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MPCA, HAZARDOUS
WASTE DIVISION

QUARTERLY GROUNDWATER SAMPLING/
MONITORING REPORT
LEISURELAND RV
EAST GRAND FORKS,MINNESOTA
5300 94-34
LEAK #5934
Phone #: (218) 773-9711

NOVEMBER 28, 1994

Huntingdon

Huntingdon

ENGINEERING & ENVIRONMENTAL, INC.
2105 7th Avenue North
Fargo, ND 58102
Phone: (701) 235-4256
Fax: (701) 235-0807

NOVEMBER 28, 1994

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MPCA, HAZARDOUS
WASTE DIVISION

AMERICAN FEDERAL SAVINGS BANK
124 DEMERS AVENUE
EAST GRAND FORKS, MN 56721-0638

Attn: Mr. David Fisher, Vice President

Subj: Quarterly Reporting
Leisureland RV
East Grand Forks, MN
5300 94-34

Enclosed, please find a copy of the quarterly report associated with the second groundwater sampling and monitoring event at the above referenced site.

Also included, please find an Approval for Release form. Upon review of the quarterly report, please sign and date the Approval for Release and return to our office in the envelop provided. Upon receipt, we will then submit the report to the MPCA for their review.

The next quarterly groundwater sampling event (3rd quarterly event) is scheduled to take place in December, 1994.

If you have any questions concerning this project please feel free to contact us at 701-235-4256.

HUNTINGDON ENGINEERING AND ENVIRONMENTAL

for Brad J. Torgerson
Environmental Scientist

Enc.
LEISURQT

Copy 3 of 4

COPY

APPROVAL FOR RELEASE

Project: Quarterly Report
Leisureland RV
East Grand Forks, MN
November 28, 1994

Report: #5300 94-34
Date: November 28, 1994

As the addressee of the above referenced reports and the client of record for the above referenced project, I hereby give my permission for the release of the above referenced reports to the agencies referenced in the subject report.

Client: AMERICAN FEDERAL SAVINGS BANK

Authorized Signature: David A Fisher

Typed Name: DAVID A FISHER

Title: VICE PRESIDENT

Company: AMERICAN FEDERAL SAVINGS BANK

Date: 12-7-94

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SITE MONITORING WORKSHEET
Fact Sheet #7
Minnesota Pollution Control Agency
LUST Cleanup Program
April 1993

The Minnesota Pollution Control Agency (MPCA) staff expect this worksheet to simplify the required post-investigation site monitoring reports. Submit this worksheet:

* quarterly, after the remedial investigation (RI) is complete but before corrective action is taken;

* quarterly, during corrective action design (CAD) installation; and

* quarterly, after CAD is operational, along with "CAD System Monitoring Worksheet," (fact sheet #11).

Completion and submittal according to the above schedule fulfills your quarterly site monitoring report requirements. You may include a short cover letter whenever circumstances require. However, you must still submit an annual progress report as described in "Petroleum Tank Release Reports" (fact sheet #3). [NOTE: MPCA staff may reduce the frequency of progress reporting on a site specific basis.]

Where attachments are requested (tables, maps, graphs, etc.), please check off those items attached. The only table not mandatory is that for dissolved oxygen.

MPCA Leak Number: 00005934

I. Ground Water Monitoring

Please attach the following:

✓ Cumulative table of ground water monitoring results, including all sample blanks.
✓ Copies of most recent laboratory reports for ground water analyses, including a copy of the Chain of Custody.
✓ Cumulative table of ground water elevation and product thickness results.
✓ Hydrograph for all monitoring and recovery wells.
✓ Graphs(s) showing contaminant concentrations over time for all monitoring and recovery wells. (GRO) - BTEX concentrations were too low to indicate useful data.
✓ Ground water contour map based on the most recent ground water elevation data.
NA Table of dissolved oxygen sample results (if collected)

Please describe unusual circumstances that may have influenced the sampling results:

None

Please detail significant observations made at the site:

None

II. Vapor Impact Monitoring

If vapor impacts were detected during the remedial investigation, please attach:

NA a cumulative table of vapor monitoring results. The table should identify the location of all vapor monitoring points (i.e., sewer manholes, basements, etc.)

NA a map of vapor monitoring locations.

Sampling instrument:_
Sampling method:_

NOTE: If vapor concentrations exceed 10 percent of the lower explosive limit, exit the building and contact the local fire department immediately. Then contact the MPCA spills unit at voice 612/297-8610, TDD 612/297-5353 or Greater Minnesota TDD 1-800-627-3529.

Vapor mitigation is required.

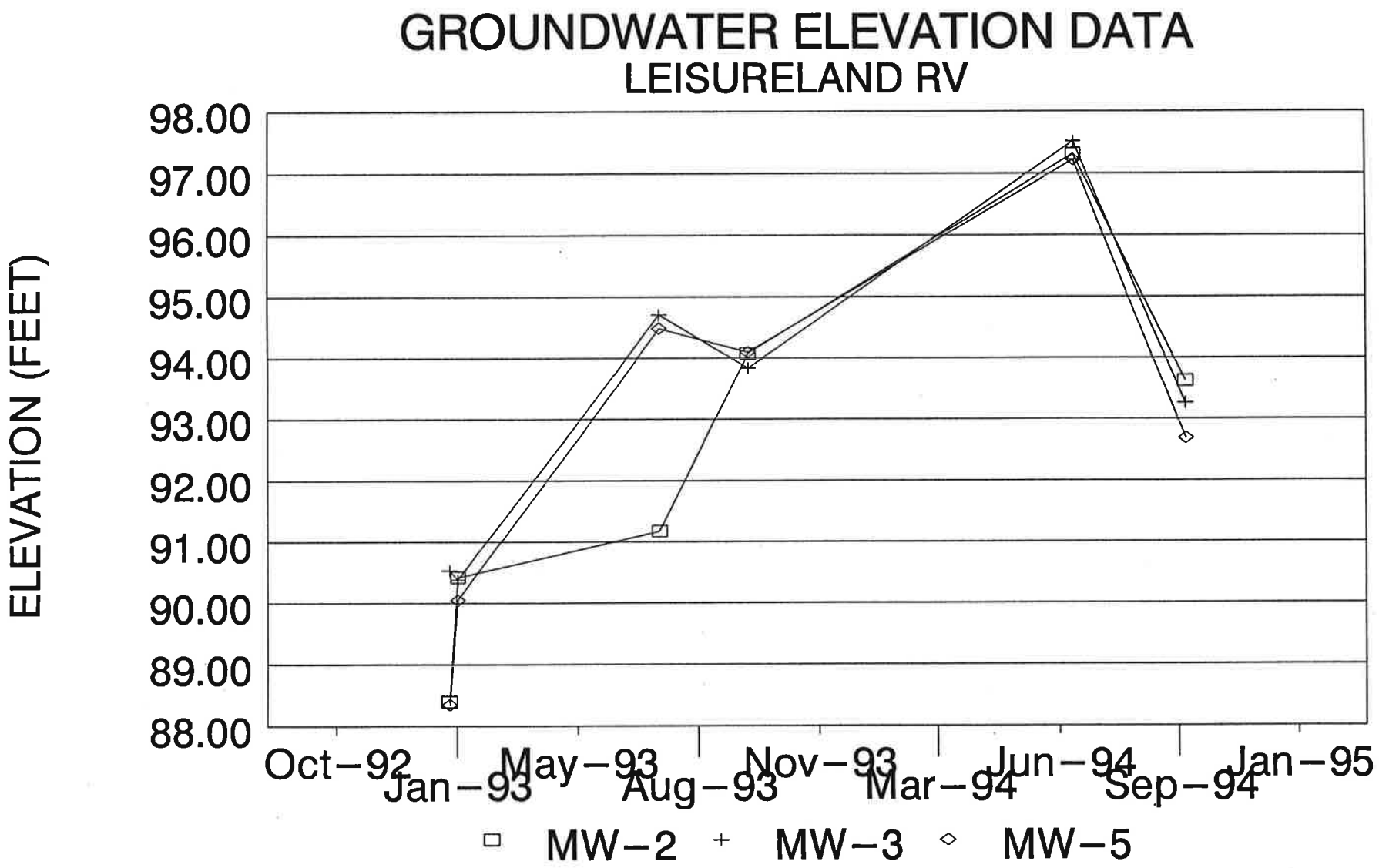
III. Recommendations

Use this space to detail any recommendations for modifying the current monitoring schedule:
None

Groundwater Elevation Data
Leisureland RV
East Grand Forks, Minnesota
Huntingdon # 5300 94-34

DATA	MW-2	MW-3	MW-5
Reference Elev. (FT)	99.22	99.66	99.48
TOS Elev.	94.22	94.66	94.48
BOS Elev.	79.22	79.66	79.48
1-25-93	88.41	90.53	88.36
2-1-93*	90.42	90.38	90.05
7-18-93*	97.17	94.71	94.49
9-30-93	94.08	93.84	94.10
6-28-94*	97.32	97.52	97.22
9-29-94*	93.63	93.26	92.70

Reference elevation and groundwater elevations are measured from the top of riser.
TOS = Top of Screen BOS = Bottom of Screen
* = Groundwater sampling events


GROUNDWATER ELEVATION DATA
LEISURELAND RV
ELEVATION (FEET)
98.00
97.00
96.00
95.00
94.00
93.00
92.00
91.00
90.00
89.00
88.00
Oct-92
Jan-93
May-93
Aug-93
Nov-93
Mar-94
Jun-94
Sep-94
Jan-95
MW-2
MW-3
MW-5

GROUNDWATER ANALYTICAL RESULTS

	BENZ (*)	TOL (*)	ETH BENZ (*)	XYL (*)	MTBE (*)	DRO	GRO (**)	LEAD	n-B	1,4	ISO	n-P	TET	1,2,4	1,3,5	METCH
MW-2																
(***)2-1-93	ND	ND	0.003	ND	ND	--	0.110	ND	0.002	ND	ND	ND	ND	ND	0.005	ND
7-18-93	0.001	0.021	0.015	0.009	ND	--	0.180	ND	0.001	ND	0.002	0.004	ND	0.005	0.002	ND
6-28-94	0.001	ND	0.003	0.002	ND	ND	0.120	ND	ND	--	ND	ND	ND	0.001	0.001	ND
9-29-94	0.006	0.011	0.046	0.002	ND	ND	0.320	ND	ND	--	0.006	0.012	ND	0.001	0.004	ND
MW-3																
2-1-93	ND	ND	ND	ND	ND	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
7-18-93	ND	ND	ND	ND	ND	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
6-28-94	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	ND	ND	ND	ND	ND	ND
9-29-94	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	ND	ND	ND	ND	ND	0.003
MW-5																
2-1-93	ND	ND	ND	ND	ND	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
7-18-93	ND	ND	ND	ND	ND	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
6-28-94	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	ND	ND	ND	ND	ND	ND
9-29-94	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	ND	ND	ND	ND	ND	0.001

BENZ = Benzene TOL = Toluene ETH BENZ = Ethylbenzene XYL = Xylenes n-B = n-Butylbenzene 1,4 = 1,4 Dichloroethane Iso =Isopropylbenzene
n-P = n-Propylbenzene TET = Tetrachloroethene 1,2,4 = Trimethylbenzene 1,3,5 = 1,3,5 Trimethylbenzene METCH = Methylene chloride
(*) = Analyzed by MNDH Method 465D (**) = Analyzed by the Wisconsin GRO method (***) = "unidentified high boiling hydrocarbons" noted in sample
All units listed in mg/l = ppm (parts per million)
N/A = Not Applicable -- = Parameter not analyzed ND = Not Detected

RAL = Recommended Allowable Limits for Drinking Water Standards PQL = Practical Quantitation Limit LDL = Lower Detectable Limit

	BENZ (*)	TOL (*)	ETH BENZ (*)	XYL (*)	MTBE (*)	DRO	GRO	LEAD	n-B	1,4	ISO	n-p	TET	1,2,4	1,3,5	METCL
Method Blank																
2-1-93	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	ND	ND
7-18-93	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	ND	ND
6-28-94	ND	ND	ND	ND	ND	--	ND	--	ND	--	ND	ND	ND	ND	ND	ND
9-29-94	ND	ND	ND	ND	ND	--	ND	--	ND	--	ND	ND	ND	ND	ND	ND
Bailer Blank																
2-1-93	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	ND	ND
7-18-93	ND	ND	ND	ND	ND	--	ND	--	ND	0.001	ND	ND	0.002	ND	ND	ND
6-28-94	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	ND	ND
9-29-94	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	ND	0.002
Trip Blank																
2-1-93	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	ND	NA
7-18-93	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	ND	NA
6-28-94	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	ND	NA
Duplicate (MW-5)																
6-28-94	ND	ND	ND	ND	ND	--	ND	--	ND	--	ND	ND	ND	ND	ND	ND
(MW-2)																
9-29-94	0.002	0.005	0.027	0.003	ND	--	0.250	--	ND	--	0.003	0.008	ND	0.002	0.004	0.003
RAL	0.010	1.00	0.700	10.0	NA	--	NA	0.020	NA	0.010	0.300	NA	0.002	NA	NA	NA
PQL	0.001	0.001	0.001	0.001	0.001	0.30	0.001	NA	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
LDL	NA	NA	NA	NA	NA	NA	NA	0.050	NA	NA	NA	NA	NA	NA	NA	NA

BENZ = Benzene TOL = Toluene ETH BENZ = Ethylbenzene XYL = Xylenes n-B = n-Butylbenzene 1,4 = 1,4 Dichloroethane Iso =Isopropylbenzene
n-P = n-Propylbenzene TET = Tetrachloroethene 1,2,4 = Trimethylbenzene 1,3,5 = 1,3,5 Trimethylbenzene METCH = Methylene chloride
(*) = Analyzed by MNDH Method 465D (**) = Analyzed by the Wisconsin GRO method (***) = "unidentified high boiling hydrocarbons" noted in sample
All units listed in mg/l = ppm (parts per million)
N/A = Not Applicable -- = Parameter not analyzed ND = Not Detected
RAL = Recommended Allowable Limits for Drinking Water Standards PQL = Practical Quantitation Limit LDL = Lower Detectable Limit

GROUND WATER ELEVATION AND SAMPING DATA SHEET

Project: Leisureland RV, East Grand Forks, MN Project Number: 5300 94-34 Sampling Method: Bailer

Date: 9-29-94 Measurements Taken By: Brad Torgerson Pump Discharge Rate: NA

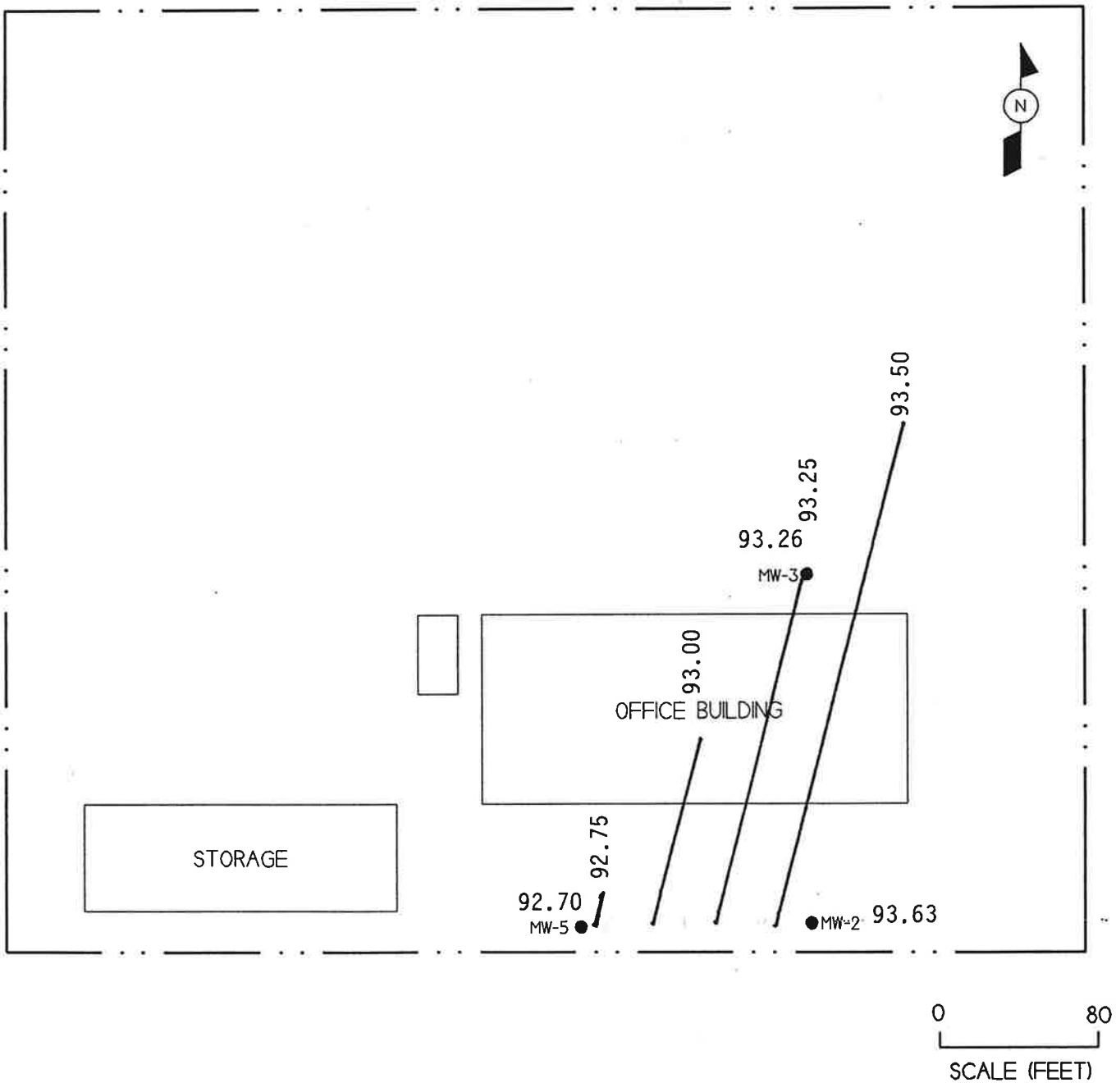
Measuring Device: Slope Indicator Weather Conditions: Clear and Sunny, 64° degrees

Well No.	Time	Depth to G.W. (TOR)	Reference Elevation (TOR)	G.W. Elevation (TOR)	Well Depth (TOR)	Dissolved Oxygen ppm	1 well Volume (gal.)	Volume Removed (gal.)	Product Odor	Product Sheen	Comments
MW-2	9:34	5.59	99.22	93.63	20	NA	2.4	8.5	NONE	NONE	BAILED TO 18.5 FEET BELOW TOR
MW-3	9:26	6.40	99.66	93.26	20	NA	2.2	8.5	NONE	NONE	BAILED TO 18.0 FEET BELOW TOR
MW-5	9:32	6.78	99.48	92.70	20	NA	2.1	8.0	NONE	NONE	BAILED TO 18.20 FEET BELOW TOR

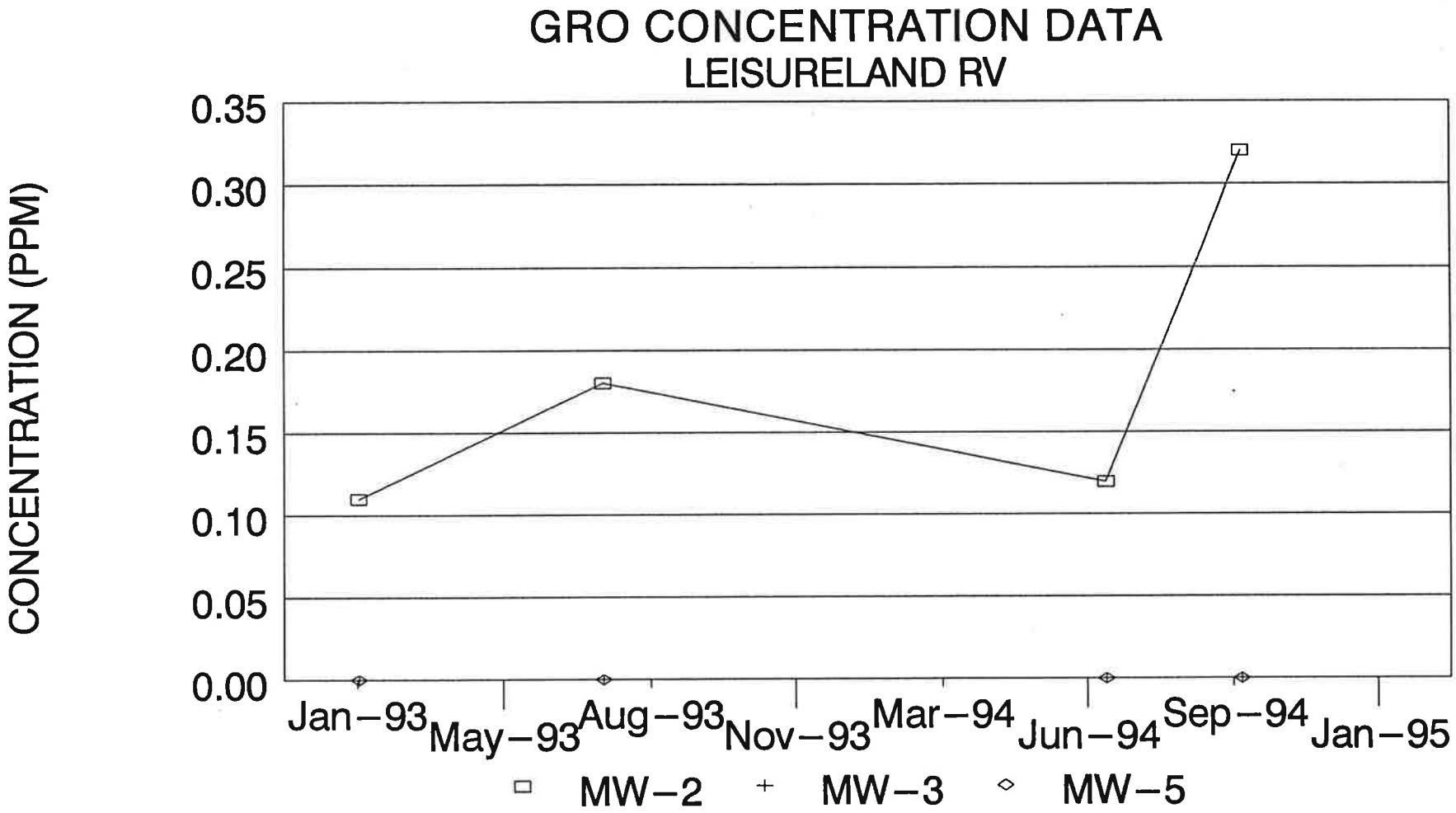
Notes: TOR = Top of riser, MW = monitoring well

Huntingdon
Consulting Engineers Environmental Scientists

HIH



TITLE: FIGURE 1 - 9-29-94 GROUNDWATER FLOW MAP 1819 CENTRAL AVENUE EAST GRAND FORKS, MINNESOTA	PROJECT #: 5300 94-34	SCALE: 1 INCH = 80 FEET
	DRAWN BY: KK	CHECKED BY: BT
	DRAWING NAME:	DATE: 11/22/94


GRO CONCENTRATION DATA
LEISURELAND RV
CONCENTRATION (PPM)
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
Jan-93
May-93
Aug-93
Nov-93
Mar-94
Jun-94
Sep-94
Jan-95
MW-2
MW-3
MW-5

Huntingdon

Huntingdon Engineering & Environmental, Inc.

737 Pelham Boulevard
St. Paul, Minnesota 55114-1739

(612) 659-7600
FAX (612) 659-7515

REPORT OF: CHEMICAL ANALYSES

PROJECT: LEISURELAND RV, 5300-94-34 **DATE:** October 13, 1994

REPORTED TO: HUNTINGDON ENGINEERING & ENVIRONMENTAL, INC.
Attn: BRAD TORGERSON
2105 SEVENTH AVENUE NORTH
FARGO ND 58102-3293

LABORATORY NO: 4411-04-10294
HPN: 10294

INTRODUCTION

This report presents the results of the analyses of five samples received on October 3, 1994, from a representative of Huntingdon-Fargo branch. The scope of our services was limited to the parameters listed in the attached tables.

METHODOLOGY

Analyses are performed according to Huntingdon Standard Operating Procedures. The procedures are based on the references stated in the analytical results tables.

RESULTS

The results are listed in the attached tables.

REMARKS

The samples were collected on September 29, 1994. If samples are not consumed in the analysis, they are held for two months from the date of sample receipt and then disposed, unless written instructions to the contrary are received.

HUNTINGDON ENGINEERING & ENVIRONMENTAL, INC.

Sharon Cenis
Project Manager

Stephanie Kidder
Laboratory Manager

SC/SK/tb

Huntingdon

VOLATILE ORGANIC COMPOUNDS
MNDH METHOD 465D

(All values are in µg/L which is equivalent to parts-per-billion)

Client ID:	METHOD BLANK	METHOD BLANK	
TCT ID:			
Compound:			**PQL**
Acetone	ND	ND	25
Allyl Chloride	ND	ND	10
Benzene	ND	ND	1
Bromobenzene	ND	ND	1
Bromochloromethane	ND	ND	1
Bromodichloromethane	ND	ND	1
Bromoform	ND	ND	5
Bromomethane	ND	ND	2
n-Butylbenzene	ND	ND	1
sec-Butylbenzene	ND	ND	1
tert-Butylbenzene	ND	ND	1
Carbon tetrachloride	ND	ND	1
Chlorobenzene	ND	ND	1
Chloroethane	ND	ND	2
Chloroform	ND	ND	1
Chloromethane	ND	ND	5
2-Chlorotoluene	ND	ND	1
4-Chlorotoluene	ND	ND	1
1,2-Dibromo-3-chloropropane	ND	ND	5
Dibromochloromethane	ND	ND	1
1,2-Dibromoethane	ND	ND	2
Dibromomethane	ND	ND	1
1,2-Dichlorobenzene	ND	ND	1
1,3-Dichlorobenzene	ND	ND	1
1,4-Dichlorobenzene	ND	ND	1
Dichlorodifluoromethane	ND	ND	5
1,1-Dichloroethane	ND	ND	1
1,2-Dichloroethane	ND	ND	1
1,1-Dichloroethene	ND	ND	1
cis-1,2-Dichloroethene	ND	ND	1
trans-1,2-Dichloroethene	ND	ND	1
Dichlorofluoromethane	ND	ND	2
1,2-Dichloropropane	ND	ND	1
1,3-Dichloropropane	ND	ND	1
2,2-Dichloropropane	ND	ND	1
1,1-Dichloropropene	ND	ND	1
cis-1,3-Dichloropropene	ND	ND	1
trans-1,3-Dichloropropene	ND	ND	1
Ethyl Ether	ND	ND	5

(continued)

PQL = Practical Quantitation Limit
ND = Not Detected

Huntingdon

VOLATILE ORGANIC COMPOUNDS (continued)
MNDH METHOD 465D

(All values are in µg/L which is equivalent to parts-per-billion)

Client ID:	METHOD BLANK	METHOD BLANK	
TCT ID:			
Compound:			**PQL**
Ethylbenzene	ND	ND	1
Hexachlorobutadiene	ND	ND	1
Isopropylbenzene	ND	ND	1
p-Isopropyltoluene	ND	ND	1
Methyl Ethyl Ketone	ND	ND	25
Methyl Isobutyl Ketone	ND	ND	25
Methyl-tert-Butyl Ether	ND	ND	1
Methylene chloride	ND	ND	1
Naphthalene	ND	ND	1
n-Propylbenzene	ND	ND	1
1,1,1,2-Tetrachloroethane	ND	ND	1
1,1,2,2-Tetrachloroethane	ND	ND	1
Tetrachloroethene	ND	ND	1
Tetrahydrofuran	ND	ND	25
Toluene	ND	ND	1
1,2,3-Trichlorobenzene	ND	ND	1
1,2,4-Trichlorobenzene	ND	ND	1
1,1,1-Trichloroethane	ND	ND	2
1,1,2-Trichloroethane	ND	ND	1
Trichloroethene	ND	ND	1
Trichlorofluoromethane	ND	ND	2
1,2,3-Trichloropropane	ND	ND	1
Trichlorotrifluoroethane	ND	ND	1
1,2,4-Trimethylbenzene	ND	ND	1
1,3,5-Trimethylbenzene	ND	ND	1
Vinyl chloride	ND	ND	2
o-Xylene, Styrene[1]	ND	ND	1
m-p-Xylenes[1]	ND	ND	1
Surrogate Recoveries:			
2-Fluorochlorobenzene (PID)	94%	100%	
2-Fluorochlorobenzene (HALL)	101%	98%	
Fluorobenzene	102%	92%	
1,1-Dichloropropane	106%	115%	
Date Analyzed:	10/7-8/94	10/10/94	

[1]Compounds not separated by this method.

PQL = Practical Quantitation Limit
ND = Not Detected

Reference: Minnesota Department of Health, Method 465D.

Huntingdon

VOLATILE ORGANIC COMPOUNDS
MNDH METHOD 465D

(All values are in µg/L which is equivalent to parts-per-billion)

Client ID:	MW-3	MW-5	
TCT ID:	41971	41975	
Compound:			**PQL**
Acetone	ND	ND	25
Allyl Chloride	ND	ND	10
Benzene	ND	ND	1
Bromobenzene	ND	ND	1
Bromochloromethane	ND	ND	1
Bromodichloromethane	ND	ND	1
Bromoform	ND	ND	5
Bromomethane	ND	ND	2
n-Butylbenzene	ND	ND	1
sec-Butylbenzene	ND	ND	1
tert-Butylbenzene	ND	ND	1
Carbon tetrachloride	ND	ND	1
Chlorobenzene	ND	ND	1
Chloroethane	ND	ND	2
Chloroform	ND	ND	1
Chloromethane	ND	ND	5
2-Chlorotoluene	ND	ND	1
4-Chlorotoluene	ND	ND	1
1,2-Dibromo-3-chloropropane	ND	ND	5
Dibromochloromethane	ND	ND	1
1,2-Dibromoethane	ND	ND	2
Dibromomethane	ND	ND	1
1,2-Dichlorobenzene	ND	ND	1
1,3-Dichlorobenzene	ND	ND	1
1,4-Dichlorobenzene	ND	ND	1
Dichlorodifluoromethane	ND	ND	5
1,1-Dichloroethane	ND	ND	1
1,2-Dichloroethane	ND	ND	1
1,1-Dichloroethene	ND	ND	1
cis-1,2-Dichloroethene	ND	ND	1
trans-1,2-Dichloroethene	ND	ND	1
Dichlorofluoromethane	ND	ND	2
1,2-Dichloropropane	ND	ND	1
1,3-Dichloropropane	ND	ND	1
2,2-Dichloropropane	ND	ND	1
1,1-Dichloropropene	ND	ND	1
cis-1,3-Dichloropropene	ND	ND	1
trans-1,3-Dichloropropene	ND	ND	1
Ethyl Ether	ND	ND	5

(continued)

PQL = Practical Quantitation Limit
ND = Not Detected

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VOLATILE ORGANIC COMPOUNDS (continued)
MNDH METHOD 465D

(All values are in µg/L which is equivalent to parts-per-billion)

Client ID:	**MW-3**	**MW-5**	
TCT ID:	41971	41975	
Compound:			**PQL**
Ethylbenzene	ND	ND	1
Hexachlorobutadiene	ND	ND	1
Isopropylbenzene	ND	ND	1
p-Isopropyltoluene	ND	ND	1
Methyl Ethyl Ketone	ND	ND	25
Methyl Isobutyl Ketone	ND	ND	25
Methyl-tert-Butyl Ether	ND	ND	1
Methylene chloride	3	1	1
Naphthalene	ND	ND	1
n-Propylbenzene	ND	ND	1
1,1,1,2-Tetrachloroethane	ND	ND	1
1,1,2,2-Tetrachloroethane	ND	ND	1
Tetrachloroethene	ND	ND	1
Tetrahydrofuran	ND	ND	25
Toluene	ND	ND	1
1,2,3-Trichlorobenzene	ND	ND	1
1,2,4-Trichlorobenzene	ND	ND	1
1,1,1-Trichloroethane	ND	ND	2
1,1,2-Trichloroethane	ND	ND	1
Trichloroethene	ND	ND	1
Trichlorofluoromethane	ND	ND	2
1,2,3-Trichloropropane	ND	ND	1
Trichlorotrifluoroethane	ND	ND	1
1,2,4-Trimethylbenzene	ND	ND	1
1,3,5-Trimethylbenzene	ND	ND	1
Vinyl chloride	ND	ND	2
o-Xylene, Styrene[1]	ND	ND	1
m-p-Xylenes[1]	ND	ND	1
Surrogate Recoveries:			
2-Fluorochlorobenzene (PID)	94%	94%	
2-Fluorochlorobenzene (HALL)	98%	97%	
Fluorobenzene	102%	101%	
1,1-Dichloropropane	107%	106%	
Date Analyzed:	10/7/94	10/7/94	

[1]Compounds not separated by this method.

PQL = Practical Quantitation Limit
ND = Not Detected

Reference: Minnesota Department of Health, Method 465D.

Huntingdon

VOLATILE ORGANIC COMPOUNDS
MNDH METHOD 465D

(All values are in µg/L which is equivalent to parts-per-billion)

Client ID:	BAILER BLANK	DUPLICATE	
TCT ID:	41977	41978	
Compound:			PQL
Acetone	ND	ND	25
Allyl Chloride	ND	ND	10
Benzene	ND	2	1
Bromobenzene	ND	ND	1
Bromochloromethane	ND	ND	1
Bromodichloromethane	ND	ND	1
Bromoform	ND	ND	5
Bromomethane	ND	ND	2
n-Butylbenzene	ND	ND	1
sec-Butylbenzene	ND	ND	1
tert-Butylbenzene	ND	ND	1
Carbon tetrachloride	ND	ND	1
Chlorobenzene	ND	ND	1
Chloroethane	ND	ND	2
Chloroform	ND	ND	1
Chloromethane	ND	ND	5
2-Chlorotoluene	ND	ND	1
4-Chlorotoluene	ND	ND	1
1,2-Dibromo-3-chloropropane	ND	ND	5
Dibromochloromethane	ND	ND	1
1,2-Dibromoethane	ND	ND	2
Dibromomethane	ND	ND	1
1,2-Dichlorobenzene	ND	ND	1
1,3-Dichlorobenzene	ND	ND	1
1,4-Dichlorobenzene	ND	ND	1
Dichlorodifluoromethane	ND	ND	5
1,1-Dichloroethane	ND	ND	1
1,2-Dichloroethane	ND	ND	1
1,1-Dichloroethene	ND	ND	1
cis-1,2-Dichloroethene	ND	ND	1
trans-1,2-Dichloroethene	ND	ND	1
Dichlorofluoromethane	ND	ND	2
1,2-Dichloropropane	ND	ND	1
1,3-Dichloropropane	ND	ND	1
2,2-Dichloropropane	ND	ND	1
1,1-Dichloropropene	ND	ND	1
cis-1,3-Dichloropropene	ND	ND	1
trans-1,3-Dichloropropene	ND	ND	1
Ethyl Ether	ND	ND	5

(continued)

PQL = Practical Quantitation Limit
ND = Not Detected

VOLATILE ORGANIC COMPOUNDS (continued)
MNDH METHOD 465D

(All values are in µg/L which is equivalent to parts-per-billion)

Client ID:	BAILER BLANK	DUPLICATE	
TCT ID:	41977	41978	
Compound:			PQL
Ethylbenzene	ND	27	1
Hexachlorobutadiene	ND	ND	1
Isopropylbenzene	ND	3	1
p-Isopropyltoluene	ND	ND	1
Methyl Ethyl Ketone	ND	ND	25
Methyl Isobutyl Ketone	ND	ND	25
Methyl-tert-Butyl Ether	ND	ND	1
Methylene chloride	2	3	1
Naphthalene	ND	ND	1
n-Propylbenzene	ND	8	1
1,1,1,2-Tetrachloroethane	ND	ND	1
1,1,2,2-Tetrachloroethane	ND	ND	1
Tetrachloroethene	ND	ND	1
Tetrahydrofuran	ND	ND	25
Toluene	ND	5	1
1,2,3-Trichlorobenzene	ND	ND	1
1,2,4-Trichlorobenzene	ND	ND	1
1,1,1-Trichloroethane	ND	ND	2
1,1,2-Trichloroethane	ND	ND	1
Trichloroethene	ND	ND	1
Trichlorofluoromethane	ND	ND	2
1,2,3-Trichloropropane	ND	ND	1
Trichlorotrifluoroethane	ND	ND	1
1,2,4-Trimethylbenzene	ND	2	1
1,3,5-Trimethylbenzene	ND	4	1
Vinyl chloride	ND	ND	2
o-Xylene, Styrene[1]	ND	ND	1
m-p-Xylenes[1]	ND	3	1
Surrogate Recoveries:			
2-Fluorochlorobenzene (PID)	94%	95%	
2-Fluorochlorobenzene (HALL)	100%	99%	
Fluorobenzene	100%	104%	
1,1-Dichloropropane	98%	105%	
Date Analyzed:	10/7/94	10/8/94	

[1]Compounds not separated by this method.

PQL = Practical Quantitation Limit
ND = Not Detected

Reference: Minnesota Department of Health, Method 465D.

Huntingdon

VOLATILE ORGANIC COMPOUNDS
MNDH METHOD 465D

(All values are in µg/L which is equivalent to parts-per-billion)

Client ID:	**MW-2**	
TCT ID:	41976	
Compound:		**PQL**
Acetone	ND	25
Allyl Chloride	ND	10
Benzene	6	1
Bromobenzene	ND	1
Bromochloromethane	ND	1
Bromodichloromethane	ND	1
Bromoform	ND	5
Bromomethane	ND	2
n-Butylbenzene	ND	1
sec-Butylbenzene	ND	1
tert-Butylbenzene	ND	1
Carbon tetrachloride	ND	1
Chlorobenzene	ND	1
Chloroethane	ND	2
Chloroform	ND	1
Chloromethane	ND	5
2-Chlorotoluene	ND	1
4-Chlorotoluene	ND	1
1,2-Dibromo-3-chloropropane	ND	5
Dibromochloromethane	ND	1
1,2-Dibromoethane	ND	2
Dibromomethane	ND	1
1,2-Dichlorobenzene	ND	1
1,3-Dichlorobenzene	ND	1
1,4-Dichlorobenzene	ND	1
Dichlorodifluoromethane	ND	5
1,1-Dichloroethane	ND	1
1,2-Dichloroethane	ND	1
1,1-Dichloroethene	ND	1
cis-1,2-Dichloroethene	ND	1
trans-1,2-Dichloroethene	ND	1
Dichlorofluoromethane	ND	2
1,2-Dichloropropane	ND	1
1,3-Dichloropropane	ND	1
2,2-Dichloropropane	ND	1
1,1-Dichloropropene	ND	1
cis-1,3-Dichloropropene	ND	1
trans-1,3-Dichloropropene	ND	1
Ethyl Ether	ND	5

(continued)

PQL = Practical Quantitation Limit
ND = Not Detected

Huntingdon

VOLATILE ORGANIC COMPOUNDS (continued)
MNDH METHOD 465D

(All values are in µg/L which is equivalent to parts-per-billion)

Client ID:	**MW-2**	
TCT ID:	41976	
Compound:		**PQL**
Ethylbenzene	46	2
Hexachlorobutadiene	ND	1
Isopropylbenzene	6	1
p-Isopropyltoluene	ND	1
Methyl Ethyl Ketone	ND	25
Methyl Isobutyl Ketone	ND	25
Methyl-tert-Butyl Ether	ND	1
Methylene chloride	ND	2
Naphthalene	ND	1
n-Propylbenzene	12	1
1,1,1,2-Tetrachloroethane	ND	1
1,1,2,2-Tetrachloroethane	ND	1
Tetrachloroethene	ND	1
Tetrahydrofuran	ND	25
Toluene	11	1
1,2,3-Trichlorobenzene	ND	1
1,2,4-Trichlorobenzene	ND	1
1,1,1-Trichloroethane	ND	2
1,1,2-Trichloroethane	ND	1
Trichloroethene	ND	1
Trichlorofluoromethane	ND	2
1,2,3-Trichloropropane	ND	1
Trichlorotrifluoroethane	ND	1
1,2,4-Trimethylbenzene	1	1
1,3,5-Trimethylbenzene	4	1
Vinyl chloride	ND	2
o-Xylene, Styrene[1]	ND	1
m-p-Xylenes[1]	2	1
Surrogate Recoveries:		
2-Fluorochlorobenzene (PID)	91%	
2-Fluorochlorobenzene (HALL)	95%	
Fluorobenzene	111%	
1,1-Dichloropropane	99%	
Date Analyzed:	10/8-10/94	

[1]Compounds not separated by this method.

PQL = Practical Quantitation Limit
ND = Not Detected

Reference: Minnesota Department of Health, Method 465D.

twin city testing corporation

601 E. 48TH ST. N.
SIOUX FALLS, SD 57104-0698
PHONE: 605/332-5371

CHAIN-OF-CUSTODY RECORD

TCT NO. 09907

American Federal Savings Bank
CLIENT NAME

CLIENT ADDRESS

CLIENT CONTACT/ADDRESS IF DIFFERENT FROM ABOVE PHONE

Brad Torgerson / Brady J. Torgerson
SAMPLED BY PRINT NAME/SIGNATURE

9-30-94
DATE/TIME SAMPLED

Brad Torgerson
TCT CONTACT

Leisureland RV
PROJECT NAME

5300 94-34
CLIENT P.O. # / PROJECT NO.

BILL TO (CO. NAME, ADDRESS)
Brad Torgerson
REPORT TO

TCT USE ONLY	
PROJ. MGR.	tlASBC
PRIORITY	Normal
INVOICE #	—
JOB NAME	HAN 10294
CUSTODY SEAL INTACT/NUMBER Y/N	NA
TEMPERATURE OF CONTAINER	16°C
SAMPLE CONDITION	OK

PREPAY Y/N	
CHECK NO.	
CHECK AMOUNT	

POSSIBLE HAZARD: YES ____ UNKNOWN X (COMMENT BELOW)

SAMPLE DISPOSAL: RETURN TO CLIENT ____ DISPOSAL BY LAB X
(ADDITIONAL CHARGES MAY BE ASSESSED)

ANALYSES REQUEST

FILTERED (YES/NO)
PRESERVED (CODE)
REFRIGERATED (Y/N)

CODE A - NONE
B - HNO_3
C - H_2SO_4
D - NaOH
E - HCl
F - ____

MN DOH 465-D, E, F

ITEM NO.	CLIENT SAMPLE ID.	MATRIX	NO. OF CONTAINERS	CONTAINER TYPE										REMARKS	TCT NO.
1	092994955, MW-3	Water	3	40ml VOA	X										41971
2	092994 1035, MW-5	"	"	"	X										41975
3	092994 1110, MW-2	"	"	"	X										41976
4	092994930, Dailer Blank	"	"	"	X										41977
5	092994, Duplicate	"	"	"	X										41978
6															
7															
8															
9															
10															

Additional Comments

Attn: Sharon Cenis

ITEM NO.	RELINQUISHED BY / AFFILIATION	ACCEPTED BY / AFFILIATION	DATE	TIME
	Brady J. Torgerson/HRE		9-29-94	1:00
			10/3/94	12:30

C813 (Rev. 8/91)

* SEE REVERSE SIDE FOR INSTRUCTIONS

Huntingdon

Huntingdon Engineering & Environmental, Inc.
601 East 48th Street North
Sioux Falls, South Dakota 57104-0698
(605) 332-5371
Fax: (605) 332-8488

REPORT OF: CHEMICAL ANALYSIS

PROJECT: AMERICAN FEDERAL SAVINGS BANK **DATE:** October 13, 1994

REPORTED TO: Huntingdon Engineering & Environmental, Inc.
Attn: Brad Torgerson
2105 Seventh Avenue North
Fargo, ND 58102

LABORATORY NO: 6600 04-200

Date Received: 9-30-94
Date Sampled: 9-29-94
Authorization: 9-30-94

The results of the gasoline range organics analysis are listed in Table 1. The results of the diesel range organics analysis are listed in Table 2. The results of the lead analysis are listed in Table 3.

TABLE 1
VOLATILE ANALYSIS

Parameter	MW-3 092994955 94-7711	MW-5 0929941035 94-7712	MW-2 0929941110 94-7713	Bailer Blank 092994930 94-7714	Duplicate 022994 94-7715	MDL
GRO	ND	ND	320	ND	250	30
SURROGATE RECOVERY:						
α,α,α-Trifluorotoluene	97%	94%	97%	97%	101%	

All values are in ug/L. ug/L is equivalent to parts per billion.
MDL - Method Detection Limit
ND - Not Detected
Date Analyzed: 10-7-94 and 10-10-94
Method: Wisconsin Gasoline Range Organics

TABLE 2
DIESEL RANGE ORGANICS ANALYSIS

Sample Identification	Diesel Range Organics (mg/L)	SURROGATE RECOVERY: Triacontane
MW-3 94-7711	ND	104%
MW-5 94-7712	ND	103%
MW-2 94-7713	ND	82%
MDL	0.3	

All values are in mg/L which is equivalent to parts per million (ppm).
MDL - Method Detection Limit
ND - Not Detected
Date Extracted: 10-5-94
Date Analyzed: 10-7-94 and 10-10-94
Method: Wisconsin Diesel Range Organics

LABORATORY QUALITY CONTROL

	ACCURACY DATA		PRECISION DATA
Parameter	Matrix Spike Percent Recovery	Matrix Spike Duplicate Percent Recovery	Relative Percent Difference
DRO	100%	105%	5.0%
Surrogate Recovery	85%	94%	---

TABLE 3
LEAD ANALYSIS

Sample Identification	Lead (mg/L)
MW-3 94-7711	ND
MW-5 94-7712	ND
MW-2 94-7713	ND
LDL	0.1
Method*	239.1

LDL - Lower Detectable Limit
All values are in mg/L which is equal to parts per million (ppm).
* EPA 600/4-79-020, March 1979, "Methods for the Chemical Analysis of Water and Waste".

LABORATORY QUALITY CONTROL

		ACCURACY DATA		PRECISION DATA
		Matrix Spike	Matrix Spike Duplicate	Relative
Parameter	Sample #	Percent Recovery	Percent Recovery	Percent Difference
Lead	94-7711	96%	100%	4.1%

HUNTINGDON ENGINEERING & ENVIRONMENTAL, INC.

Deanna Wiarda
Gas Chromatography

Virginia VerMulm
Laboratory Supervisor

Dan T. Hanson
Chemistry Manager

DW/VVM/DTH/kk
4-200dg&l.1far

Huntingdon

twin city testing corporation
601 E. 48TH ST. N.
SIOUX FALLS, SD 57104-0698
PHONE: 605/332-5371

CHAIN-OF-CUSTODY RECORD

TCT NO. 09908

CLIENT NAME: American Federal Savings Bank

CLIENT ADDRESS:

CLIENT CONTACT/ADDRESS IF DIFFERENT FROM ABOVE: PHONE:

SAMPLED BY PRINT NAME/SIGNATURE: Brad Torgerson / Brad J. Torgerson

DATE/TIME SAMPLED: 9-29-94

POSSIBLE HAZARD: YES ____ UNKNOWN X (COMMENT BELOW)

SAMPLE DISPOSAL: RETURN TO CLIENT ____ DISPOSAL BY LAB X
(ADDITIONAL CHARGES MAY BE ASSESSED)

TCT CONTACT: Brad Torgerson

PROJECT NAME: Leisureland RV

CLIENT P.O. # / PROJECT NO.: 5300 94-34

BILL TO (CO. NAME, ADDRESS): Brad Torgerson

REPORT TO:

TCT USE ONLY	
PROJ. MGR.	
PRIORITY	
INVOICE #	
JOB NAME	
CUSTODY SEAL INTACT/NUMBER Y/N	
TEMPERATURE OF CONTAINER	
SAMPLE CONDITION	

PREPAY Y/N	
CHECK NO.	
CHECK AMOUNT	

ANALYSES REQUEST

	GRO	DRO	Dissolved Lead
FILTERED (YES/NO)	N	N	Y
PRESERVED (CODE)	E	E	B
REFRIGERATED (Y/N)	Y	Y	Y

CODE A - NONE
B - HNO3
C - H_2SO_4
D - NaOH
E - HCl
F - ____

ITEM NO.	CLIENT SAMPLE ID.	MATRIX	NO. OF CONTAINERS	CONTAINER TYPE	GRO	DRO	Dissolved Lead	REMARKS	TCT NO.
1	092994955, MW-3	Water	4	40ml VOA, 1 liter Amber & 500 ml plastic	X	X	X		7711
2	0929941035, MW-5	" "	4	" "	X	X	X		7712
3	092994 1110, MW-2	" "	4	" "	X	X	X		7713
4	092994930, Bailer Blank	" "	2	2-40ml VOA	X				7714
5	022994, Duplicate	" "	2	40ml VOA	X				7715
6									
7									
8									
9									
10									

Additional Comments
GRO Only
Attn: Dan H.

ITEM NO.	RELINQUISHED BY / AFFILIATION	ACCEPTED BY / AFFILIATION	DATE	TIME
	Brad J. Torgerson / HEE		9-29-94	1:00
		Jenelle Ollerich / Huntingdon	9-30-94	1030

C913 (Rev. 8.91)

* SEE REVERSE SIDE FOR INSTRUCTIONS

RECEIVED

DEC 14 1993

MPCA, HAZARDOUS
WASTE DIVISION

REMEDIAL INVESTIGATION & CORRECTIVE ACTION DESIGN REPORT LEISURELAND RV EAST GRAND FORKS, MINNESOTA #5300 03-78 LEAK#0005934

Phone: (218) 773-9711

NOVEMBER 29, 1993

Twin City Testing Corp.
2105 7th Avenue North
Fargo, North Dakota

Huntingdon
Consulting Engineers Environmental Scientists

REMEDIAL INVESTIGATION
& CORRECTIVE ACTION DESIGN REPORT
1819 CENTRAL AVENUE NW
EAST GRAND FORKS, MINNESOTA
#5300 03-78

1.0 INTRODUCTION

1.1 Site Description

The subject site is Leisureland RV located on the northeast side of East Grand Forks, Minnesota at 1819 Central Drive (Figures 1, 2 and 3). The legal description of the property is Lot 11, Auditor's Plat of Outlots 1 through 23, SE¼, NE¼, Section 35, T152N, R50W, East Grand Forks, Polk County, Minnesota. The site consists of 6.4 acres. The site is occupied by two commercial buildings and an unused granary. Leisureland RV occupies the 21,120 square foot slab on grade building which was reportedly constructed in 1960. A small coffee shop is located in the southeast corner of the same building. The second slab on grade building (constructed in 1974) contains 10,000 square feet and was used for cold storage.

The former location of a 1,000 gallon underground storage tank (UST) removed from the site on November 18, 1992 was on the south side of the largest building (Figure 3). Mr. Tim Kerr of American Federal Savings Bank in East Grand Forks, North Dakota reported that the 1,000 gallon UST, which reportedly contained gasoline, replaced a 500 gallon UST which was excavated and removed from the site approximately 15 years ago. The original 500 UST reportedly had observable "leaks".

Quast Transfer Inc. is located north of the subject site. A frontage road and Central Avenue (Minnesota Highway 220) bound the site on the east. 3rd Avenue NW and residential and farm land are located west of the site. Valley Truck Parts and Service, Inc. and Breidenbach Welding Repair are adjacent to the southern boundary of the site. Valley Truck Parts and Service reportedly recently had two 1,000 gallon diesel USTs removed from the north side of their property. The two USTs on the Valley Truck property were located approximately 50 to 100 feet south of the location of MW-2. Mr. Doug Runyon of Valley Truck Parts stated that one

of the two 1,000 gallon USTs removed from his site had apparently leaked. No other details were given by Mr. Runyon. The nearest surface water is the Red River, approximately one mile to the west (Figure 1).

The site is located on the topographically flat plain of the former glacial Lake Agassiz. The glacial lake plain soils consists of dense, uniform, impermeable glacial lake clay up to 120 feet thick. The flat topography and the heavy texture of the soil cause poor natural drainage. Ditching has been extensive to remove storm runoff (USGS Water Resources of the Red Lake River Watershed, Northwestern Minnesota, HA-346, 1970).

The soils encountered at this site consist of glacial lake sediment composed primarily of "fat" clay. The upper 5 to 15 feet of the soil profile is commonly oxidized to a brown color. The remaining unweathered clay is gray in color. Discontinuous, localized lenses of silt occur in the clay. The upper 5 to 8 feet of lake sediment consist of silty lean clay. The remainder of the soil profile, to the terminus of the borings, consisted of brown to gray silty fat clay. The glacial lake sediments, glacial moraine and the subjacent Cretaceous and Paleozoic strata, are approximately 300 feet thick and overlie Precambrian crystalline bedrock. The fine-grained lake deposits generally are not a source of water in the area (USGS Water Resources of the Red Lake River Watershed, Northwestern Minnesota, HA-346, 1970).

1.2 Background Information

As part of a property transfer procedure, Twin City Testing (TCT) completed a Phase I Environmental Site Assessment (ESA) dated August 14, 1992 at the request of American Federal Savings Bank (AFSB). Research for that report (Appendix A) revealed the presence of a UST and an unused water well on the property. Recommendations from the TCT ESA included removing the UST and properly abandoning the well.

Representatives from Analysis, Research and Consulting Laboratories, Inc. (ARC) were on site on November 18, 1992 to "perform subsoil investigation and testing during the removal of a

1,000 gallon UST." The location of the 1,000 gallon UST removed from the site on November 18, 1992 was on the south side of the largest building (Figure 3). At that time, approximately 30 cubic yards of soil were excavated from the UST basin and an additional 20 cubic yards was removed from a trench dug to search for an unused water well, located on the south side of the property, in order to properly abandon the well. The well was not found during that excavation event. According to the Guidance Document #3 filed by ARC (Appendix A), the soil was treated by land application at the Grand Forks Landfill.

The ARC report dated November 27, 1992 (Appendix A) describes the UST excavation and removal. The UST excavation was performed by MARK II; certification #0603. No details about the disposal of the UST were available.

Five soil samples collected by ARC from the excavated soils indicated the presence of hydrocarbon vapors. ARC recommended further remedial investigations at the site.

Appendix B contains the available correspondence between the Minnesota Pollution Control Agency (MPCA) and AFSB. A memo dated August 6, 1992 stated that the MPCA approves AFSB plans to abandon the water well on the subject site. A letter from AFSB dated August 24, 1992, according to Mr. Tim Kerr, is to notify the MPCA of the 500 gallon UST that was removed from the site approximately 15 years ago. A letter from the MPCA dated November 25, 1992 states that AFSB must begin remedial investigations (RI) at the site. ARC reported to the MPCA that there was visible contamination in the soils when they supervised the removal of the 1,000 gallon UST from the subject site. The letter from AFSB dated December 14, 1992 stated that two competitive bids had been solicited and TCT had been chosen as the environmental consultant for the RI at the site.

Appendix B also contains MPCA Fact Sheet #6.

1.3 Purpose and Scope

The purpose of our work during this phase of the project was to provide information regarding the degree and extent of hydrocarbon contamination in the soils and groundwater associated with the site.

The scope of work performed for this phase of the project included the following:

1. advancing six soil borings to depths of up to 18 feet below grade;
2. screening the soil samples recovered from the borings for the presence and concentration of organic vapors as indicators of hydrocarbon contamination;
3. analyzing select soil samples from the borings for the presence and concentration of benzene, toluene, ethylbenzene, xylene, (BTEX), gasoline range organics (GRO), methyl tertiary butyl ether (MTBE) and Lead;
4. obtaining Minnesota Department of Health Monitoring Well Permits;
5. completing three of the borings as above grade monitoring wells;
6. developing the monitoring wells;
7. obtaining groundwater elevation data from the monitoring wells;
8. collecting two rounds of groundwater samples (per MPCA directives) from the monitoring wells and analyzing the samples for the presence and concentration of volatile organic compounds (VOCs) from the MN DOH 465 D list using GC/MS analysis, GRO, MTBE and Lead; and
9. preparing and submitting a report including data generated during our field work with our conclusions and recommendations based on that data.

2.0 PROJECT RESULTS

2.1 Soil Borings

During January 13 & 14, 1993, six soil borings were advanced by TCT to a depth of up to 19

feet below grade. The locations of the borings are shown on Figure 3. The borings were advanced using the methodologies presented in Appendix C.

Unfortunately, the only remaining soil profile data available is that found on the Minnesota Department of Health well records for MW-2, MW-3 and MW-5 (Appendix D). The field data regarding soil borings SB-1, SB-4 and SB-6 has been inadvertently lost, therefore soil profile information is not available for these borings. No PID data is available for any of the soil borings. Mr. Chris McLain of the MPCA was made aware of this by TCT, via telephone, on September 18, 1993. Mr. McLain said to note this in the report and proceed with the available data (phone conversation record dated September 18, 1993 in Appendix B).

The soil profile encountered in the borings (MW-2, MW-3 and MW-5) consisted of fill material from ½ to 3 feet below grade. Lean clay with some silty laminations was encountered from the base of the fill material to depths of approximately 7 to 8 feet. The borings were terminated at approximately 18 feet below grade in the fat clays encountered from the base of the lean clay to the terminus of the boring. Cross section sketches are included in Appendix D.

2.2 Soil Sample Analytical Results

One select soil sample from each of the six soil borings (SB-1 through SB-6) was collected and analyzed for the presence and concentration of BTEX, MTBE, GRO and Lead using the methodologies outlined in the laboratory reports included as Appendix E. The samples were found to contain the concentrations presented in Table 1.

TABLE 1

SOIL SAMPLE ANALYTICAL RESULTS

SAMPLE DEPTH INTERVAL	BENZENE	TOLUENE	ETHYL BENZENE	XYLENES	GRO	MTBE	LEAD
SB-1 9½-11½	ND	ND	ND	ND	ND	ND	7.30
SB-2 7-9	20.0	5.90	3.70	11.0	240.0	11.0	8.20
SB-3 7-9	ND	ND	ND	ND	ND	ND	7.20
SB-4 7-9	ND	ND	ND	ND	ND	ND	6.90
SB-5 7-9	ND	ND	ND	ND	ND	ND	4.60
SB-6 7-9	9.00	4.20	5.90	12.0	130.0	4.50	5.80
MDL	0.050	0.050	0.050	0.050	5.00	0.050	NA
LDL	NA	NA	NA	NA	NA	NA	2.00

ND = Not Detected
NA = Not Applicable
MDL = Method Detection Limit for Hydrocarbon Compounds
LDL = Lower Detectable Limit for Lead
Results for Hydrocarbon Compounds Reported in mg/kg (milligrams per kilogram) = ppm (parts per million)
Results for Lead Reported in mg/kg (milligrams/kilogram) = ppm (parts per million)

Figure 4 indicates the inferred extent of on-site residual soil contamination at the subject site. The extent of the off-site residual soil contamination is unknown.

2.3 Free Phase Product Observation

No free phase product was reportedly observed by ARC personnel during the UST excavation. No free phase product was observed by TCT personnel while conducting our RI activities.

2.4 Ground Water

Soil borings SB-2, SB-3 and SB-5 were completed as monitoring wells on January 18, 1993 using methods outlined in Appendix C. Specific construction details associated with MW-2, MW-3 and MW-5 are included in the "Monitoring well" data sheet along with the approved permit and monitoring well records in Appendix D.

Ground-water elevation data from the monitoring wells were measured by TCT personnel using methods presented in Appendix C. Ground-water elevation data sheets for the February 1, 1993 monitoring event are included in Appendix F. The elevations were measured in feet, relative to a datum of 100 feet, however, the information identifying the reference point is no longer available. Ground-water elevation trends based on data obtained to date is included as Figure 5. The potentiometric surface sketches including data obtained from the four measurement events are represented as Figures 6, 7, 8 and 9. Ground-water elevation data is presented in Table 2.

TABLE 2

GROUNDWATER ELEVATION DATA

Monitoring Well ID	**MW-2**	**MW-3**	**MW-5**
Reference Elev. (FT)	**99.22**	**99.66**	**99.48**
TOS Elev.	94.22	94.66	94.48
BOS Elev.	79.22	79.66	79.48
1-25-93	88.41	90.53	88.36
2-1-93	90.42	90.38	90.05
7-18-93	97.17	94.71	94.49
9-30-93	94.08	93.84	94.10

Reference elevation and groundwater elevations are measured from the top of the riser.
-- = No measurement obtained TOS = Top of screen BOS = Bottom of screen

On February 1, 1993, TCT personnel conducted a rising head slug test on MW-3. Results of the analysis are presented in Appendix F. The data was analyzed using the Bouwer and Rice method by AQTESOLV (Geraghty & Miller Modeling Group). The results indicated an hydraulic conductivity (K) of 3.0×10^{-6} feet per minute.

2.5 Ground-water Analytical Results

Groundwater samples were collected from monitoring wells MW-2, MW-3 and MW-5 and were analyzed for the presence and concentrations of BTEX, MTBE, GRO and Lead using the methods presented on the laboratory results in Appendix E. Only those VOCs which were present in detectible concentrations are reported below. The results of the analyses are presented in Table 3

TABLE 3

GROUNDWATER ANALYTICAL RESULTS

	BENZ (*)	TOL (*)	ETH BENZ (*)	XYL (*)	MTBE (*)	GRO (**)	LEAD	n-B	1,4	ISO	n-P	TET	1,2,4	1,3,5
MW-2														
(***)2-1-93	ND	ND	0.003	ND	ND	0.110	ND	0.002	ND	ND	ND	ND	ND	0.005
7-18-93	0.001	0.021	0.015	0.009	ND	0.180	ND	0.001	ND	0.002	0.004	ND	0.005	0.002
MW-3														
2-1-93	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
7-18-93	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-5														
2-1-93	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
7-18-93	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Method Blank														
2-1-93	ND	ND	ND	ND	ND	ND	--	ND	ND	ND	ND	ND	ND	ND
7-18-93	ND	ND	ND	ND	ND	ND	--	ND	ND	ND	ND	ND	ND	ND
Bailer Blank														
2-1-93	ND	ND	ND	ND	ND	ND	--	ND	ND	ND	ND	ND	ND	ND
7-18-93	ND	ND	ND	ND	ND	ND	--	ND	0.001	ND	ND	0.002	ND	ND
Trip Blank														
2-1-93	ND	ND	ND	ND	ND	ND	--	ND	ND	ND	ND	ND	ND	ND
7-18-93	ND	ND	ND	ND	ND	ND	--	ND	ND	ND	ND	ND	ND	ND
RAL	0.010	1.00	0.700	10.0	NA	NA	0.020	NA	0.010	0.300	NA	0.002	NA	NA
PQL	0.001	0.001	0.001	0.001	0.001	0.001	NA	0.001	0.001	0.001	0.001	0.001	0.001	0.001
LDL	NA	NA	NA	NA	NA	NA	0.050	NA	NA	NA	NA	NA	NA	NA

BENZ = Benzene TOL = Toluene ETH BENZ = Ethylbenzene XYL = Xylenes n-B = n-Butylbenzene 1,4 = 1,4 Dichloroethane Iso = Isopropylbenzene
n-P = n-Propylbenzene TET = Tetrachloroethene 1,2,4 = Trimethylbenzene 1,3,5 = 1,3,5 Trimethylbenzene
(*) = Analysed by MNDH Method 465D (**) = Analyzed by the Wisconsin GRO method (***) = "unidentified high boiling hydrocarbons" noted in sample
All units listed in mg/l = ppm (parts per million)
N/A = Not Applicable -- = Parameter not analyzed ND = Not Detected
RAL = Recommended Allowable Limits for Drinking Water Standards PQL = Practical Quantitation Limit LDL = Lower Detectable Limit

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2.6 Receptor Survey

The Petroleum Vapor Risk Assessment Survey (MPCA Fact Sheet #22) was completed to determine which utilities might act as receptors. Figures 3 and 4 indicate the locations of the buried electric, sanitary sewer, telephone, natural gas and municipal water lines serving the subject site. PID readings were obtained from the storm sewers located east and west of the site and the sanitary sewer located west of the site. No organic vapors were detected from the three manholes that were checked. All buildings in the area appear to be built as slab on grade.

The groundwater receptor survey (MPCA Fact Sheet #23) included the review of 20 well logs, including the three monitoring wells installed by TCT at the subject site, supplied by the Minnesota Geological Survey (MGS). None of these well locations has been personally verified by MGS personnel. The deepest borehole on record within two miles of the site is 25 feet below grade. All 20 wells identified were either monitoring wells (19) with one single recovery well. The location of all these wells are shown on Figure 15. Well records for the 20 wells are contained in Appendix G. Table 4 contains the available information concerning each of the 20 wells in the format requested by the MPCA.

TABLE 4

AREA WELL DATA SUMMARY

UNIQUE WELL NUMBER	GROUND SURFACE ELEVATION	BASE OF WELL ELEVATION	BASE OF CASING ELEVATION	WATER LEVEL ELEVATION	AQUIFER	WELL USE
121234	N/A	18' BG	18' BG	9.10' BMP	TILL	MONITORING
121235	N/A	14' BG	14' BG	9.30' BMP	TILL	MONITORING
121236	N/A	18' BG	18' BG	8.93' BMP	TILL	MONITORING
465326	N/A	22' BG	22' BG	13.6' BMP	TILL	RECOVERY
465327	N/A	18' BG	18' BG	12.17' BMP	TILL	MONITORING
465328	N/A	18' BG	18' BG	13.5' BMP	TILL	MONITORING
465329	N/A	17' BG	17' BG	10.6' BMP	TILL	MONITORING
465330	N/A	16.5' BG	16.5' BG	9.4' BMP	TILL	MONITORING
458854	N/A	19' BG	9' BG	9.73' BMP	TILL	MONITORING
458870	N/A	9' BG	19' BG	10.35' BMP	TILL	MONITORING
458871	N/A	10' BG	20' BG	9.98' BMP	TILL	MONITORING
444342	N/A	9' BG	19' BG	12.00' BMP	TILL	MONITORING
444343	N/A	9' BG	19' BG	12.00' BMP	TILL	MONITORING
444344	N/A	9' BG	19' BG	12.00' BMP	TILL	MONITORING
483569	N/A	10' BG	25' BG	7.5' BMP	TILL	MONITORING
483570	N/A	10' BG	25' BG	7.5' BMP	TILL	MONITORING
483571	N/A	10' BG	25' BG	7.5' BMP	TILL	MONITORING
522013	N/A	3.17' BG	18.17' BG	7.5' BMP	TILL	MONITORING
522012	N/A	3.3' BG	18.3' BG	7.5' BMP	TILL	MONITORING
522011	N/A	3.32' BG	18.32' BG	9' BMP	TILL	MONITORING

N/A = Not Available BG = Below Grade BMP = Below Measure Point

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During initial excavation activities at the site on November 18, 1992, additional excavation was done to locate an old unregistered water well that was reportedly located on the south side of the site. The well was not found during the initial phase of excavation supervised by ARC. However, the well was later located in the previous excavation and was properly abandoned by Olson's Well Service of Halstad, MN on 9/30/93. The well abandonment record is included in Appendix G.

Mr. Leonard T. Pulkrabek of LTP Enterprises stated that virtually no one in the Grand Forks-East Grand Forks area uses well water because of poor quality. Mr. Pulkrabek stated that the Dakota formation is known to produce salty water from a depth of approximately 180 feet just west of Grand Forks, ND. Mr. Dan Boyce, with the city of East Grand Forks, MN, reported that the city obtains its municipal water supply from the Red Lake River approximately 1½ miles southwest of the site. Phone conversation records with city and corporate personnel concerning the presence of water wells in the area of the subject site are contained in Appendix G.

A Hydrogeological Setting and Ground Water Contamination Worksheet (MPCA Fact Sheet #24) was completed for the subject site and is presented in Appendix G.

3.0 DISCUSSION OF RESULTS

Review of the analytical results indicate that soils and groundwater at the site are impacted by hydrocarbon contamination in a manner consistent with losses of product from the former UST system.

Review of the data indicates that the eastern extent of contamination is bounded by SB-1 while the northern extent is bounded by SB-3. The western extent of contamination is bounded by SB-4 and SB-5. The southern extent of contamination is not yet identified as MW-2 is near the southern edge of the subject site (Figure 3 and Table 1). Soil analytical data indicate that there is hydrocarbon impacted soil at SB-6, adjacent to the former UST location, and in MW-2 which is south of the former UST location. Review of the data indicates that lateral migration of hydrocarbon contamination may have taken place within the laminations and lenses of silt within

the fat and lean clay layers between 3 and 8 feet below grade.

Review of the January 25, 1993 potentiometric surface (Figure 11) indicates groundwater flowing to the southwest. It is our opinion that ground-water levels associated with the three monitoring wells had not yet equilibrated as the wells had been installed only seven days prior to measuring the water levels. Ground-water recharge to the monitoring wells, in our opinion, is very slow due to the clay substrate present at the site. Review of Figure 12 indicates groundwater flowing to the west. Again, in our opinion, the ground-water levels in the monitoring wells may not yet have equilibrated. Review of the July 18,1993 potentiometric surface (Figure 13) indicates ground-water flowing to the northwest. Review of Figure 14 indicates ground-water flowing to the north. Hydraulic gradients at the subject site ranged from 0.023 on July 18, 1993 to 0.0014 on September 30, 1993.

Review of the ground-water analytical results indicates that no detectable concentrations of the analytes were measured in MW-3 and MW-5. MW-2 contains BTEX compounds in quantities below RALs. GRO was detected in MW-2. No detectable quantities of Lead or MTBE were present in the three monitoring wells. Review of the ground-water analytical results indicated 1,4 dichloroethane and tetrachloroethane was present in the bailer blank on the July 18, 1993 sampling event. None of these compounds were detected in any of the other samples collected during that sampling event.

There appears to be a potential for off-site diesel contamination migrating onto the subject site as indicated by the presence of "unidentified high boiling hydrocarbons" reported in the February 1, 1993 groundwater sample analytical results. The possibility of impacts to MW-2, MW-3 and MW-5 from off-site diesel sources should be further investigated.

Based on the low degree of hydrocarbon contamination remaining in the groundwater, it is our opinion that remediation may not be warranted at the subject site.

4.0 CORRECTIVE ACTION DESIGN

4.1 Objectives

The objectives of the proposed corrective actions will be to:

- Provide information regarding viable remedial options
- Continue sampling and monitoring activities

The groundwater cleanup goals for this site are set by the MPCA and are described in the Hydrogeologic Setting and Ground Water Characterization worksheet. The worksheet states that two conditions must be met at and beyond the site boundaries:

1. The RAL for VOC's.
2. The concentration of total hydrocarbons must be less then or equal to 1 part per million (ppm) at and beyond site boundaries.

The soil remediation cleanup goal is to meet the MPCA guidelines of 100 ppm total petroleum hydrocarbons in silts and clays (MPCA Fact Sheet #13, April, 1993).

4.2 Alternatives

Two proposed correction actions were considered for the site.

1. Passive Remediation This alternative would allow natural degradation and dispersion to occur and would involve implementation of a ground-water monitoring program.

Advantages: This alternative would not result in any significant disruption of the site when contrasted with a procedure such as excavation.

Disadvantages: This alternative does not control future contaminant migration and associated potential impacts. The time for the site to reach a condition of acceptable levels of contamination is unknown.

2. Excavation This alternative would result in active remediation (removal) of contaminated soils.

Advantages: This alternative provides active source removal in a relatively short time frame.

Disadvantages: This alternative would result in a significant disruption of activities at the site for a few days to a couple of weeks. Approximately 3 feet of overburden would have to be stripped and stockpiled on-site, for later use as clean fill, to excavate the contaminated soil potentially located between

3 and 12 feet below grade. The impacted soils that most likely occur under the building would not be excavable and would, therefore, not be remediated by this method. This alternative would require the removal and replacement of MW-2. This alternative will also require post-excavation groundwater monitoring.

4.3 Discussion of Alternatives

A review of the data indicates that the bulk of residual soil hydrocarbon contamination exists within a zone between three and twelve feet below grade.

In our opinion, passive remediation is a viable alternative for this site. Although contaminants detected in groundwater are below RALs, soil concentrations exceed the 100 PPM limit for soils. Quarterly sampling and monitoring should, in our opinion, be a part of any remedial option chosen. The monitoring program would provide information regarding contaminant fate, including degradation and dispersion resulting from natural processes. A re-evaluation should be performed after the first year of monitoring regarding the need for additional work.

Excavation, in our opinion, is not the most viable remediation option at this site. We estimate the excavation of contaminated soils would involve the removal of approximately 1,000 cubic yards of clean overburden prior to excavating approximately 2,500 cubic yards of contaminated soil to attain clean-up to an MPCA action level of 100 ppm. The hydrocarbon contaminated soils would be excavated and land applied for treatment. Excavation of the clays containing up to 240 ppm GRO would remove the main source of the hydrocarbon contamination. However, impacted soils beneath the building (down-gradient of the former UST) would not be excavable.

The configuration of the dissolved contaminant plume is unknown due to the potential influence of diesel fuel migrating onto the subject site from the former USTs on the Valley Truck Parts site located south of the subject site. The February 1, 1993 laboratory analysis for groundwater from MW-2 did contain "unidentified high boiling hydrocarbons" which could indicate diesel fuel may be present in MW-2 (the UST on the subject site contained gasoline).

5.0 RECOMMENDATIONS

We recommend that one year of quarterly ground-water sampling and monitoring be conducted on MW-2, MW-3 and MW-5 to provide information regarding the potentiometric surface elevation, hydraulic gradient, groundwater flow direction and groundwater quality. In our opinion, the groundwater samples should be analyzed for the presence and concentration of BTEX, MTBE, GRO, DRO and dissolved Lead.

Finally, we recommend that this report be submitted to the MPCA for their review.

6.0 VERIFICATIONS

The incorporation of the aforementioned measures would provide verification of their effectiveness in the form of water quality data.

If concentrations of hydrocarbons drop significantly or remain below RALs in the monitoring wells over the one year period, TCT may recommend the discontinuance of groundwater monitoring. However, if diesel fuel is detected in any of the on-site monitoring wells, migration of the diesel fuel from off-site sources would be indicated.

7.0 SITE ABANDONMENT PROCEDURES

Sealing

Wells to be abandoned will be filled with neat cement grout using a tremie line under pressure in a continuous operation from the bottom of the well upward in accordance with the Minnesota Department of Health (MDH) guidelines.

Casing Cutoff

The well casing material will be cutoff at least 2 feet below land surface and native topsoil will be used to fill the hole produced.

Abandoned Well Report

Abandoned well reports will be submitted to the MDH. The information given will include depth, diameter, static water level, casing schedule, geology, method of sealing, volume, and type of grout used.

All surface equipment and materials will be dismantled and removed from the site.

8.0 SUMMARY OF ESTIMATED CONCEPTUAL COSTS

Twin City Testing Corporation anticipates providing a work plan and proposal regarding the aforementioned work upon MPCA corrective action plan approval.

PASSIVE REMEDIATION

Institute a one year quarterly sampling schedule: sampling the 3 wells quarterly with three quarterly reports and one annual report.

Field Costs (per sampling event):

Milage = 200 miles @ 0.40/ mile =		$80.00
Travel Time = 3 hrs @ $50.00/hr =		$150.00
Sampling Time = 3 hrs @ $50.00/hr =		$150.00
Sample containers, bailers and rope =		$110.00
Shipping Time = 1 hr @ $50.00/hr =		$50.00
Freight =		$70.00
Total per sampling event =		$610.00
Total per year =	$610.00 X 4 events =	$2,440.00

Sample Analysis (per sampling event)

BTEX, MTBE (via 465D) = $165.00/sample X 3 per event =		$495.00
GRO = $75.00/sample X 3 per event =		$225.00
DRO = $85.00/sample X 3 per event =		$255.00
Dissolved Lead = $33.00/sample X 3 per event =		$99.00
Total per sampling event =		$1,074.00
Total per year =	$1,074.00 X 4 events =	$4,296.00

Reporting and Project Management

Quarterly Reports

Env. Tech = 6 hrs @ $69.00/hr =	$415.00	
Env. Eng. = 1 hr @ $78.00/hr =	$80.00	
Drafting = 1.5 hrs @ $40.00/hr =	$60.00	
Project Management = 1.5 hrs @ $78.00/hr =	$120.00	
Total per sampling event =	$675.00	
Total per year for first 3 events =		$2,025.00

Annual Sampling Report

Env. Tech = 13.5 hrs @ $69.00/hr =	$935.00	
Env. Eng. = 1.5 hrs @ $78.00/hr =	$120.00	
Drafting = 2 hrs @ $40.00/hr =	$80.00	
Project Management = 3 hrs @ $78.00/hr =	$235.00	
Total per year for last report =	$1,370.00	$1,370.00
TOTAL YEARLY MONITORING COSTS =		$10,131.00

ONE YEAR ESTIMATED COST = $ 10,131.00

9.0 REMARKS

The recommendations contained in this report represent our professional opinions. These opinions were arrived at in accordance with currently accepted hydrogeologic, analytical and engineering practices at this time and location. Other than this, no warranty is implied or intended.

This report was prepared by:

Date: 11/30/93

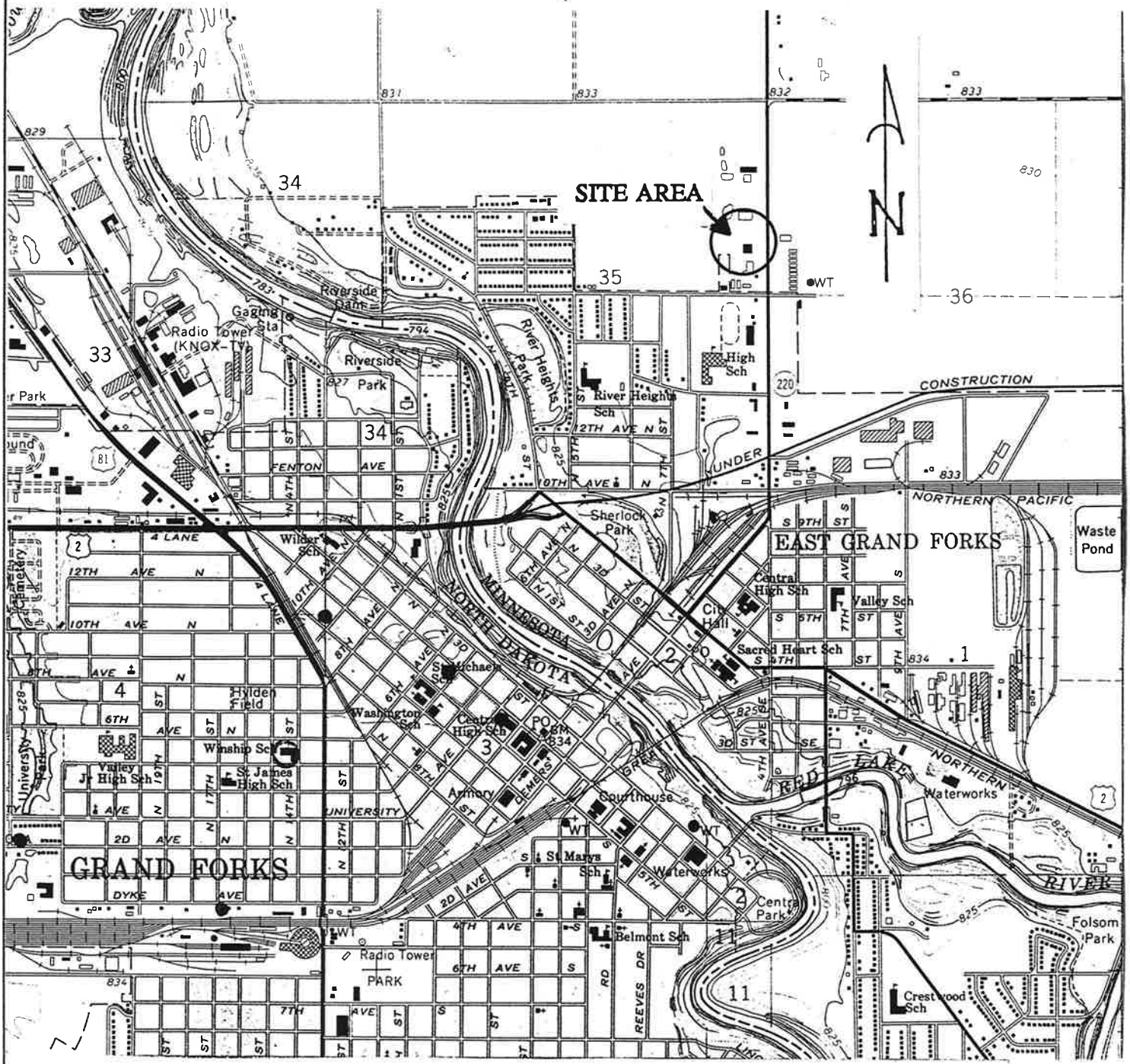
Steven D. Jorgensen
Environmental Scientist

This report was reviewed by:

Date: 11/30/93

Tim Kenyon
Vice President - Environmental Services

FIGURES



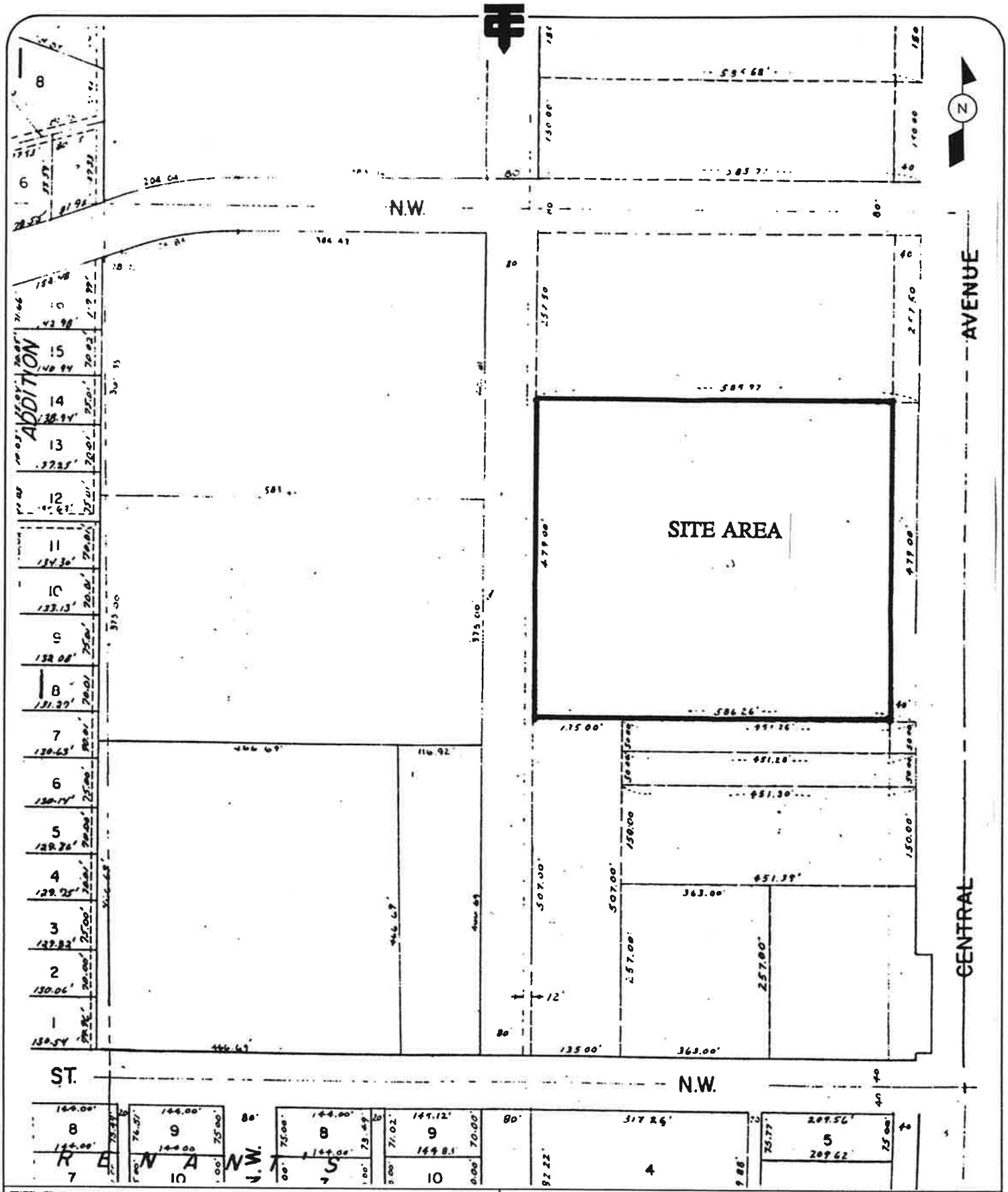
GRAND FORKS, N. DAK.—MINN.

NE/4 GRAND FORKS 15' QUADRANGLE

N4752.5—W9700/7.5

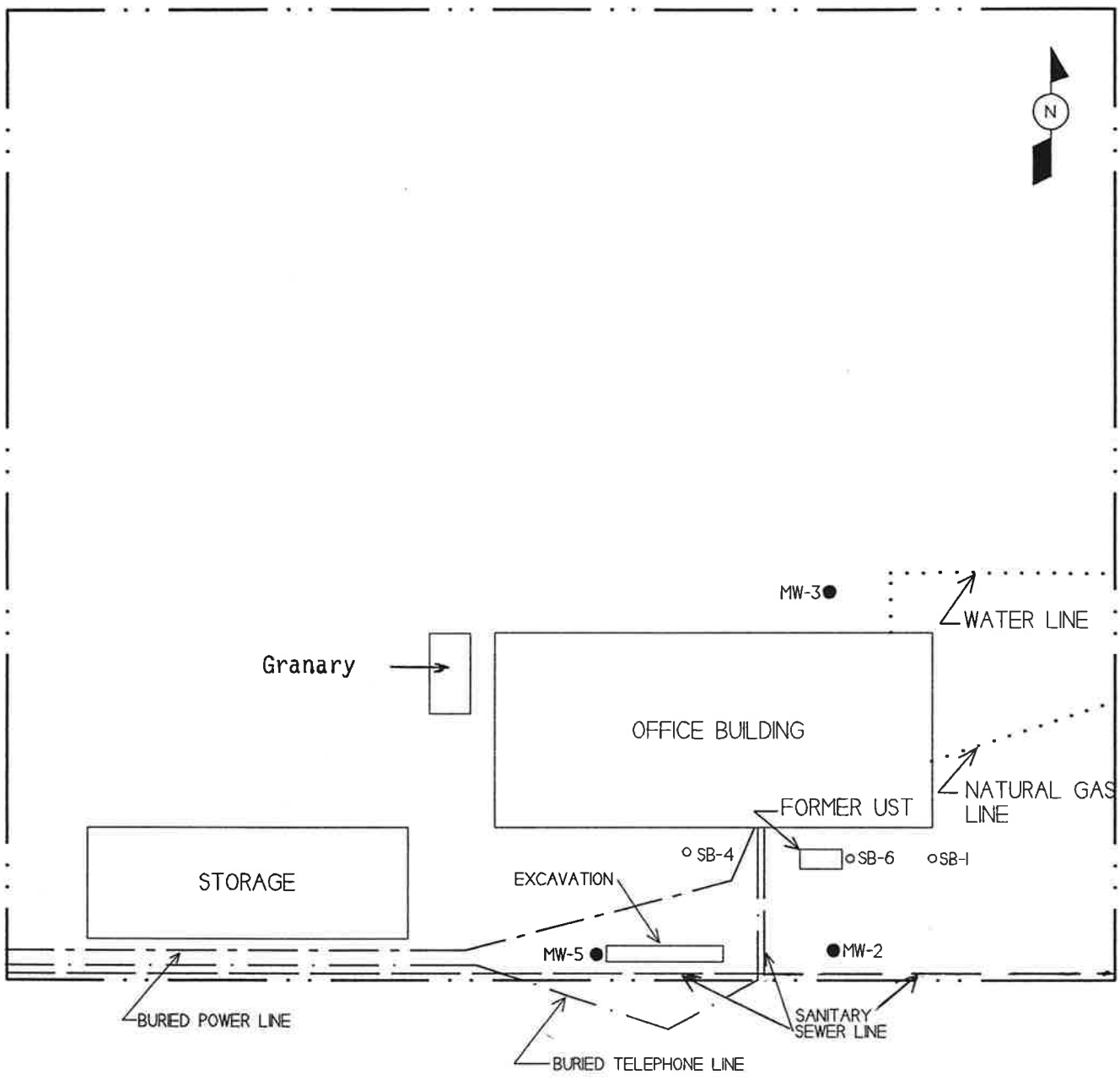
TITLE: FIGURE 1
SITE TOPOGRAPHIC MAP
1819 CENTRAL AVENUE
EAST GRAND FORKS, MINNESOTA

PROJECT #: 5300 03-78	SCALE: AS SHOWN
DRAWN BY: WG	CHECKED BY: TJ
DRAWING NAME:	DATE: 11/93



TITLE: FIGURE 2
SITE PLAT MAP
1819 CENTRAL AVENUE
EAST GRAND FORKS, MINNESOTA

PROJECT #: 5300 03-78	SCALE: NOT TO SCALE
DRAWN BY: WG	CHECKED BY: TJ
DRAWING NAME:	DATE: 11/93



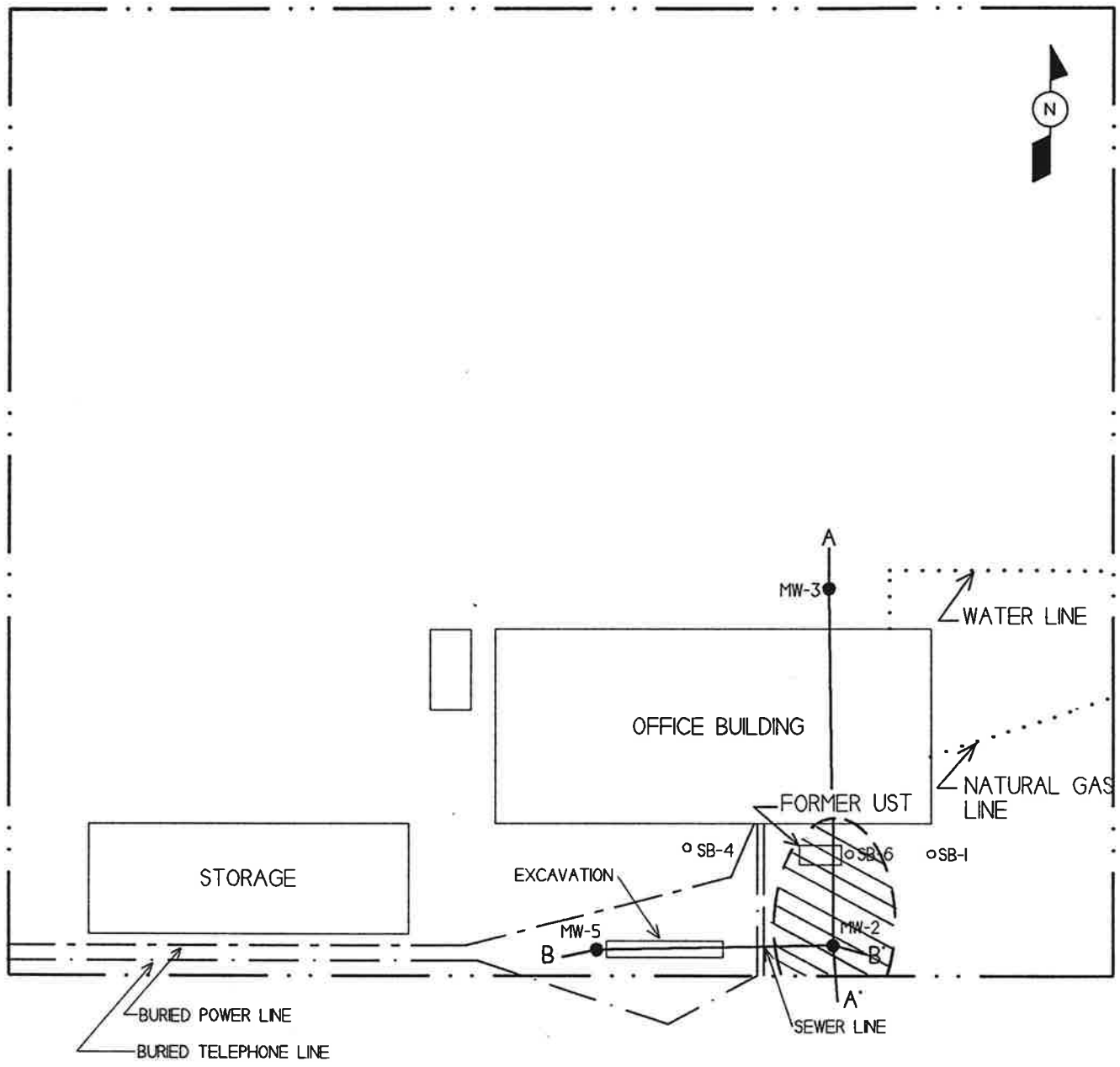
o SB-6 = Soil Boring

● MW-2 = Monitoring Well

0 80

SCALE (FEET)

TITLE: FIGURE 3 SITE DETAIL SKETCH 1819 CENTRAL AVENUE EAST GRAND FORKS. MINNESOTA	PROJECT #: 5300 03-78	SCALE: 1 INCH - 80 FEET
	DRAWN BY: WG	CHECKED BY: TJ
	DRAWING NAME:	DATE: 11/93



LEGEND

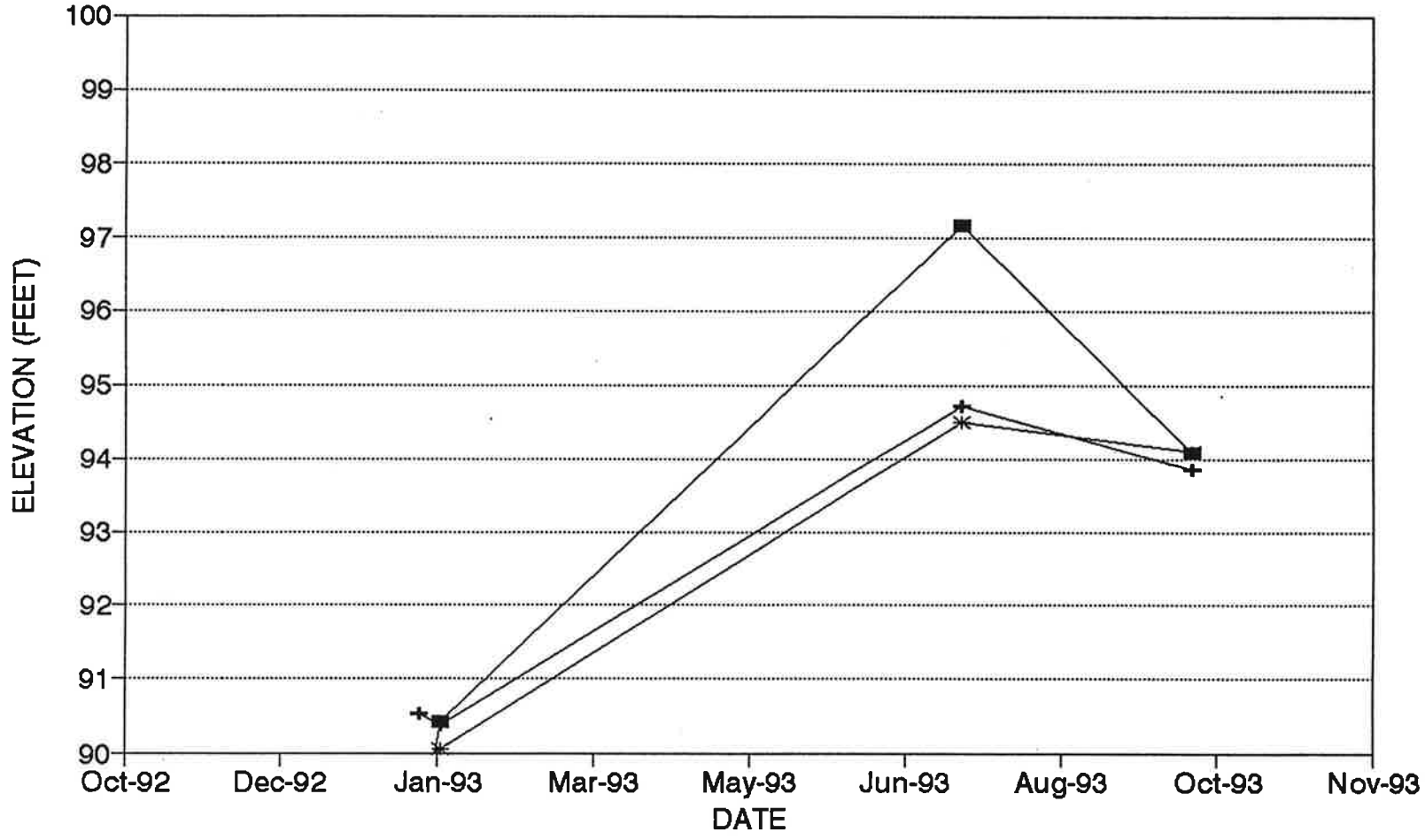
- ○ SB - SOIL BORING
- ● MW - MONITORING WELL
- A-A' - LINE OF CROSS SECTION
- ▨ APPROXIMATE EXTENT OF RESIDUAL SOIL CONTAMINATION (DASHED WHERE INFERRED)

0 80

SCALE (FEET)

TITLE: FIGURE 4 EXTENT OF RESIDUAL SOIL CONTAMINATION 1819 CENTRAL AVENUE EAST GRAND FORKS, MINNESOTA	PROJECT #: 5400 93-48	SCALE: 1 INCH = 80 FEET
	DRAWN BY: WG	CHECKED BY: TJ
	DRAWING NAME:	DATE: 11/93

POTENTIOMETRIC SURFACE ELEVATIONS
LEISURELAND RV, 1819 CENTRAL AVENUE



DATE 11/93	FIGURE 5
PROJECT # 5300 03-78	
REVIEWED BY: TJ	
DRAWN BY: SDJ	
SCALE	

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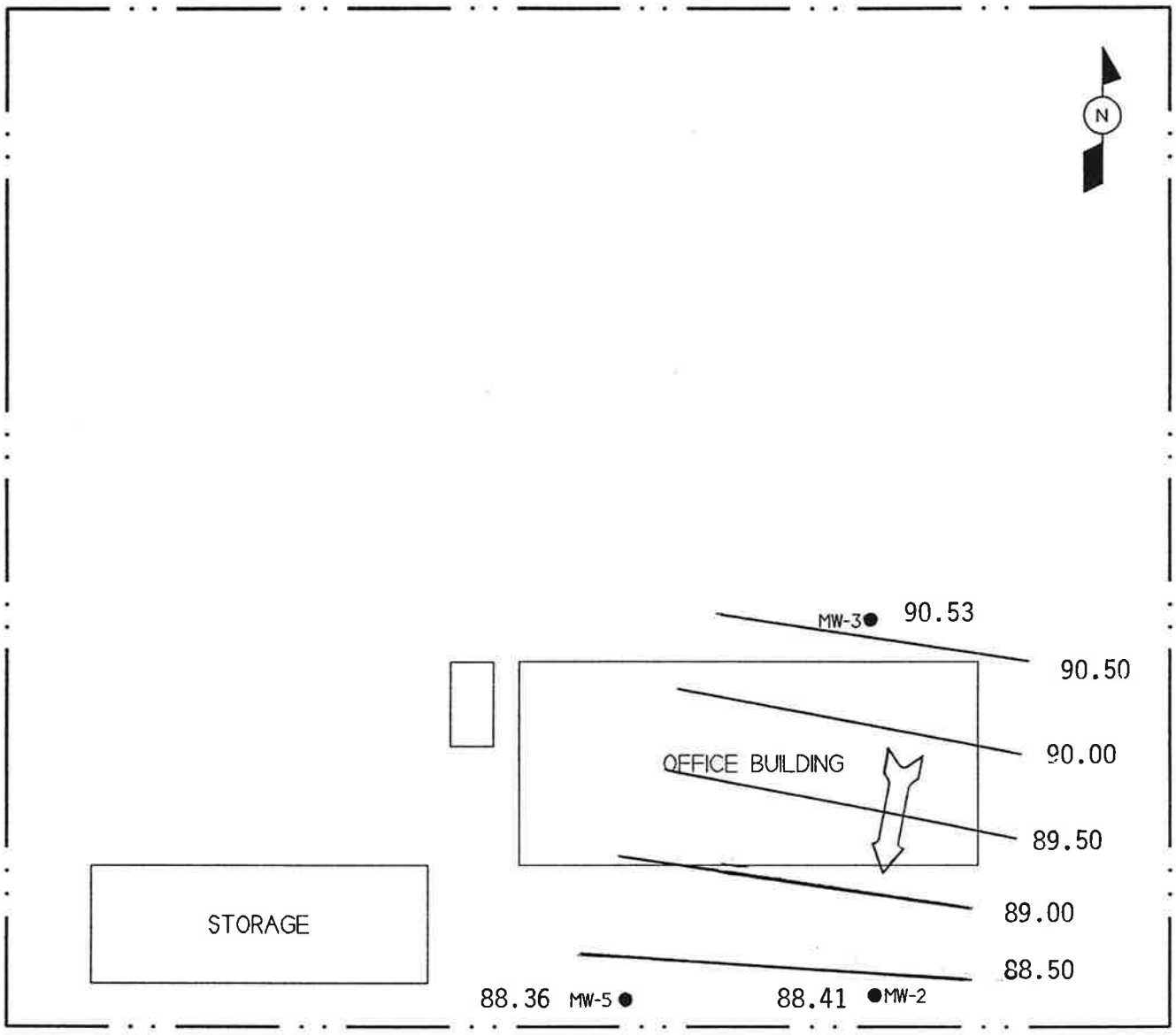


● MW-2 = Monitoring Well

= Direction of Groundwater Flow

88.36 = Groundwater Elevation (feet)

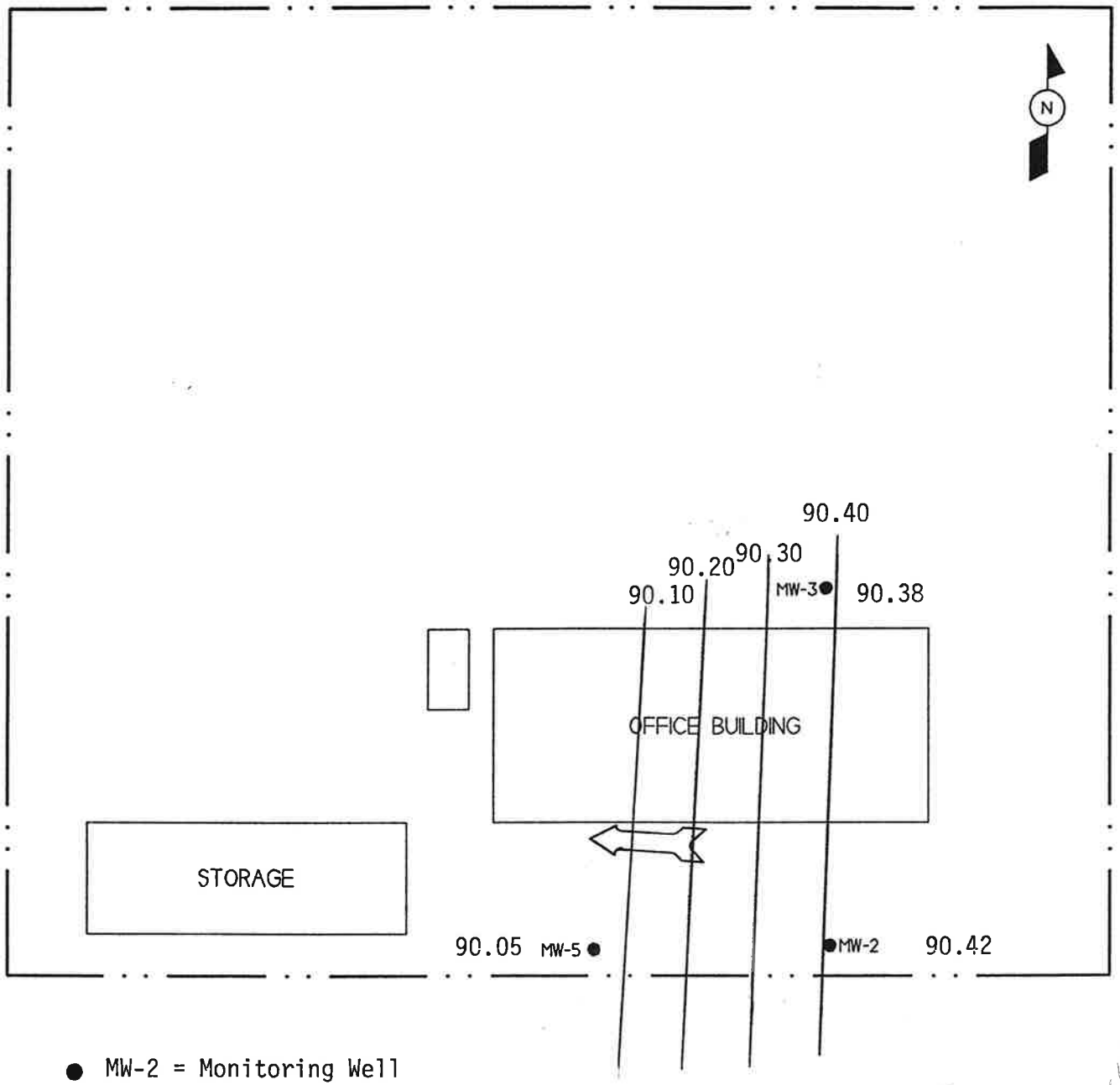
=Potentiometric Surface Contour

Contour Interval = 0.50 feet

0 80

SCALE (FEET)

TITLE: FIGURE 6 POTENTIOMETRIC SURFACE SKETCH - JAN93 1819 CENTRAL AVENUE EAST GRAND FORKS, MINNESOTA	PROJECT #: 5300 03-78	SCALE: 1 INCH = 80 FEET
	DRAWN BY: WG	CHECKED BY: TJ
	DRAWING NAME:	DATE: 11/93



● MW-2 = Monitoring Well

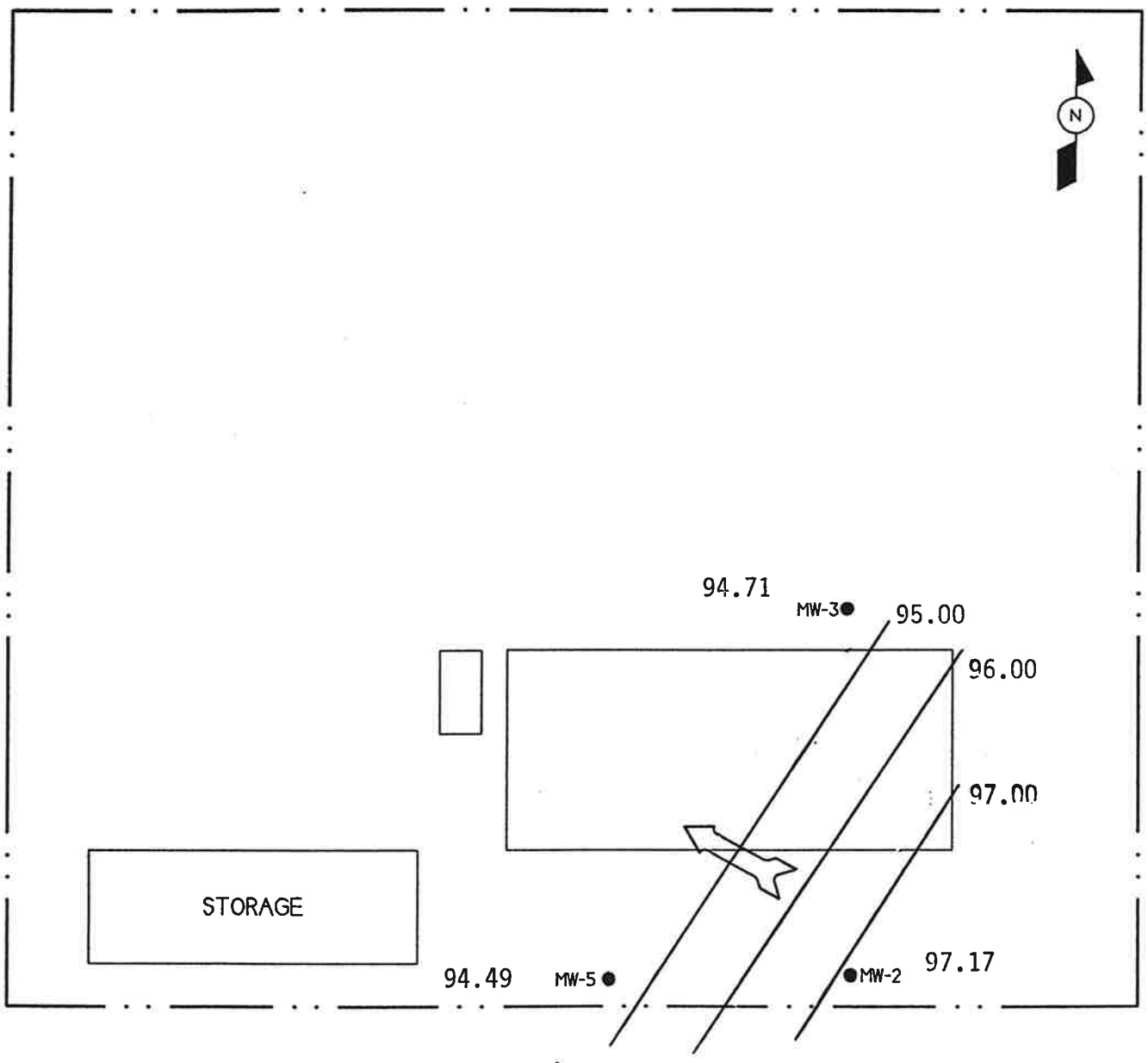
⟹ = Direction of Groundwater Flow

90.05 = Groundwater Elevation (feet)

/ = Potentiometric Surface Elevation
Contour Interval = 0.10 feet

0 80
SCALE (FEET)

TITLE: FIGURE 7 POTENTIOMETRIC SURFACE SKETCH - FEB93 1819 CENTRAL AVENUE EAST GRAND FORKS. MINNESOTA	PROJECT #: 5300 03-78	SCALE: 1 INCH - 80 FEET
	DRAWN BY: WG	CHECKED BY: TJ
	DRAWING NAME:	DATE: 11/93



● MW-2 = Monitoring Well

= Direction of Groundwater Flow

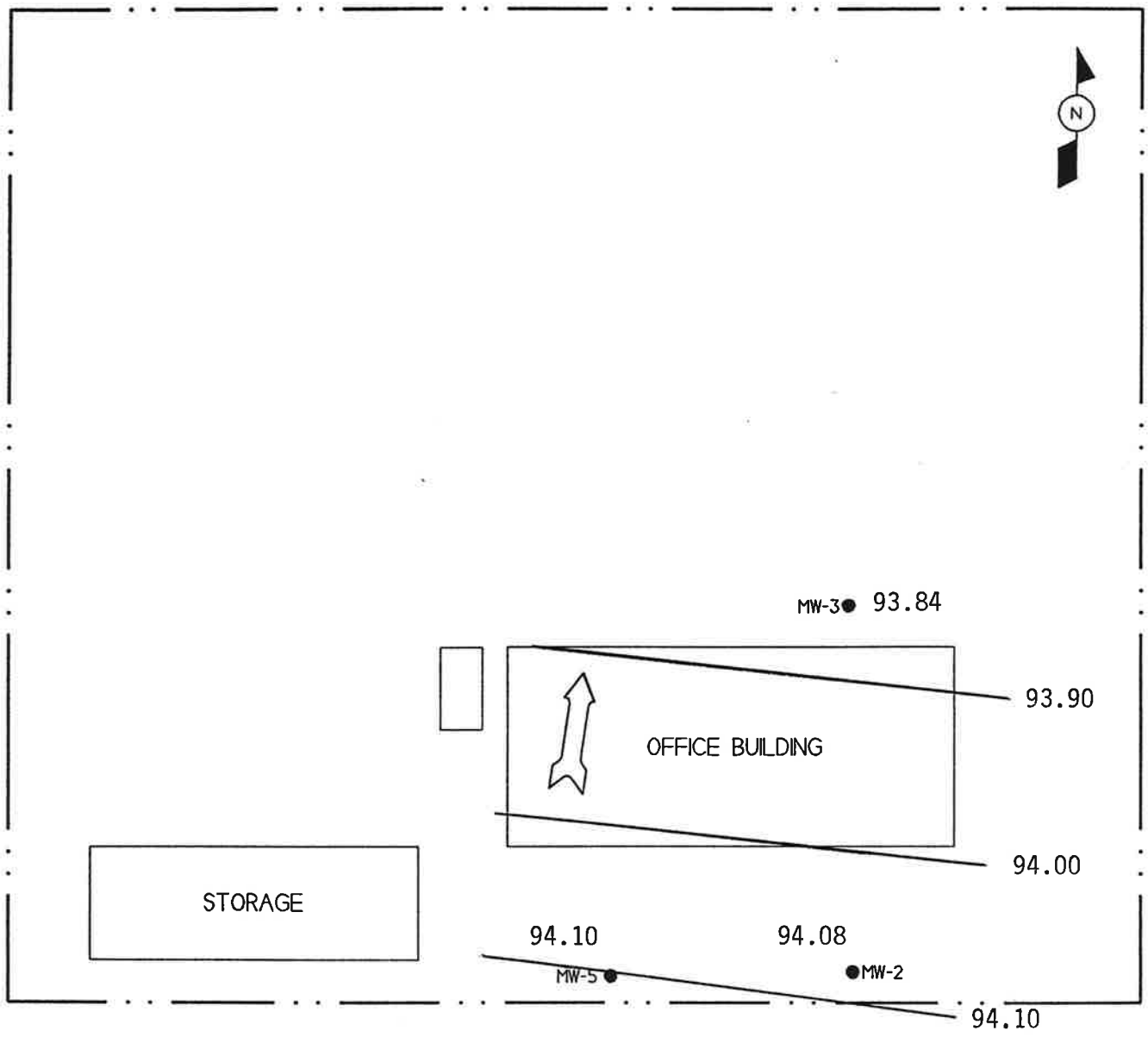
94.49 = Groundwater Elevation (feet)

= Potentiometric Surface Elevation
Contour Interval = 1.0 feet

0 80

SCALE (FEET)

TITLE: FIGURE 8 POTENTIOMETRIC SURFACE SKETCH - JULY93 1819 CENTRAL AVENUE EAST GRAND FORKS. MINNESOTA	PROJECT #: 5300 03-78	SCALE: 1 INCH - 80 FEET
	DRAWN BY: WG	CHECKED BY: TJ
	DRAWING NAME:	DATE: 11/93



● MW-2 = Monitoring Well

⟹ = Direction of Groundwater Flow

94.10 = Groundwater Elevation (feet)

/ = Potentiometric Surface Contour
Contour Interval = 0.10 feet

0 80
SCALE (FEET)

TITLE: FIGURE 9 POTENTIOMETRIC SURFACE SKETCH - SEPT93 1819 CENTRAL AVENUE EAST GRAND FORKS, MINNESOTA	PROJECT #: 5300 03-78	SCALE: 1 INCH = 80 FEET
	DRAWN BY: WG	CHECKED BY: TJ
	DRAWING NAME:	DATE: 11/93

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Consulting Engineers & Environmental Scientists

Twin City Testing Corporation
601 East 48th Street North
Sioux Falls, South Dakota 57104-0698
(605) 332-5371
Fax: (605) 332-8488

REPORT OF: CHEMICAL ANALYSIS

PROJECT: AMERICAN FEDERAL SAVINGS BANK **DATE:** February 12, 1993

REPORTED TO: Twin City Testing Corporation
Attn: Brad Torgerson
1555-C North 42nd Street
Grand Forks, ND 58206

LABORATORY NO: 6600 03-101

INTRODUCTION

On January 15, 1993, our laboratory received samples from the above referenced site. We were requested to conduct an analysis to determine the concentration of benzene, toluene, xylene, ethylbenzene, methyl tertiary butyl ether, gasoline range organics (GRO), and total lead in the samples according to EPA Methods.

SAMPLE IDENTIFICATION

TCT #	Identification
93-1482	SB-1, 9½-11½'
93-1483	SB-2, 7-9'
93-1484	SB-3, 7-9'
93-1485	SB-4, 7-9'
93-1486	SB-5, 7-9'
93-1487	SB-6, 7-9'

METHODOLOGY

GRO concentrations were determined using methods similar to Wisconsin Gasoline Range Organics Methods with a Tekmar LSC-2 Liquid Sample Concentrator on a Perkin Elmer Sigma 3B Gas Chromatograph equipped with a flame ionization detector. Compounds were identified by column retention time and quantified by peak area comparisons to those of known standards using a Hewlett Packard 3396A Integrator.

The samples for lead were analyzed according to Method 3050 referenced in USEPA Methods Manual SW846. The solutions for lead were analyzed using a GBC Model 904 Atomic Absorption Spectrophotometer.

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A member of the HIH group of companies

REPORT OF: CHEMICAL ANALYSIS

LABORATORY NO. 6600 03-101

DATE: February 12, 1993
PAGE: 2

RESULTS

The results of the GRO analysis are listed in Table 1. The results of the lead analysis are listed in Table 2.

REMARKS

The samples were taken on January 13, 1993. The samples for GRO were analyzed on January 22, 23 and 26, 1993. The samples for GRO were consumed in the analysis. The sample extracts will be held for thirty days from the date of this report, then discarded unless other arrangements are made.

TWIN CITY TESTING CORPORATION

Mark Edeen
Gas Chromatography

Virginia VerMulm
Atomic Absorption

Dan T. Hanson
Chemistry Manager

ME/VV/DTH/kk
3-1011&g.gf

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TABLE 1
GASOLINE RANGE ORGANICS ANALYSIS
#6600 03-101
February 12, 1993

Parameter	SB-1 93-1482	SB-2 93-1483	SB-3 93-1484	MDL
GRO	ND	240,000	ND	5,000
Benzene	ND	20,000	ND	50
Toluene	ND	5,900	ND	50
Xylene	ND	11,000	ND	50
Ethylbenzene	Nd	3,700	ND	50
Methyl tertiary butyl ether	ND	11,000	ND	50
SURROGATE RECOVERY:				
α,α,α-Trifluorotoluene	104%	100%	105%	

All values are in ug/kg. ug/kg is equal to parts per billion.

MDL - Method Detection Limit

ND - Not Detected

TABLE 1 (cont.)
GASOLINE RANGE ORGANICS ANALYSIS
#6600 03-101
February 12, 1993

Parameter	SB-4 93-1485	SB-5 93-1486	SB-6 93-1487	MDL
GRO	ND	ND	130,000	5,000
Benzene	ND	ND	9,000	50
Toluene	ND	ND	4,200	50
Xylene	ND	ND	12,000	50
Ethylbenzene	Nd	ND	5,900	50
Methyl tertiary butyl ether	ND	ND	4,500	50
SURROGATE RECOVERY:				
α,α,α-Trifluorotoluene	105%	103%	108%	

All values are in ug/kg. ug/kg is equal to parts per billion.

MDL - Method Detection Limit

ND - Not Detected

TABLE 2
LEAD ANALYSIS
#6600 03-101
February 12, 1993

TCT #	Lead	Lower Detectable Limit
93-1482	7.3	2.0
93-1483	8.2	2.0
93-1484	7.2	2.0
93-1485	6.9	2.0
93-1486	4.6	2.0
93-1487	5.8	2.0

All results are in mg/kg.

twin city testing corporation

CHAIN-OF-CUSTODY RECORD

TCT NO. 04303

TCT USE ONLY
PROJ. MGR.
PRIORITY
INVOICE #
JOB NAME
CUSTODY SEAL INTACT/NUMBER Y/N
TEMPERATURE OF CONTAINER
SAMPLE CONDITION

Brad Torgerson
TCT CONTACT

1819 Central Avenue NW
PROJECT NAME

5400 93-48
CLIENT P.O. # / PROJECT NO.

5400 93-48
BILL TO (CO. NAME, ADDRESS)

Brad
REPORT TO

American Federal Savings Bank
CLIENT NAME

David Fisher
CLIENT ADDRESS

CLIENT CONTACT/ADDRESS IF DIFFERENT FROM ABOVE PHONE

Brad Torgerson / Brady J. Torgerson
SAMPLED BY PRINT NAME/SIGNATURE

1-13-93 & 1-14-93
DATE/TIME SAMPLED

POSSIBLE HAZARD: YES ____ UNKNOWN X (COMMENT BELOW)

SAMPLE DISPOSAL: RETURN TO CLIENT ____ DISPOSAL BY LAB X
(ADDITIONAL CHARGES MAY BE ASSESSED)

PREPAY Y/N
CHECK NO.
CHECK AMOUNT

ANALYSES REQUEST

CODE A - NONE
B - HNO3
C - H_2SO_4
D - NaOH
E - HCl
F - methanol

ITEM NO.	CLIENT SAMPLE ID.	MATRIX	NO. OF CONTAINERS	CONTAINER TYPE	FILTERED (YES/NO)	PRESERVED (CODE)	REFRIGERATED (Y/N)	GRO, BETX	MTBE	Lead	REMARKS	TCT NO.
					N	A	Y					
1	Soil Boring #1, 9½'-11½'	Soil	4	60ml soil jar + 8oz soil jar	X	X	X					1482
2	Soil Boring #2, 7'-9'	Soil	4	" "	X	X	X					1483
3	Soil Boring #3, 7'-9'	Soil	4	" "	X	X	X					1484
4	Soil Boring #4, 7'-9'	Soil	4	" "	X	X	X					1485
5	Soil Boring #5, 7'-9'	Soil	4	" "	X	X	X					1486
6	Soil Boring #6, 7'-9'	Soil	4	" "	X	X	X					1487
7												
8												
9												
10												

Additional Comments	ITEM NO.	RELINQUISHED BY / AFFILIATION	ACCEPTED BY / AFFILIATION	DATE	TIME
Possible hydrocarbon contamination		Brad Torgerson/TCT	Airborne	1-21	

* SEE REVERSE SIDE FOR INSTRUCTIONS

twin city testing corporation
662 CROMWELL AVENUE
ST. PAUL, MN 55114
PHONE 612/645-3601

REPORT OF: CHEMICAL ANALYSES

PROJECT: AMERICAN FEDERAL SAVINGS BANK, 5400 93-48 **DATE:** February 20, 1993

REPORTED TO: Twin City Testing
Attn: Brad Torgerson
1505-C North 42nd Street
Grand Forks, ND 58206

LABORATORY NO: 4410 03-1012

INTRODUCTION

This report presents the results of the analyses of five samples received on February 2, 1993, from a representative of Twin City Testing, Grand Forks. The scope of our services was limited to the parameters listed in the attached tables.

METHODOLOGY

Analyses are performed according to Twin City Testing Standard Operating Procedures. The procedures are based on the references stated in the analytical results tables.

RESULTS

The results are listed in the attached tables.

REMARKS

The samples were collected on February 1, 1993. If samples are not consumed in the analysis, they are held for three months from the date of sample receipt and then disposed, unless written instructions to the contrary are received.

TWIN CITY TESTING CORPORATION

Todd Mitchell

Todd Mitchell
Project Manager

S O. Max

Susan Max
Laboratory Manager

TM/SM/NJW

AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC AND OURSELVES, ALL TWIN CITY TESTING CORPORATION REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS OR EXTRACTIONS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR PRIOR WRITTEN APPROVAL.

VOLATILE ORGANIC COMPOUNDS
MNDH METHOD 465D

(All values are in µg/L which is equivalent to parts-per-billion)

Client ID:	Method Blank	Method Blank	Method Blank	MW-2[2]	
TCT ID:				308437	
Compound:					**PQL**
Acetone	ND	ND	ND	ND	10
Allyl Chloride	ND	ND	ND	ND	10
Benzene	ND	ND	ND	ND	1
Bromobenzene	ND	ND	ND	ND	1
Bromochloromethane	ND	ND	ND	ND	1
Bromodichloromethane	ND	ND	ND	ND	1
Bromoform	ND	ND	ND	ND	5
Bromomethane	ND	ND	ND	ND	2
n-Butylbenzene	ND	ND	ND	2	1
sec-Butylbenzene	ND	ND	ND	ND	1
tert-Butylbenzene	ND	ND	ND	ND	1
Carbon tetrachloride	ND	ND	ND	ND	1
Chlorobenzene	ND	ND	ND	ND	1
Chloroethane	ND	ND	ND	ND	2
Chloroform	ND	ND	ND	ND	1
Chloromethane	ND	ND	ND	ND	5
2-Chlorotoluene	ND	ND	ND	ND	1
4-Chlorotoluene	ND	ND	ND	ND	1
1,2-Dibromo-3-chloropropane	ND	ND	ND	ND	5
Dibromochloromethane	ND	ND	ND	ND	1
1,2-Dibromoethane	ND	ND	ND	ND	2
Dibromomethane	ND	ND	ND	ND	1
1,2-Dichlorobenzene	ND	ND	ND	ND	1
1,3-Dichlorobenzene	ND	ND	ND	ND	1
1,4-Dichlorobenzene	ND	ND	ND	ND	1
Dichlorodifluoromethane	ND	ND	ND	ND	2
1,1-Dichloroethane	ND	ND	ND	ND	1
1,2-Dichloroethane	ND	ND	ND	ND	1
1,1-Dichloroethene	ND	ND	ND	ND	1
cis-1,2-Dichloroethene	ND	ND	ND	ND	1
trans-1,2-Dichloroethene	ND	ND	ND	ND	1
Dichlorofluoromethane	ND	ND	ND	ND	5
1,2-Dichloropropane	ND	ND	ND	ND	1
1,3-Dichloropropane	ND	ND	ND	ND	1
2,2-Dichloropropane	ND	ND	ND	ND	1

(continued)

[2]Chromatographic profile also contains unidentified high boiling hydrocarbons.

PQL = Practical Quantitation Limit
ND = Not Detected

LABORATORY NO: 4410 03-1012

VOLATILE ORGANIC COMPOUNDS (continued)
MNDH METHOD 465D

(All values are in µg/L which is equivalent to parts-per-billion)

Client ID:	Method Blank	Method Blank	Method Blank	MW-2[2]	
TCT ID:				308437	
Compound:					**PQL**
1,1-Dichloropropene	ND	ND	ND	ND	1
cis-1,3-Dichloropropene	ND	ND	ND	ND	1
trans-1,3-Dichloropropene	ND	ND	ND	ND	1
Ethyl Ether	ND	ND	ND	ND	5
Ethylbenzene	ND	ND	ND	3	1
Hexachlorobutadiene	ND	ND	ND	ND	1
Isopropylbenzene	ND	ND	ND	ND	1
p-Isopropyltoluene	ND	ND	ND	ND	1
Methyl Ethyl Ketone	ND	ND	ND	ND	5
Methyl Isobutyl Ketone	ND	ND	ND	ND	5
Methyl-tert-Butyl Ether	ND	ND	ND	ND	1
Methylene chloride	ND	ND	ND	ND	1
Naphthalene	ND	ND	ND	ND	1
n-Propylbenzene	ND	ND	ND	ND	1
1,1,1,2-Tetrachloroethane	ND	ND	ND	ND	1
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	1
Tetrachloroethene	ND	ND	ND	ND	1
Tetrahydrofuran	ND	ND	ND	ND	10
Toluene	ND	ND	ND	ND	1
1,2,3-Trichlorobenzene	ND	ND	ND	ND	1
1,2,4-Trichlorobenzene	ND	ND	ND	ND	1
1,1,1-Trichloroethane	ND	ND	ND	ND	2
1,1,2-Trichloroethane	ND	ND	ND	ND	1
Trichloroethene	ND	ND	ND	ND	1
Trichlorofluoromethane	ND	ND	ND	ND	2
1,2,3-Trichloropropane	ND	ND	ND	ND	1
Trichlorotrifluoroethane	ND	ND	ND	ND	1
1,2,4-Trimethylbenzene	ND	ND	ND	ND	1
1,3,5-Trimethylbenzene	ND	ND	ND	5	1
Vinyl chloride	ND	ND	ND	ND	2
o-Xylene, Styrene[1]	ND	ND	ND	ND	1
m-p-Xylenes[1]	ND	ND	ND	ND	1
Date Analyzed:	2/8-9/93	2/10-11/93	2/11-12/93	2/10-12/93	

[1]Compounds not separated by this method.
[2]Chromatographic profile also contains unidentified high boiling hydrocarbons.
PQL = Practical Quantitation Limit
ND = Not Detected

Reference: Minnesota Department of Health, Method 465D.

LABORATORY NO: 4410 03-1012

VOLATILE ORGANIC COMPOUNDS
MNDH METHOD 465D

(All values are in µg/L which is equivalent to parts-per-billion)

Client ID:	MW-3	MW-5	Trip Blank	Bailer Blank	
TCT ID:	308438	308439	308440	308441	
Compound:					**PQL**
Acetone	ND	ND	ND	ND	10
Allyl Chloride	ND	ND	ND	ND	10
Benzene	ND	ND	ND	ND	1
Bromobenzene	ND	ND	ND	ND	1
Bromochloromethane	ND	ND	ND	ND	1
Bromodichloromethane	ND	ND	ND	ND	1
Bromoform	ND	ND	ND	ND	5
Bromomethane	ND	ND	ND	ND	2
n-Butylbenzene	ND	ND	ND	ND	1
sec-Butylbenzene	ND	ND	ND	ND	1
tert-Butylbenzene	ND	ND	ND	ND	1
Carbon tetrachloride	ND	ND	ND	ND	1
Chlorobenzene	ND	ND	ND	ND	1
Chloroethane	ND	ND	ND	ND	2
Chloroform	ND	ND	ND	ND	1
Chloromethane	ND	ND	ND	ND	5
2-Chlorotoluene	ND	ND	ND	ND	1
4-Chlorotoluene	ND	ND	ND	ND	1
1,2-Dibromo-3-chloropropane	ND	ND	ND	ND	5
Dibromochloromethane	ND	ND	ND	ND	1
1,2-Dibromoethane	ND	ND	ND	ND	2
Dibromomethane	ND	ND	ND	ND	1
1,2-Dichlorobenzene	ND	ND	ND	ND	1
1,3-Dichlorobenzene	ND	ND	ND	ND	1
1,4-Dichlorobenzene	ND	ND	ND	ND	1
Dichlorodifluoromethane	ND	ND	ND	ND	2
1,1-Dichloroethane	ND	ND	ND	ND	1
1,2-Dichloroethane	ND	ND	ND	ND	1
1,1-Dichloroethene	ND	ND	ND	ND	1
cis-1,2-Dichloroethene	ND	ND	ND	ND	1
trans-1,2-Dichloroethene	ND	ND	ND	ND	1
Dichlorofluoromethane	ND	ND	ND	ND	5
1,2-Dichloropropane	ND	ND	ND	ND	1
1,3-Dichloropropane	ND	ND	ND	ND	1
2,2-Dichloropropane	ND	ND	ND	ND	1

(continued)

PQL = Practical Quantitation Limit
ND = Not Detected

LABORATORY NO: 4410 03-1012

VOLATILE ORGANIC COMPOUNDS (continued)
MNDH METHOD 465D

(All values are in µg/L which is equivalent to parts-per-billion)

Client ID:	MW-3	MW-5	Trip Blank	Bailer Blank	
TCT ID:	308438	308439	308440	308441	
Compound:					**PQL**
1,1-Dichloropropene	ND	ND	ND	ND	1
cis-1,3-Dichloropropene	ND	ND	ND	ND	1
trans-1,3-Dichloropropene	ND	ND	ND	ND	1
Ethyl Ether	ND	ND	ND	ND	5
Ethylbenzene	ND	ND	ND	ND	1
Hexachlorobutadiene	ND	ND	ND	ND	1
Isopropylbenzene	ND	ND	ND	ND	1
p-Isopropyltoluene	ND	ND	ND	ND	1
Methyl Ethyl Ketone	ND	ND	ND	ND	5
Methyl Isobutyl Ketone	ND	ND	ND	ND	5
Methyl-tert-Butyl Ether	ND	ND	ND	ND	1
Methylene chloride	ND	ND	ND	ND	1
Naphthalene	ND	ND	ND	ND	1
n-Propylbenzene	ND	ND	ND	ND	1
1,1,1,2-Tetrachloroethane	ND	ND	ND	ND	1
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	1
Tetrachloroethene	ND	ND	ND	ND	1
Tetrahydrofuran	ND	ND	ND	ND	10
Toluene	ND	ND	ND	ND	1
1,2,3-Trichlorobenzene	ND	ND	ND	ND	1
1,2,4-Trichlorobenzene	ND	ND	ND	ND	1
1,1,1-Trichloroethane	ND	ND	ND	ND	2
1,1,2-Trichloroethane	ND	ND	ND	ND	1
Trichloroethene	ND	ND	ND	ND	1
Trichlorofluoromethane	ND	ND	ND	ND	2
1,2,3-Trichloropropane	ND	ND	ND	ND	1
Trichlorotrifluoroethane	ND	ND	ND	ND	1
1,2,4-Trimethylbenzene	ND	ND	ND	ND	1
1,3,5-Trimethylbenzene	ND	ND	ND	ND	1
Vinyl chloride	ND	ND	ND	ND	2
o-Xylene, Styrene[1]	ND	ND	ND	ND	1
m-p-Xylenes[1]	ND	ND	ND	ND	1
Date Analyzed:	2/10/93	2/10/93	2/8-9/93	2/10-11/93	

[1]Compounds not separated by this method.

PQL = Practical Quantitation Limit
ND = Not Detected

Reference: Minnesota Department of Health, Method 465D.

LABORATORY NO: 4410 03-1012

GASOLINE RANGE ORGANICS RESULTS
EPA METHOD 8020

(All values are in µg/L which is equivalent to parts-per-billion)

Client ID:	Method Blank	MW-2	MW-3	MW-5	
TCT ID:		308437	308438	308439	
Parameter:					**PQL**
Gasoline Range Organics	ND	110	ND	ND	30
Surrogate Recovery:					
α,α,α-Trifluorotoluene	101%	107%	104%	103%	
Date Collected:		2/1/93	2/1/93	2/1/93	
Date Analyzed:	2/3/93	2/3/93	2/3/93	2/3/93	

PQL = Practical Quantitation Limit

ND = Not Detected

Reference: EPA Test Methods for Evaluating Solid Waste, SW-846, November 1986, 3rd Edition.

Wisconsin Department of Natural Resources, PUBL-SW-140, April 1992.

LABORATORY NO: 4410 03-1012

ANALYTICAL RESULTS

(All values are in µg/L which is equal to parts-per-billion)

Client ID:	MW-2	MW-3	MW-5			
TCT ID:	308437	308438	308439			
Parameter				**PQL**	**Test Date**	**Test Method**
Lead	ND	ND	ND	50	2/9/93	200.7

ND = Not Detected

PQL = Practical Quantitation Limit

Reference: Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, March, 1983.

LABORATORY NO: 4410 03-1012

twin city testing corporation

V3-38

CHAIN-OF-CUSTODY RECORD

TCT NO. 04309

Brad Torgerson
TCT CONTACT

1819 Central Avenue NW
PROJECT NAME

5400 93-48
CLIENT P.O. # / PROJECT NO.

5400 93-48
BILL TO (CO. NAME, ADDRESS)

Brad Torgerson
REPORT TO

American Federal Savings Bank
CLIENT NAME

CLIENT ADDRESS

CLIENT CONTACT/ADDRESS IF DIFFERENT FROM ABOVE PHONE

Brad Torgerson/ Bradyn Torgerson
SAMPLED BY PRINT NAME/SIGNATURE

2-1-93
DATE/TIME SAMPLED

POSSIBLE HAZARD: YES ____ UNKNOWN X (COMMENT BELOW)

SAMPLE DISPOSAL: RETURN TO CLIENT ____ DISPOSAL BY LAB X
(ADDITIONAL CHARGES MAY BE ASSESSED)

TCT USE ONLY	
PROJ. MGR.	TODD
PRIORITY	Normal
INVOICE #	4410 03-1012
JOB NAME	GRA-Americ.1
CUSTODY SEAL INTACT/NUMBER Y/N	N-A
TEMPERATURE OF CONTAINER	10.5°C
SAMPLE CONDITION	OK

PREPAY Y/N	N
CHECK NO.	
CHECK AMOUNT	

ANALYSES REQUEST

CODE A - NONE
B - HNO3
C - H_2SO_4
D - NaOH
E - HCl
F - _____

ITEM NO.	CLIENT SAMPLE ID.	MATRIX	NO. OF CONTAINERS	CONTAINER TYPE	FILTERED (YES/NO)	PRESERVED (CODE)	REFRIGERATED (Y/N)	MN DOH 465D List VOCs	6R01 MTBE	Total Lead	REMARKS	TCT NO.
1	mw-2 0201360	Water	4	40 ml VOAs & 500ml plastic	N	E	Y	X	X	X		308437
2	mw-3, 0201045	water	4	" "	N	E	Y	X	X	X		308438
3	mw-5, 0201247	water	4	" "	N	B	Y	X	X	X		308439
4	Trip Blank, 0201905	water	3	40 ml VOAs				X				308440
5	Bailer Blank, 0201045	water	3	40 ml VOAs				X				308441
6												308442 (RW)
7												
8												
9												
10												

Additional Comments	ITEM NO.	RELINQUISHED BY / AFFILIATION	ACCEPTED BY / AFFILIATION	DATE	TIME
Possible hydrocarbon Contamination		Brad Torgerson/ TCT	Airborne Express	2-1-93	4:30
			Paula Kreuz	2/4/93	10:00

twin city testing corporation
662 CROMWELL AVENUE
ST. PAUL, MN 55114
PHONE 612/645-3601

REPORT OF: CHEMICAL ANALYSES

PROJECT: AMERICA FEDERAL SAVINGS BANK, 5300 03-78 **DATE:** August 6, 1993

REPORTED TO: Twin City Testing Corporation
Attn: Wayne Gerzewski
2105 7th Avenue N
Fargo, ND 58102

LABORATORY NO: 4410 03-2037

INTRODUCTION

This report presents the results of the analyses of five samples received on July 20, 1993, from a representative of Twin City Testing Corporation, Fargo branch. The scope of our services was limited to the parameters listed in the attached tables.

METHODOLOGY

Analyses are performed according to Twin City Testing Standard Operating Procedures. The procedures are based on the references stated in the analytical results tables.

RESULTS

The results are listed in the attached tables.

REMARKS

The samples were collected on July 18, 1993. If samples are not consumed in the analysis, they are held for two months from the date of sample receipt and then disposed, unless written instructions to the contrary are received.

TWIN CITY TESTING CORPORATION

Todd Mitchell
Project Manager

Stephanie Kidder
Laboratory Manager

TM/SK/jd

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VOLATILE ORGANIC COMPOUNDS
MNDH METHOD 465D

(All values are in µg/L which is equivalent to parts-per-billion)

Client ID:	Method Blank	Method Blank	
TCT ID:			
Compound:			**PQL**
Acetone	ND	ND	10
Allyl Chloride	ND	ND	10
Benzene	ND	ND	1
Bromobenzene	ND	ND	1
Bromochloromethane	ND	ND	1
Bromodichloromethane	ND	ND	1
Bromoform	ND	ND	5
Bromomethane	ND	ND	2
n-Butylbenzene	ND	ND	1
sec-Butylbenzene	ND	ND	1
tert-Butylbenzene	ND	ND	1
Carbon tetrachloride	ND	ND	1
Chlorobenzene	ND	ND	1
Chloroethane	ND	ND	2
Chloroform	ND	ND	1
Chloromethane	ND	ND	5
2-Chlorotoluene	ND	ND	1
4-Chlorotoluene	ND	ND	1
1,2-Dibromo-3-chloropropane	ND	ND	5
Dibromochloromethane	ND	ND	1
1,2-Dibromoethane	ND	ND	2
Dibromomethane	ND	ND	1
1,2-Dichlorobenzene	ND	ND	1
1,3-Dichlorobenzene	ND	ND	1
1,4-Dichlorobenzene	ND	ND	1
Dichlorodifluoromethane	ND	ND	5
1,1-Dichloroethane	ND	ND	1
1,2-Dichloroethane	ND	ND	1
1,1-Dichloroethene	ND	ND	1
cis-1,2-Dichloroethene	ND	ND	1
trans-1,2-Dichloroethene	ND	ND	1
Dichlorofluoromethane	ND	ND	2
1,2-Dichloropropane	ND	ND	1
1,3-Dichloropropane	ND	ND	1
2,2-Dichloropropane	ND	ND	1

(continued)

PQL = Practical Quantitation Limit
ND = Not Detected

VOLATILE ORGANIC COMPOUNDS (continued)
MNDH METHOD 465D

(All values are in µg/L which is equivalent to parts-per-billion)

Client ID:	**Method Blank**	**Method Blank**	
TCT ID:			
Compound:			**PQL**
1,1-Dichloropropene	ND	ND	1
cis-1,3-Dichloropropene	ND	ND	1
trans-1,3-Dichloropropene	ND	ND	1
Ethyl Ether	ND	ND	5
Ethylbenzene	ND	ND	1
Hexachlorobutadiene	ND	ND	1
Isopropylbenzene	ND	ND	1
p-Isopropyltoluene	ND	ND	1
Methyl Ethyl Ketone	ND	ND	5
Methyl Isobutyl Ketone	ND	ND	5
Methyl-tert-Butyl Ether	ND	ND	1
Methylene chloride	ND	ND	1
Naphthalene	ND	ND	1
n-Propylbenzene	ND	ND	1
1,1,1,2-Tetrachloroethane	ND	ND	1
1,1,2,2-Tetrachloroethane	ND	ND	1
Tetrachloroethene	ND	ND	1
Tetrahydrofuran	ND	ND	10
Toluene	ND	ND	1
1,2,3-Trichlorobenzene	ND	ND	1
1,2,4-Trichlorobenzene	ND	ND	1
1,1,1-Trichloroethane	ND	ND	2
1,1,2-Trichloroethane	ND	ND	1
Trichloroethene	ND	ND	1
Trichlorofluoromethane	ND	ND	2
1,2,3-Trichloropropane	ND	ND	1
Trichlorotrifluoroethane	ND	ND	1
1,2,4-Trimethylbenzene	ND	ND	1
1,3,5-Trimethylbenzene	ND	ND	1
Vinyl chloride	ND	ND	2
o-Xylene, Styrene[1]	ND	ND	1
m-p-Xylenes[1]	ND	ND	1
Date Analyzed:	7/31-8/1/93	7/30-31/93	

[1]Compounds not separated by this method.

PQL = Practical Quantitation Limit
ND = Not Detected

Reference: Minnesota Department of Health, Method 465D.

VOLATILE ORGANIC COMPOUNDS
MNDH METHOD 465D

(All values are in µg/L which is equivalent to parts-per-billion)

Client ID:	MW-5	MW-2	MW-3	
TCT ID:	323109	323111	323112	
Compound:				**PQL**
Acetone	ND	ND	ND	10
Allyl Chloride	ND	ND	ND	10
Benzene	ND	1	ND	1
Bromobenzene	ND	ND	ND	1
Bromochloromethane	ND	ND	ND	1
Bromodichloromethane	ND	ND	ND	1
Bromoform	ND	ND	ND	5
Bromomethane	ND	ND	ND	2
n-Butylbenzene	ND	1	ND	1
sec-Butylbenzene	ND	ND	ND	1
tert-Butylbenzene	ND	ND	ND	1
Carbon tetrachloride	ND	ND	ND	1
Chlorobenzene	ND	ND	ND	1
Chloroethane	ND	ND	ND	2
Chloroform	ND	ND	ND	1
Chloromethane	ND	ND	ND	5
2-Chlorotoluene	ND	ND	ND	1
4-Chlorotoluene	ND	ND	ND	1
1,2-Dibromo-3-chloropropane	ND	ND	ND	5
Dibromochloromethane	ND	ND	ND	1
1,2-Dibromoethane	ND	ND	ND	2
Dibromomethane	ND	ND	ND	1
1,2-Dichlorobenzene	ND	ND	ND	1
1,3-Dichlorobenzene	ND	ND	ND	1
1,4-Dichlorobenzene	ND	ND	ND	1
Dichlorodifluoromethane	ND	ND	ND	5
1,1-Dichloroethane	ND	ND	ND	1
1,2-Dichloroethane	ND	ND	ND	1
1,1-Dichloroethene	ND	ND	ND	1
cis-1,2-Dichloroethene	ND	ND	ND	1
trans-1,2-Dichloroethene	ND	ND	ND	1
Dichlorofluoromethane	ND	ND	ND	2
1,2-Dichloropropane	ND	ND	ND	1
1,3-Dichloropropane	ND	ND	ND	1
2,2-Dichloropropane	ND	ND	ND	1

(continued)

PQL = Practical Quantitation Limit
ND = Not Detected

VOLATILE ORGANIC COMPOUNDS (continued)
MNDH METHOD 465D

(All values are in µg/L which is equivalent to parts-per-billion)

Client ID:	MW-5	MW-2	MW-3	
TCT ID:	323109	323111	323112	
Compound:				**PQL**
1,1-Dichloropropene	ND	ND	ND	1
cis-1,3-Dichloropropene	ND	ND	ND	1
trans-1,3-Dichloropropene	ND	ND	ND	1
Ethyl Ether	ND	ND	ND	5
Ethylbenzene	ND	15	ND	1
Hexachlorobutadiene	ND	ND	ND	1
Isopropylbenzene	ND	2	ND	1
p-Isopropyltoluene	ND	ND	ND	1
Methyl Ethyl Ketone	ND	ND	ND	5
Methyl Isobutyl Ketone	ND	ND	ND	5
Methyl-tert-Butyl Ether	ND	ND	ND	1
Methylene chloride	ND	ND	ND	1
Naphthalene	ND	ND	ND	1
n-Propylbenzene	ND	4	ND	1
1,1,1,2-Tetrachloroethane	ND	ND	ND	1
1,1,2,2-Tetrachloroethane	ND	ND	ND	1
Tetrachloroethene	ND	ND	ND	1
Tetrahydrofuran	ND	ND	ND	10
Toluene	ND	21	ND	1
1,2,3-Trichlorobenzene	ND	ND	ND	1
1,2,4-Trichlorobenzene	ND	ND	ND	1
1,1,1-Trichloroethane	ND	ND	ND	2
1,1,2-Trichloroethane	ND	ND	ND	1
Trichloroethene	ND	ND	ND	1
Trichlorofluoromethane	ND	ND	ND	2
1,2,3-Trichloropropane	ND	ND	ND	1
Trichlorotrifluoroethane	ND	ND	ND	1
1,2,4-Trimethylbenzene	ND	5	ND	1
1,3,5-Trimethylbenzene	ND	2	ND	1
Vinyl chloride	ND	ND	ND	2
o-Xylene, Styrene[1]	ND	ND	ND	1
m-p-Xylenes[1]	ND	9	ND	1
Date Analyzed:	7/30-31/93	7/30-31/93	7/30-31/93	

[1]Compounds not separated by this method.

PQL = Practical Quantitation Limit
ND = Not Detected

Reference: Minnesota Department of Health, Method 465D.

LABORATORY NO: 4410 03-2037

VOLATILE ORGANIC COMPOUNDS
MNDH METHOD 465D

(All values are in µg/L which is equivalent to parts-per-billion)

Client ID:	Blank	Bailer Blank	
TCT ID:	323113	323114	
Compound:			**PQL**
Acetone	ND	ND	10
Allyl Chloride	ND	ND	10
Benzene	ND	ND	1
Bromobenzene	ND	ND	1
Bromochloromethane	ND	ND	1
Bromodichloromethane	ND	ND	1
Bromoform	ND	ND	5
Bromomethane	ND	ND	2
n-Butylbenzene	ND	ND	1
sec-Butylbenzene	ND	ND	1
tert-Butylbenzene	ND	ND	1
Carbon tetrachloride	ND	ND	1
Chlorobenzene	ND	ND	1
Chloroethane	ND	ND	2
Chloroform	ND	ND	1
Chloromethane	ND	ND	5
2-Chlorotoluene	ND	ND	1
4-Chlorotoluene	ND	ND	1
1,2-Dibromo-3-chloropropane	ND	ND	5
Dibromochloromethane	ND	ND	1
1,2-Dibromoethane	ND	ND	2
Dibromomethane	ND	ND	1
1,2-Dichlorobenzene	ND	ND	1
1,3-Dichlorobenzene	ND	ND	1
X 1,4-Dichlorobenzene	ND	1	1
Dichlorodifluoromethane	ND	ND	5
1,1-Dichloroethane	ND	ND	1
1,2-Dichloroethane	ND	ND	1
1,1-Dichloroethene	ND	ND	1
cis-1,2-Dichloroethene	ND	ND	1
trans-1,2-Dichloroethene	ND	ND	1
Dichlorofluoromethane	ND	ND	2
1,2-Dichloropropane	ND	ND	1
1,3-Dichloropropane	ND	ND	1
2,2-Dichloropropane	ND	ND	1

(continued)

PQL = Practical Quantitation Limit
ND = Not Detected

VOLATILE ORGANIC COMPOUNDS (continued)
MNDH METHOD 465D

(All values are in µg/L which is equivalent to parts-per-billion)

Client ID:	Blank	Bailer Blank	
TCT ID:	323113	323114	
Compound:			**PQL**
1,1-Dichloropropene	ND	ND	1
cis-1,3-Dichloropropene	ND	ND	1
trans-1,3-Dichloropropene	ND	ND	1
Ethyl Ether	ND	ND	5
Ethylbenzene	ND	ND	1
Hexachlorobutadiene	ND	ND	1
Isopropylbenzene	ND	ND	1
p-Isopropyltoluene	ND	ND	1
Methyl Ethyl Ketone	ND	ND	5
Methyl Isobutyl Ketone	ND	ND	5
Methyl-tert-Butyl Ether	ND	ND	1
Methylene chloride	ND	ND	1
Naphthalene	ND	ND	1
n-Propylbenzene	ND	ND	1
1,1,1,2-Tetrachloroethane	ND	ND	1
1,1,2,2-Tetrachloroethane	ND	ND	1
X Tetrachloroethene	ND	2	1
Tetrahydrofuran	ND	ND	10
Toluene	ND	ND	1
1,2,3-Trichlorobenzene	ND	ND	1
1,2,4-Trichlorobenzene	ND	ND	1
1,1,1-Trichloroethane	ND	ND	2
1,1,2-Trichloroethane	ND	ND	1
Trichloroethene	ND	ND	1
Trichlorofluoromethane	ND	ND	2
1,2,3-Trichloropropane	ND	ND	1
Trichlorotrifluoroethane	ND	ND	1
1,2,4-Trimethylbenzene	ND	ND	1
1,3,5-Trimethylbenzene	ND	ND	1
Vinyl chloride	ND	ND	2
o-Xylene, Styrene[1]	ND	ND	1
m-p-Xylenes[1]	ND	ND	1
Date Analyzed:	7/30-31/93	7/30/93	

[1]Compounds not separated by this method.

PQL = Practical Quantitation Limit
ND = Not Detected

Reference: Minnesota Department of Health, Method 465D.

LABORATORY NO: 4410 03-2037