RECEIVED
APR 23 1993
MPCA, HAZARDOUS
WASTE DIVISION

LIMITED ENVIRONMENTAL SITE ASSESSMENT

Richfield Mitsubishi
Richfield, Minnesota
MPCA LEAK #00005512
TCT #4233 93-4012

Twin City Testing Corporation
737 Pelham Boulevard
St. Paul, Minnesota 55114
(612) 659-7572

December 4, 1992

TABLE OF CONTENTS

List of Tables

List of Appendices

ACRONYMS AND INITIALISMS

EPA	Environmental Protection Agency
GRO	Gasoline Range Organics
ND	Non-Detectable
PID	Photoionization Detector
PPB	Parts Per Billion
PPM	Parts Per Million
PQL	Practical Quantitation Limit
SB	Soil Boring
TCT	Twin City Testing Corporation
VOCs	Volatile Organic Compounds

LIMITED ENVIRONMENTAL SITE ASSESSMENT

Richfield Mitsubishi
920 West 78th Street
Richfield, Minnesota
MPCA LEAK #00005512
TCT #4233 93-4012

1.0 INTRODUCTION

1.1 Purpose

This report summarizes the results of a limited Environmental Site Assessment (ESA) work at the Richfield Mitsubishi by Twin City Testing Corporation (TCT). The purpose of this work was to provide additional information regarding the extent of petroleum hydrocarbon contamination detected during an assessment of the underground storage tanks (UST's) by Allied Engineering.

This assessment was conducted in accordance with a TCT proposal dated October 28, 1992 and was authorized by Mr. Walter Baker of Baker, Bassford, Hanvik & O'Malley, P.A.

1.2 Scope of Work

TCT's scope of service for this phase of the project consisted of the following:

- Prepare a site health and safety plan.
- Advance two standard penetration soil borings to the water table and one hand auger boring to a depth of 10 feet.
- Screen recovered soil samples for total organic vapors using photoionization detector (PID).
- Collect representative soil and groundwater samples and chemically analysis.
- Chemically analyze the soil samples for volatile organic compounds (VOC's) and gasoline range organics (GRO) and the groundwater samples for VOC's.
- Prepare a report presenting field and laboratory data.

1.3 Background Information

The Richfield Mitsubishi facility is located at 920 West 78th Street in Richfield, Minnesota. The site has three 550 gallon UST's located beneath the interior north end of the building (Figure 1). Two of the tanks contained virgin motor oil and the third contained used motor oil. The tanks are currently not being used. The tank assessment work by Allied Engineering consisted of jack hammering openings through the concrete floor and advancing six hand auger borings 13 feet below each end of the tanks. Chemical analysis revealed relatively low level of hydrocarbon contamination in soil samples collected from the western most tank which was used to store motor oil. Total petroleum hydrocarbons (TPH) were detected at a concentration of 21.6 parts per million at this location.

Based on the results of the tank assessment, additional site work was recommended to further define the extent of contamination.

2.0 PROJECT RESULTS

The following section presents the results of field activities and chemical analyses collected during the current phase of the assessment as described in Section 1.1. The work was completed on November 11, 1992.

2.1 Soil Borings

Two standard penetration soil borings SB-1 and, SB-2 were advanced at the site at the locations shown in Figure 1. The soil borings were advanced to a depth of 27 and 26 feet below surface grade (bsg) respectively. Groundwater was encountered in these borings at a depth of 24.5 to 25 bsg.

The borings were drilled using a truck-mounted hollow stem auger equipped with a split spoon sampler. Subsurface samples were collected at five foot intervals with a split spoon sampler as described in Appendix A. After taking the final sample at the bottom of the boring, and again after withdrawal of the auger, each borehole was checked for the presence of groundwater. Borings were grouted with neat cement grout prior to leaving the site.

The hand auger boring (HA-1) was completed inside the building using a hand-held, stainless steel auger. The HA-1 was advanced to a depth of approximately 10 feet bsg.

2.1.1 Stratigraphy

Soil stratigraphy was determined by examination of split spoon samples obtained during the drilling of the soil borings. The sample descriptions include physical characteristics such as grain size, texture, and morphology. The soil boring logs identifying the depth of various soil strata are presented in Appendix A.

The general site lithology consists of a mixture sand, silty sand, and lean clay fill underlain by coarse alluvium. In boring SB-1, fill was encountered to a depth of 8 feet. In SB-2, fill was not encountered in the first sampling interval from 6 to 8 feet.

2.2 Contaminant Observations

As the soil borings were advanced, recovered soil samples were screened in the field for the presence of volatile organic vapors using a 11.7 eV PID. Exposed soils were immediately placed in sealed jars for headspace analysis. The methodology used are presented in Appendix A.

No evidence of volatile organic vapors were detected. Complete organic vapor readings are presented on the soil boring logs in Appendix B.

2.3 Chemical Analyses

2.3.1 Soil Chemistry Results

Soil samples were collected from borings SB-1, SB-2 at a depth of 25-27 feet and from HA-1 from a depth of 9.5-13 feet. The soil samples were analyzed for the following parameters:

- Volatile Organic Compounds (VOC) by MDH Method 465D
- Gasoline Range Organics (GRO) by EPA Method 8020

Chemical analysis of soil samples collected from the three borings detected low concentration of various VOC's. A summary of the VOC's detected is presented in Table 1. Laboratory reports are presented in Appendix C.

Table 1

Laboratory Chemical Analysis of Volatile Organic Compounds in Soil Samples

Compound	SB-1 (25-27) ft	SB-2 (25-27) ft	HA-1 (9.5-10) ft	PQL
Acetone	11	11	12	10
Benzene	ND	ND	2	1
Methyl Chloride	ND	1	2	1
Tetrachloroethene	ND	23	ND	2
1,1,2-Trichloroethane	ND	ND	3	1
Trichloroethene	ND	ND	2	1

Values are in μg/kg which is equal to parts per billion
ND=Not Detected
PQL=Practical Quantitation Limit

2.3.2 Groundwater Chemistry Results

Groundwater samples were collected from both soil borings. The water samples were collected through the hollow stem auger using a teflon bailer. The groundwater samples were analyzed for VOCs. A summary of the VOC detected are summarized in Table 2, with complete groundwater results present in Appendix C.

Table 2

Laboratory Chemical Analysis of Volatile Organic Compounds in Groundwater Samples

Compound	SB-1	SB-2	PQL
Cis-1,2-dichloroethene	ND	3	1
Naphthalene	ND	1	1
Tetrachloroethene	150	210	5
Toluene	1	ND	1
Trichloroethene	ND	6	1

Values are in μg/L which is equivalent to parts per billion
ND=Not Detected
PQL=Practical Quantitation Limit

3.0 DISCUSSION

The data presented in this report are based on field observations and chemical analyses of soil samples collected from two soil borings and one hand auger boring and two groundwater samples also collected from the soil borings.

VOC concentrations in the soil ranged from non-detectable to 23 parts per billion (ppb). The compounds detected were at or just above the PQL with the exception of tetrachlorethane detected in SB-2. The presence of acetone and methyl chloride is probably due to laboratory contamination. Common sources for these compounds are the sample bottles and in cleaning and preparation of laboratory equipment. These compounds at level less than ten times the PQL are commonly considered to be laboratory related and not due to on-site sources. Gasoline range organics were non-detectable in the three soil samples. The petroleum contamination associated with the western most tank appears to be limited.

Tetrachloroethene was detected in the two groundwater samples at a level well above the recommended allowable limit for drinking water (7 ppb) as established by the Minnesota

Department of Health. Tetrachloroethene is a regulated chemical constituent and may represent a regulatory concern.

Tetrachloroethene is typically used in a variety of industrial processes, including dry-cleaning; vapor-degreasing solvent, and drying agent for metals and certain solids.

4.0 CONCLUSIONS and RECOMMENDATIONS

Based on the work performed to date, it does not appear that the UST's at the site have significantly impacted the soil or groundwater at the site. The levels of petroleum hydrocarbons detected not appear to represent a threat to the environment or to human health. We recommend that the UST's be abandoned in accordance with Federal and State regulations.

A surficial inquiry indicates that the source of the tetrachloroethene may be due to off-site sources. We recommend additional work to provide information regarding the source and extent of the tetrachlorethane contamination. This may include a soil gas survey, soil boring or monitoring wells.

5.0 STANDARD OF CARE

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

This report was prepared by: Brian G. Sullivan

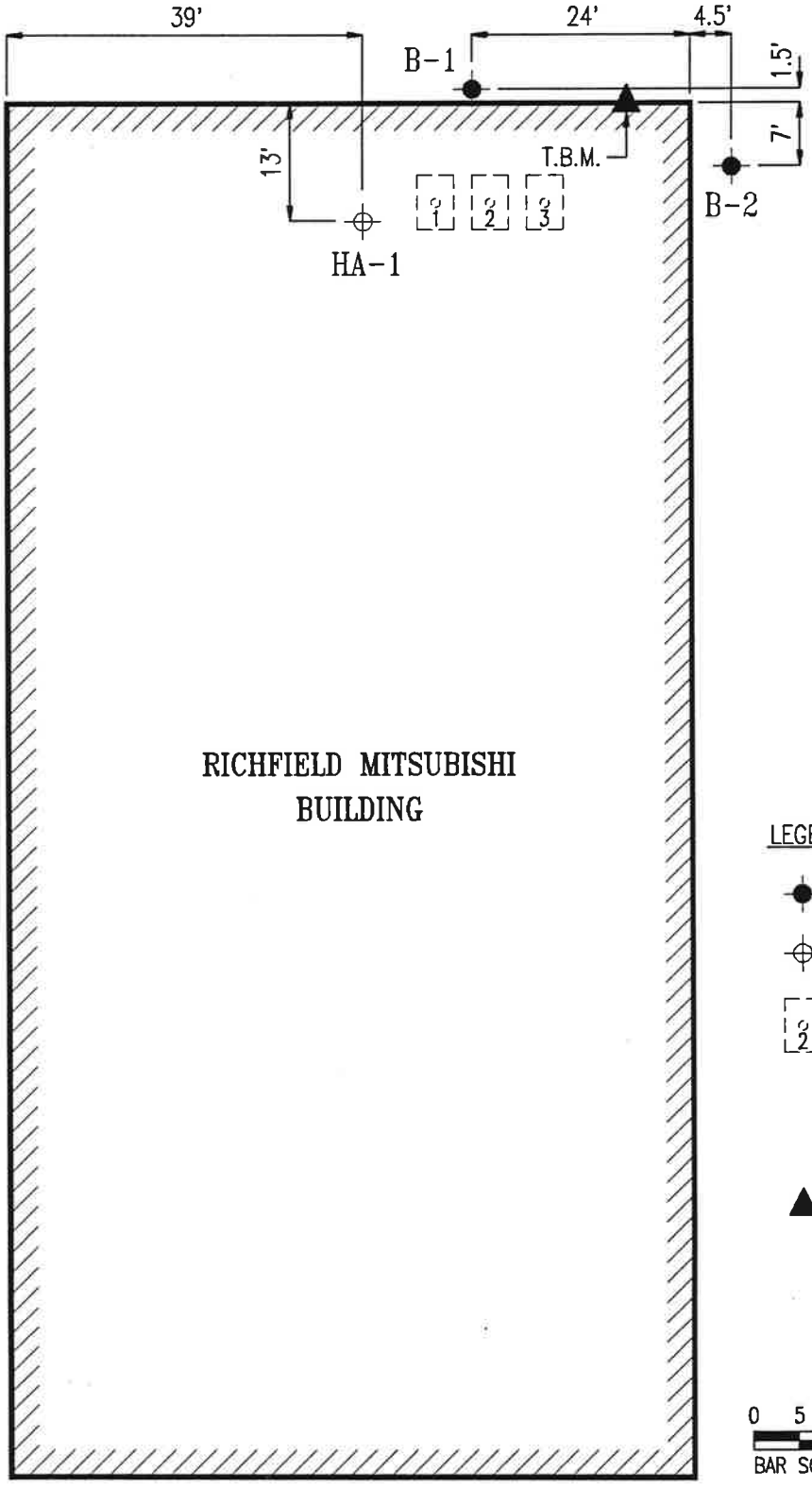
Brian G. Sullivan
Project Manager

Date: December 4, 1992

This report was reviewed by:

William E. Fellows P.E.
Senior Project Manager

FIGURES



LEGEND:

- SOIL BORING LOCATION
- HAND AUGER LOCATION
- UNDERGROUND STORAGE TANK WITH FILL PORT
  - TANK 1 – MOTOR OIL
  - TANK 2 – MOTOR OIL
  - TANK 3 – USED OIL
- T.B.M. – TEMPORARY BENCH MARK DOORWAY OF EXISTING BUILDING. ELEVATION = 100.00'

0 5 10 20 25 40 50

BAR SCALE IN FEET

NORTH

FIGURE NUMBER: 1	DATE: DECEMBER 1, 1992
PROJECT: SITE MAP RICHFIELD MITSUBISHI 920 WEST 78th STREET RICHFIELD, MINNESOTA	PROJECT NO. 4233 93-4012
	DRAWN BY: JULIA STEFFENS
	REVIEWED BY: BRIAN SULLIVAN
	SCALE: 1" = 20'
	AUTOCAD DWG: 4231\93-4012A

APPENDIX A

METHODOLOGIES

Methodologies

Contamination Reduction

The drill rig and\or downhole tools were steam cleaned prior to mobilization and between each boring as necessary. The wash water was disposed of on site. Cuttings were thin-spread on site.

The split barrel sampler was washed with a biodegradable low-phosphate detergent solution and rinsed with potable water prior to collecting each sample. Wash and rinse water were disposed of on site.

Soil Classification

As the samples were obtained in the field, they were visually and manually classified in accordance with ASTM: D 2487-85 and D-2488. Representative portions of the samples were then returned to the laboratory for further examination and for verification of the field classification. Logs of the borings indicating the depth and identification of the various strata, the N value, water level information, contaminant observations and pertinent information regarding the method of maintaining and advancing the drill holes are attached. Charts illustrating the soil classification procedure, the descriptive terminology and symbols on the boring logs are also attached.

Soil Sampling and Chain of Custody

Soil samples were collected using a split barrel sampler. Soil samples were collected in approved laboratory prepared containers and transported to the laboratory in an ice filled cooler. A Sampling Information form was filled out for each sample indicating pertinent details of the sample collection process.

Upon collection of a sample, a chain of custody log was initiated. The chain of custody record includes the following information: project, work order number, shipped by, shipped to, sampling point, location, field ID number, date and time taken, sample type, number of containers, analysis required, sampler(s) signature(s), and other necessary information. As few people as possible handled the sample containers.

Soil Headspace Analysis

Soil samples were screened using a Flame Ionization Detector or an hNu Model 101 Photoionization detector equipped with a 10.2, eV lamp and calibrated for reading in parts per million volume/volume of benzene. An eight ounce glass jar is half filled with soil and immediately covered with two layers of aluminum foil (shiny side up) after which the lid is applied tightly to the jar. The jar is shaken for 15 seconds. The samples were stored for 10 minutes in an atmosphere of at least 32° F. After headspace development (a minimum of 10 minutes) the jar is shaken for another 15 seconds. The lid is removed and the foil seal punctured with the sample probe. The highest meter response in a time period of two to five seconds after insertion was recorded for each jar sample.

Soil Sampling

Soil sampling was performed in accordance with ASTM: D 1586-84. Using this procedure, a 2 inch O.D. split barrel sampler is driven into the soil by a 140 pound weight falling 30 inches. After an initial set of 6 inches, the number of blows required to drive the sampler an additional 12 inches is known as the penetration resistance or N value. The N value is an index of the relative density of cohesionless soils and the consistency of cohesive soils.

APPENDIX B

BORING LOGS

LOG OF TEST BORING

JOB NO. 4221 03-11 VERTICAL SCALE 1" = 4' BORING NO. 1

PROJECT RICHFIELD MITSUBISHI - RICHFIELD, MINNESOTA

DEPTH IN FEET	DESCRIPTION OF MATERIAL (SURFACE ELEVATION 99.6)	CLASSIFICATION SYMBOL	GEOLOGIC ORIGIN	N or CR	WL	SAMPLE NO.	SAMPLE TYPE	LABORATORY TESTS W	D	LL	PL	Qu or RQD
	NO SAMPLES TAKEN											
5.5												
	FILL, A MIXTURE OF SAND, SILTY SAND AND LEAN CLAY, black and brown, moist		Fill	4		1	SB					.4/.4
8.0												
	SAND, fine grained, brown to light brown, moist, loose to medium dense (SP)		Coarse Alluvium	6		2	SB					.4/.4
				13		3	SB					.4/.4
18.0												
	SAND W/SILT, fine to medium grained, brown mottled, moist, medium dense to loose (SP)			16		4	SB					.4/.4
				9	▼	5	SB					.4/.4
27.0												
	End of Boring											

WATER LEVEL MEASUREMENTS

DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	BAILED DEPTHS	WATER LEVEL
11-6	10:05	27'	25'	26.5'		25'

START 11-6-92 COMPLETE 11-6-92 @ 10:30

METHOD 3-1/4" HSA 0'-30'

NORTH: EAST:

CREW CHIEF T. White

twin city testing corporation

LOG OF TEST BORING

JOB NO. 4221 03-11 VERTICAL SCALE 1" = 4' BORING NO. 2

PROJECT RICHFIELD MITSUBISHI - RICHFIELD, MINNESOTA

DEPTH IN FEET	DESCRIPTION OF MATERIAL (SURFACE ELEVATION 99.2)	CLASSIFICATION SYMBOL	GEOLOGIC ORIGIN	N or CR	WL	SAMPLE NO.	SAMPLE TYPE	LABORATORY TESTS W	D	LL	PL	Qu or RQD
	NO SAMPLES TAKEN											
4.5	SAND W/SILT, fine grained, brown and brown mottled, moist, loose (SP-SM)		Coarse Alluvium	5		1	SB					.4/.4
				6		2	SB					
11.0	SAND, fine grained, brown, moist (SP)											.4/.4
				10		3	SB					.4/.4
18.0	SAND W/A LITTLE GRAVEL, fine grained, brown and brown and black mottled, moist to waterbearing, very loose to medium dense (SP)			16		4	SB					.4/.4
				3	▼	5	SB					
26.0	End of Boring											.4/.4

WATER LEVEL MEASUREMENTS

DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	BAILED DEPTHS	WATER LEVEL
11-6	12:00	26'	24.5'	25'		24.5'

START 11-6-92 COMPLETE 11-6-92 @ 12:15

METHOD 3-1/4" HSA 0'-28'

NORTH: EAST:

CREW CHIEF T. White

twin city testing corporation