A REPORT FOR AN UNDERGROUND STORAGE TANK CLOSURE SITE ASSESSMENT AT 435 WOODWARD AVENUE BELOIT, WISCONSIN

PREPARED FOR:
JOHN SHEEHY
THE URSULA BORGERDING ESTATE
1000 EAST DEAN ROAD
MILWAUKEE, WISCONSIN 53217

PREPARED BY
KRISTINE M. STEHR
GEOLOGIST
CBC ENVIRONMENTAL SERVICES
140 EAST RYAN ROAD
OAK CREEK, WISCONSIN 53154

December 11, 1989

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

I. INTRODUCTION

This report presents the results of an underground storage tank closure site assessment performed by CBC Environmental Services of Oak Creek, Wisconsin for Autoquip, Incorporated of Milwaukee, Wisconsin. Autoquip, Incorporated removed the following underground storage tanks at 435 Woodward Avenue, Beloit, Wisconsin:

* Two (2) 550-Gallon - Kerosene
* Two (2) 550-Gallon - Gasoline
* Two (2) 550-Gallon - Fuel Oil

Autoquip, Incorporated retained CBC Environmental Services to evaluate the soils in the two (2) excavations containing the six (6) underground storage tanks (Figure 1). The investigation was performed to satisfy the Wisconsin Department of Industry, Labor, and Human Relations (DILHR) requirements for soil sample collection and analysis.

II. INVESTIGATION

Site Description

The property is currently owned by the Ursula Borgerding Estate and is commercially developed. The property is situated on the west bank of the Rock River.

According to Beloit Fire Chief Gerald Buckley, a 1000-gallon gasoline spill occurred at the site on May 24, 1984. The spill is documented in the "State of Wisconsin Department of Natural Resources Statewide Spills and Hazardous Incident Report" dated September 7, 1989.

Soil Quality

The soils surrounding the tanks in Excavation 1 were contained in a cement vault. Composite samples of the excavation soils were collected to represent the north and south ends of the excavation. Additionally, samples from

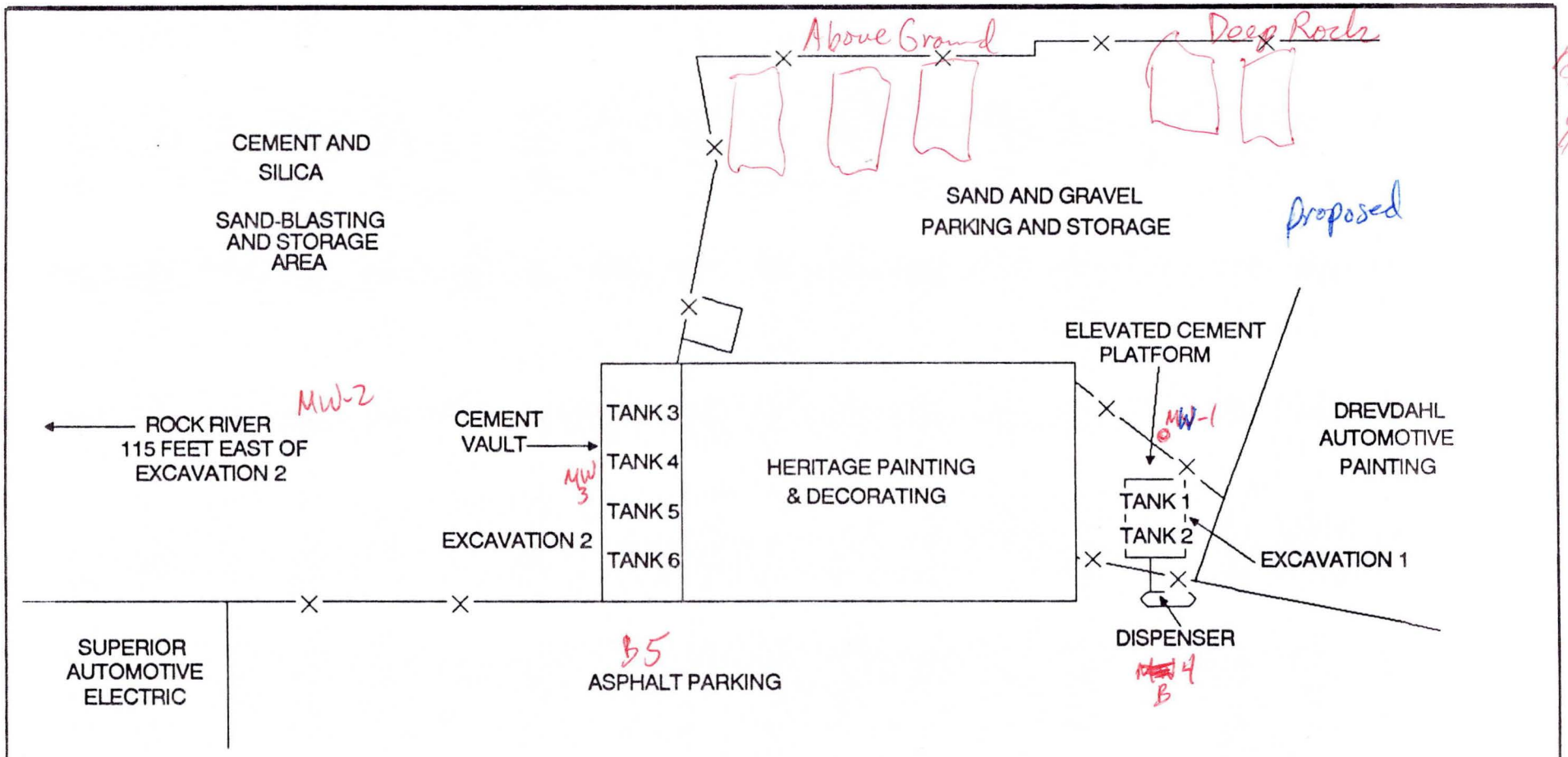


FIGURE 1

SITE PLAN MAP

URSULA BORGERDING ESTATE PROPERTY
435 WOODWARD AVENUE
BELOIT, WISCONSIN

APPROXIMATE SCALE
0 25 50 FEET
0 5 10 METERS

North

—X— FENCE

ENVIRONMENTAL SERVICES

under the dispenser and piping associated with Tanks 1 and 2 were collected.

Soils surrounding the tanks in Excavation 2 were contained on the base and to the north, south and west by a cement vault that stood two (2) feet above the ground surface. The soils were contained on the east by the west wall of the Heritage Painting and Decorating building. The soils in the excavation smelled strongly of gasoline and in some areas appeared to be coated with an oily substance. Composite samples of the soils were collected to represent the north and south ends of the excavation near the ground surface, and the center of the excavation near the base of the tanks, five (5) feet below the ground surface.

All soil samples were screened with a Microtip Photoionization Detector (PID). The PID provided a semi-quantitative value of the volatile compounds that have ionization potentials less than 10.6 electron volts (eV). The PID results are summarized in Table 1. As shown in Table 1, volatile compounds were detected in all of the samples screened.

The soils contained in the cement vault in Excavation 1 were removed and stored on site. No samples from this location were submitted to the laboratory for chemical analysis.

Due to the high levels of volatile compounds detected in the soils collected from Excavation 2, no soil samples from this location were submitted to the laboratory for chemical analysis.

Water Quality

A sample of the excavation water found in Excavation 2 was placed on ice, accompanied by a Chain-of-Custody document and transported to the Chem-Bio Corporation laboratory for analysis of benzene, toluene, ethylbenzene and xylene. The

Table 1. PID results for excavation soils.

SAMPLE	*PID SCREEN
Excavation 1	
Composite North	16
Composite South	29
Piping	4
Dispenser	3
Excavation 2	
Composite North	684
Composite South	1054
Composite Center	520

*PID readings in parts per million.

laboratory results are summarized in Table 2. As shown in Table 2, benzene, toluene, ethylbenzene and xylene were detected in the water sample. The laboratory reports are presented in Appendix A.

III. SITE GEOLOGY

Soils encountered in Excavation 1 consisted of medium to coarse-grained, brown sand. The base of the cement retainer was at a depth of five (5) feet below the ground surface. Ground water was not encountered in Excavation 1.

Soils encountered in Excavation 2 consisted of dark brown sandy silt and pebbles. The base of the cement retainer was encountered at a depth of 7.25 feet. Ground water was encountered at 5.75 feet below the ground surface.

IV. REGULATIONS

Soil

The State of Wisconsin has not established standards for the levels of petroleum substances detected in soil. The Wisconsin Department of Natural Resources (WDNR) evaluates each situation separately to determine if the existence of contaminants in soils will have an adverse effect on the ground water or otherwise on the environment and public health.

The WDNR has stated that a subsurface investigation is required if free product, heavily saturated soils or other conditions warrant corrective action. As shown in Table 1, PID readings show that volatile compounds exist in the soils of both excavations. The contaminated soils in Excavation 1 were removed from the cement vault and stored on site.

Water

The State of Wisconsin has established ground water quality

Table 2. Laboratory results for excavation water.

SUBSTANCE	*CONCENTRATION	**CORRECTIVE ACTION REQUIRED
Benzene	9500	YES
Toluene	16,000	YES
Ethylbenzene	810	YES
Xylene	12,000	YES

*Concentrations in Parts Per Billion (PPB).

**Corrective action required as defined in NR 140 of the Wisconsin Administrative Code.

standards for contaminants detected in or having a reasonable probability of entering the ground water resources of the State. The standards are found in Chapter NR 140 of the Wisconsin Administrative code.

The State has established both Preventive Action Limits and Enforcement Standards for benzene, toluene, ethylbenzene and xylene (Table 3). The regulations state that when a Preventive Action Limit has been attained or exceeded, the owner of the facility is to notify the Department of Natural Resources (DNR). The DNR will then assess the cause and significance of the contamination and determine the appropriate response measures. When an Enforcement Standard is attained or exceeded, the DNR shall require remedial action.

The concentrations of benzene, toluene and xylene detected in a water sample collected from Excavation 2 exceed the Enforcement Standards. The concentration of ethylbenzene detected in the water sample exceeds the Preventive Action Limit.

V. CONCLUSIONS

The underground storage tank closure assessment revealed the presence of volatile compounds in the soils and ground water in the evaluated area.

The concentrations of benzene, toluene and xylene detected in a ground water sample collected from the tank excavation exceed the Enforcement Standards found in Chapter NR 140 of the Wisconsin Administrative Code. The concentration of ethylbenzene in the ground water sample exceeds the Preventive Action Limit.

Table 3. Chapter NR 140 Ground Water Quality Standards.

SUBSTANCE	*NR 140 ENFORCEMENT STANDARD	*NR 140 PREVENTIVE ACTION LIMIT
Benzene	.67	.067
Toluene	343	68.6
Ethylbenzene	1360	272
Xylene	620	124

*Concentrations in Parts Per Billion (PPB).

VI. RECOMMENDATIONS

The presence of volatile compounds detected in the soils of Excavation 2 warrants further investigation. The concentrations of benzene, toluene and xylene detected in the water in Excavation 2 require remedial action. CBC Environmental Services recommends a hydrogeologic investigation to determine the vertical and lateral boundaries of the contamination. The investigation will include the following scope of work:

* In order to minimize on-site hazards, the site will be prepared in accordance with CBC Standard Operating Procedure. Protocol will include the location and marking of all known underground utilities within the work area.

* Six (6) boreholes will be drilled to a depth of twelve (12) feet below the ground surface or to a depth at which uncontaminated soils are found. If ground water is encountered before a depth of fifteen (15) feet is reached, augers will be advanced five (5) feet below the ground water table for the purpose of installing monitoring wells.

  A site plan map with the proposed boring locations is presented as Appendix B. The objectives of the boring placement are to:

  1) evaluate the extent of contamination around Excavation 2 (borings B-1, B-2 and B-3),

  2) determine if the soils around the dispenser at Excavation 1 have been impacted by the operation of underground storage tanks 1 and 2 (B-4),

3) investigate the impact of the May 24, 1984 documented gasoline spill on the subject property (B-5),

4) determine if the contamination has migrated toward the Rock River (B-6).

* Soil samples will be collected at 2.5 foot intervals.

* In-field analysis of the soil samples from each boring will be performed with a Photoionization Detector (PID). The PID will provide a semi-quantitative value of the volatile compounds in the unsaturated soils.

* At least one (1) soil sample from each boring will be accompanied by a Chain-of-Custody document and transported to the Chem-Bio Corporation laboratory for analysis of total petroleum hydrocarbons (TPH).

* If ground water is encountered, monitoring wells will be installed for the purpose of determining ground water quality. Water samples collected from each well will be analyzed for total petroleum hydrocarbons (TPH), benzene, toluene, ethylbenzene and xylene (BTEX).

* If ground water is encountered, an elevation survey will be conducted to determine ground water flow direction.

The hydrogeologic investigation will provide information essential to the development of a Remedial Action Plan that addresses the Wisconsin Department of Natural Resources

guidelines for site restoration. A Remedial Site Assessment report will be prepared to include the findings of the hydrogeologic investigation and recommendations for further site assessment and/or remediation.

VII. DISCLAIMER

The preliminary underground storage tank site assessment conducted at the aforementioned location was intended to examine the environmental integrity of the subsurface of the subject property, as of the date of the report, through a site inspection and laboratory analysis of samples collected by our staff. The investigation was performed, by our staff, using the degree of care and skill ordinarily exercised, under similar circumstances, by other reputable Engineers and Geologists practicing in this or similar localities. The statements and conclusions in the report are based on our interpretations of the data presented and collected by our staff on or prior to the date of the report. Chem-Bio Corporation offers no other warranty or legal responsibility, expressed or implied, for the environmental status of the site assessed.

CHEM-BIO CORPORATION
ENVIRONMENTAL SERVICES
140 EAST RYAN ROAD OAK CREEK, WI 53154-4599 (414) 764-7005

12/11/89 LABORATORY REPORT

A718 8442399 W31
CM/* / / /
TEWOCR0018

AUTOQUIP INC.
3861 N. 35TH ST.
MILWAUKEE ,WI 53216
ATTN: JOHN SOTHMAN

SAMPLE 89311-A07707 WATER/EXCAVATION WATER
DATE COLLECTED 11/07/89 DATE RECEIVED 11/07/89

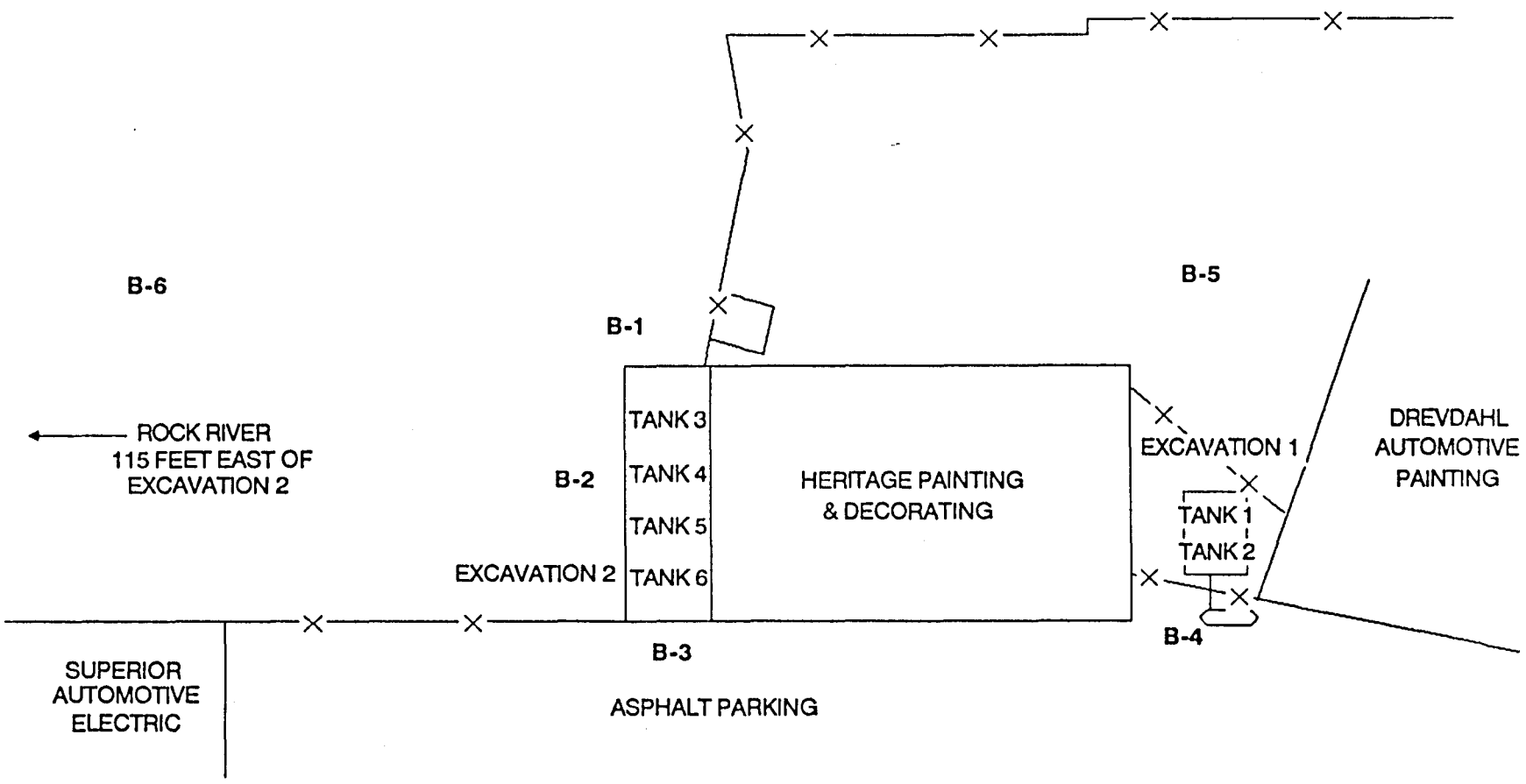
TEST NAME	RESULT	UNITS	
BENZENE	9500	PPB	!
TOLUENE	16000	PPB	!
XYLENE	12000	PPB	!
TOTAL PETROLEUM HYDROCARBONS	110 GASOLINE	PPM	!
ETHYL BENZENE	810	PPB	!

PLEASE CONTACT OUR CLIENT SERVICE DEPARTMENT WITH QUESTIONS. REMAINING WASTE SAMPLES WILL BE RETURNED 6 WEEKS FROM THE RECEIVING DATE OF SAMPLE. WATER SAMPLES ARE DISPOSED OF 30 DAYS AFTER RECEIPT. WI DNR LAB CERTIFICATION #241283020/A.I.H.A. ACCREDITED.

! = REPRINT N/T = NOT TESTED N/A = NOT APPLICABLE APPROVAL

APPENDIX B

PROPOSED SOIL BORING LOCATIONS



PROPOSED BORING LOCATIONS

URSULA BORGERDING ESTATE PROPERTY
435 WOODWARD AVENUE
BELOIT, WISCONSIN

APPROXIMATE SCALE
0 25 50 FEET
0 5 10 METERS

North

—×— FENCE

ENVIRONMENTAL SERVICES