in a tower or other structure.

AIR SPARGING - Air was injected into the aquifer to move dissolved contaminants from groundwater into the air. Air sparging is usually used in conjunction with soil vapor extraction.

FREE PRODUCT - Liquid petroleum which was floating on the water table was removed by pumping.

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Carroll D. Besadny, Secretary
Box 12436
Milwaukee, Wisconsin 53212
TELEFAX NO. 414-263-8483

September 30, 1992

File Ref: 4440-2703
County: Sheboygan
ER-LUST

Mr. Robert Zidar
2121 South 55th Street
West Allis, WI 53013

Dear Mr. Zidar:

RE: CRC - Wasco - 5116 W. Lincoln Avenue, West Allis, WI

Wisconsin Department of Natural Resources (WDNR) has been notified that petroleum contamination was discovered September 24, 1992 at the above referenced location. Based on the site specific information provided, this case has been assigned to the Medium Priority Rank group. The purpose of this letter is to inform you of your legal responsibilities to address this situation.

Releases from underground storage tanks regulated under Subtitle I of the Resource Conservation and Recovery Act require compliance with the provisions of 40 CFR Parts 280 and 281. The Environmental Protection Agency (EPA) has the authority to take enforcement action at any time, but will generally not take action against parties cooperating with the state. The WDNR proceeds in LUST cases under the authority of s. 144.76, Wisconsin Statutes, commonly referred to as Wisconsin's Hazardous Substance Spill Law. The definition of "hazardous substance" as found in s. 144.01(4m), Wisconsin Statutes, includes petroleum products.

> Wisconsin Statute 144.76(2a) states: "A person who possesses or controls a hazardous substance which is discharged or who causes the discharge of a hazardous substance shall notify the Department immediately of any discharge not exempted under sub.(9)."
>
> Wisconsin Statute 144.76(3) states: "A person who possesses or controls a hazardous substance which is discharged or who causes the discharge of a hazardous substance shall take the actions necessary to restore the environment to the extent practicable and minimize the harmful effects from the discharge to the air, lands, or waters of this state."

Because you possess or control a hazardous substance which has been released to the environment, the Department identifies you as the party responsible for taking the actions necessary to restore the environment. You are required to:

1. Immediately notify the WDNR Spills Hotline at (414) 263-8491 should emergency conditions involving explosive vapors and/or well contamination develop.

2. Conduct an investigation to determine the extent of soil and groundwater contamination.

3. Remediate all of the environmental impacts caused by this situation.

4. Sample private water supply wells which may have been impacted by the release.

The Department suggests that you have a qualified environmental engineer or hydrogeologist direct the remedial investigation, assess the environmental impact, and coordinate the implementation of a cleanup program. Within 15 days of receiving this letter, you should provide the WDNR with the date the remedial investigation will begin.

The Department requires that the location of the tank and/or release be submitted with the work plan. **Requirements for location are Latitude, Longitude, 1/4, 1/4, Township, and Range (east or west).**

Final documentation of the investigation and cleanup should be prepared according to the guidance enclosed and sent to this office on completion of compliance with all applicable federal, state and local laws and regulations. Remedial actions must adequately cleanup contaminated soil and/or groundwater to current WDNR guidelines and/or standards. All product, soil, wastewater, and sludge must be disposed of in compliance with all applicable federal, state and local laws and regulations. Because the Department is experiencing a backlog of leaking underground storage tank cases of emergency status and your case is not currently ranked as an emergency, your submittals will be reviewed as time permits. Investigation and cleanup should not, however, be delayed pending WDNR review of your case.

The WDNR requests that concise LUST project updates be submitted every six months for all medium priority sites; biannual updates will enable WDNR project managers to monitor the status of remedial investigations and/or corrective actions on projects which are not under direct WDNR oversight.

You are encouraged to contact the Department of Industry, Labor, and Human Relations (DILHR), the state agency that administers the Petroleum Environmental Cleanup Fund (PECFA). This fund may reimburse you for eligible costs associated with the remedial investigation and cleanup. DILHR should be contacted at (608) 267-4545 to obtain current information regarding the PECFA program.

Please be aware that your ability to utilize PECFA funds will be dependent on your cooperation in adequately addressing this problem.

Sincerely,

Giselle Red

Giselle Red
Program Assistant, Environmental Repair Section

Enclosures: Remedial Investigation Checklist
Application to Treat or Dispose of Petroleum Contaminated Soil

c: Brenda Boyce - Dames & Moore
SED Case File

241 558130

#2703

Department of Natural Resources

LEAKING UNDERGROUND STORAGE TANK (Case Tracking)
Form 4400-146
3-91

Site Name: CRC - Wasco
Concrete Raising Company

PMN: _____ FID: 241558130

Proj Mgr: Jim Delwiche

Support Person: _____

District: SED County: Milwaukee

Address: 5116 W. Lincoln
West Allis, WI 53219

Legal Municipality: West Allis

Legal Desc: SW 1/4 SW 1/4 Sec 2 T 6N R 21 (E)W

Date of Initial Contact: 9 / 24 / 92 Date of Letter: 9 / 30 / 92 Date Site Closure Approved: 2 / 10 / 95

Status
_____ 1 = State Lead
✓ 2 = RP Lead

Priority Screening
_____ 1 = High
✓ 2 = Medium 9/24/92 SD
_____ 3 = Low
_____ 4 = Unknown

Score: _____ . _____

Funding Source
✓ 1 = RP
_____ 2 = LTF
_____ 3 = EF
_____ 4 = SF
_____ 5 = None
_____ 6 = Other (Describe In Comments)
_____ 7 = EPA (Emergency Resp)

PECFA Review Requested
(√) ✓ Yes _____ No

Date PECFA Request Received
(mm/dd/yy) 4 / 15 / 94

Lust Trust Eligible
_____ 1 = Federal
_____ 2 = Non-Federal

CASE STATUS

(√) As Appropriate	Date Initiated (mm/dd/yy)	Date Completed (mm/dd/yy)	Comments
_____ No Action Taken (N)			
_____ Emergency (E)	/ /	/ /	TANK-YANK
_____ Emergency Response (R)	/ /	/ /	
_____ Field Investigation (I)	/ /	/ /	1 550 gas
_____ Remedial Action (C)	/ /	/ /	1 2000 gas
_____ Long Term Monitoring (L)	/ /	/ /	

(√) All Appropriate	Known Impacts (√)	Potential Impacts (√)
_____ Fire/Explosion Threat (1)		
_____ Contaminated Private Well (2)		
_____ Contaminated Public Well (3)		
_____ Groundwater Contamination (4)		
✓ Soil Contamination (5)	✓	
_____ Other: (6) _____		

Substances (√)
_____ Leaded Gas(1)
X Unleaded Gas (2)
_____ Diesel (3)
✓ Fuel Oil (4)
_____ Unknown Hydrocarbons (5)
_____ Other (8) _____
_____ VOCS (6)
_____ Pesticide (7)
Quantity Discharged _____

Responsible party
Name: Mr. Robert Zidar (CRC)
Address: 2121 S 55th St.
West Allis WI 53013
Telephone: (414) / 649-2000
(list additional on separate list and attach.)

Consultant: Daymes + MOORE
Contact: Brenda, Boyce
Address: 250 E. Wisconsin
Suite #1500, Milwaukee 53202
Telephone: 414 / 347-0800

Amount Committed: $_____ . _____

Amount Spent: $_____ . _____
(list additional on separate list and attach.)

ENFORCEMENT ACTION TAKEN

01 = Inf. Contact, Resp Initiated
02 = RP Letter, Resp Initiated
03 = NTC of Non Compliance
04 = Inf. Enf. Conf, Resp Initiated
05 = Follow-up Enf. Conf, Resp Initated
06 = Inspection Letter
07 = Response Received
08 = Adequate Response
09 = Progress Being Made
10 = Defer Enforcement
11 = Close Out
12 = Recommend NFA
13 = FWD to Secondary Enf
14 = Notice of Violation
15 = Formal Enf Conf
16 = Enf Conf. Letter
17 = Admin. Order Proposed
18 = Admin. Order Final
19 = Admin. Order Modified
20 = Admin. Order Cancelled
21 = Contest Case Hearing
22 = Draft Referral
23 = Referral to DOJ
24 = Referral to DA
25 = Referral to EPA
26 = Continuing Violation
27 = See Next Violation
28 = Site Inspection
99 = Other Action: _____

ACTION (code from above)	DATE (mm/dd/yy)	COMMENT
01	9 / 24 / 92	Initial Contact Date
02	9 / 30 / 92	RP letter

(list additional on separate list and attach.)

LUST CASE PRIORITY SCREENING WORKSHEET

HIGH FACTORS: (DEFINITION: Any case which presents an actual threat to human health, or has a high potential of causing a threat to human health and property; and/or any case which has caused or has a high potential of causing substantial impacts to the soil waters and air of the State of Wisconsin.)

____ Contaminated private or public well >NR140 enf. std.
____ Explosive or toxic vapors in structures
____ Threat of fire

HIGH OR MEDIUM FACTORS: (write in choice of high or medium)
____ Floating product (medium if no receptors within 1 mile)
____ Known gw contamination (private or public well <140 enf. std.)
____ Impacted surface water - -wetland, trout stream, etc. impacted
____ Saturated soil contamination

MEDIUM FACTORS: (DEFINITION: Any case which does not appear to be an immediate threat to human health or vital natural resources but which shows levels of contamination that may cause substantial environmental impacts if left unaddressed.)

____ Moderate (e.g. 100 - 500 ppm TPH) soil contamination with moderate potential for impacting groundwater.
____ Impacted surface water - - no critical habitat threats.

LOW FACTORS: DEFINITION: Any case where contamination has been documented, but which presents limited potential for any immediate threat to human health and vital natural resources.)

____ Soil contamination (e.g. less than 100 ppm TPH) which appears to have a limited potential for impacting groundwater.
____ Initial remedial action has substantially reduced environmental threat.

UNKNOWN FACTOR: (DEFINITION: Any case where some indication of contamination is present, but due to incomplete or inaccurate information the level of threat to human health or the environment can not be assessed at this time.)

____ Inadequate information to assign a high, medium, or low ranking.

OVERALL RANKING: The screening rank for the site along with the date of ranking. This may be updated when additional information is received. Special circumstances for a particular case may be taken into account in the comment section. The District LUST coordinator may independently set the ranking of a site based upon "special circumstances."

Circle one & date, indicate in priority screening box opposite side _____ HIGH ____✓____ MEDIUM _____ LOW _____ UNKNOWN

Overall Site Comment: 9/24/92 SD

NUMERICAL LUST SCORING WORKSHEET (Complete for LUST cases ranked HIGH)

1. GROUNDWATER & SOILS: (circle one)

POINTS	
20	Municipal Well
18	>5 private wells
16	4 - 6 private wells
14	2 - 3 private wells
12	1 private well
8	Soil & gw within 1200' of a public well
6	Soil & gw within 1200' of one or more private wells
4	GW contamination, no wells within 1200'
2	Soil contamination

_____ SCORE

*For purposes of this scoring, private well includes any non-municipal water supply system.

2. EXPLOSIVE OR TOXIC VAPORS: (circle one)

POINTS CONFIRMED	POTENTIAL	
20	10	Explosive levels in a residence or building
	8	Explosive levels in a sewer or structure
12	6	Toxic levels in a residence or building

NOTE: Explosive levels determined to be >20% LEL as per an explosivity meter; toxicity levels are based on OSHA permissible exposure limits (PEL)

_____ SCORE

3. HYDROGEOLOGIC SETTING: (circle one)

POINTS	
12	Permeable stratigraphy (gravel, sand, fractured bedrock or utilities capable of intercepting and directing flow) and groundwater within 25 feet of the ground surface.
10	Permeable stratigraphy and groundwater greater than 25 feet below ground surface.
8	Moderately permeable stratigraphy (silty sands, silty gravel, clayey sands) and groundwater within 25 feet of ground surface .
6	Moderately permeable stratigraphy and groundwater greater than 25 feet below ground surface.
4	Impermeable stratigraphy (silt, clayey silt, sand clays) and groundwater within 25 feet of ground surface.
2	Impermeable stratigraphy and groundwater greater than 25 feet below ground surface.

_____ SCORE

4. TYPE OF PRODUCT: (circle one)

POINTS	
8	Gasoline, mixture of gasoline and other products, other light petroleum products.
6	Diesel, fuel oil.
2	Bunker oil, other heavy oils or crude fractions.

FID: 241558130 WASCO PROP. 5116 W. LINCOLN
ERR LUST

List Additional Responsible Party Names Here:

Responsible Party Name: _____ Responsible Party Name: _____
Address: _____ Address: _____
Phone: / Phone: /

Responsible Party Name: _____ Responsible Party Name: _____
Address: _____ Address: _____
Phone: / Phone: /

List Additional Consultants Here:

Consultant: Drake Environmental Consultant: _____
Contact: Jeff Tracy Contact: _____
Address: N80 W14824 Appleton Ave. Address: _____
Menomonee Falls, WI 53051
Phone: 414 253-1440 Phone: /
Amount Committed: $_____.____ Amount Spent: $_____.____ Amount Committed: $_____.____ Amount Spent: $_____.____

List Additional Enforcement Actions Here:

Action Code	Date (mo/day/yr)	Comment
37	11 / 8 / 93	
39	11 / 8 / 93	
41	3 / 24 / 94	
99	8 / 9 / 94	LETTER SUBMITTED
45	2 / 8 / 95	
	/ /	
	/ /	
	/ /	
	/ /	
	/ /	
	/ /	
	/ /	
	/ /	
	/ /	
	/ /	
	/ /	
	/ /	
	/ /	
	/ /	

Additional Site Comments:

two tanks / 550
/ 2000

NO GW but high PID
2000 – 1900 readings in
tank # 2 2000

Raining during tank 1 removal
(no PID)

Tank #2 removal down
to 8.0 ft
between 5-6 feet contamination
seems to pancake out
smell (oder) bad

Medium due to high PID 1900

9/24/92 SD