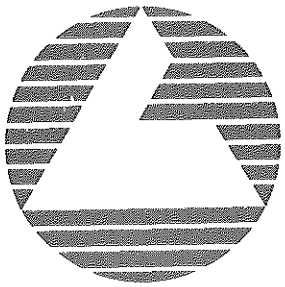

LAW ENVIRONMENTAL

REMEDIAL INVESTIGATION WORK PLAN

THE TORRINGTON COMPANY
3702 WEST SAMPLE STREET, SOUTH BEND, INDIANA

Submitted to:

CAPSULE ENVIRONMENTAL ENGINEERING, INC.

St. Paul, Minnesota

September 21, 1992

LAW ENVIRONMENTAL, INC.

12977 NORTH FORTY DRIVE
SUITE 300
ST. LOUIS, MISSOURI 63141-8636
314-469-2900
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September 21, 1992

Ms. Susan Price
Capsule Environmental Engineering, Inc.
1970 Oakcrest Avenue
St. Paul, Minnesota 55113
(612) 636-2644

Subject: **Remedial Investigation Work Plan**
The Torrington Company
3702 West Sample Street
South Bend, Indiana
Law Environmental Project No. 53-2645

Dear Ms. Price:

Law Environmental, Inc. is pleased to submit this Remedial Investigation Work Plan for the former Torrington Heavy Bearings Manufacturing Facility located at 3702 West Sample Street in South Bend, Indiana. These services were requested by Capsule in a letter dated July 30, 1992.

We appreciate the opportunity to provide environmental consulting services to Capsule. Should you have any questions regarding this Work Plan or the project in general, please call.

Very truly yours,

LAW ENVIRONMENTAL, INC.

Robert A. Johnson
Project Geologist

J.T. Bradburne, P.G.
Principal

RAJ/JTB

REMEDIAL INVESTIGATION WORK PLAN

THE TORRINGTON COMPANY
3702 WEST SAMPLE STREET
SOUTH BEND, INDIANA

Submitted to:

CAPSULE ENVIRONMENTAL ENGINEERING, INC.

St. Paul, Minnesota

Law Environmental, Inc.

St. Louis, Missouri

September 21, 1992

Project 53-2645

FOREWORD

This Work Plan presents a general description of previous assessment activities and proposed work to be completed to further characterize the surface and subsurface characteristics at the former Torrington Heavy Bearings Facility located at 3702 West Sample Street in South Bend, Indiana. As recommended in the Environmental Protection Agency (EPA) document entitled "Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA, Interim Final," dated October 1988, Law Environmental has provided general descriptions of initial work to be implemented. Detailed descriptions of the work will be provided in the Sampling and Analysis Plan (SAP) which will include the Quality Assurance Project Plan (QAPP) and the Field Sampling Plan (FSP). Given that remedial assessment is a dynamic process, the Work Plan, QAPP and FSP may be modified at a later date to incorporate new data and/or refine project objectives. The project Health and Safety Plan (HSP), also included as part of the SAP, will address health and safety elements necessary for the duration of the project.

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1.0 INTRODUCTION

1.1 Site Description

The former Torrington Heavy Bearings Facility is located at 3702 West Sample Street in South Bend, Indiana (Figure 1). The site is approximately 16 acres and includes a 352,000 square foot manufacturing building, foundry building, solvent still building and surface water pond. Four additional surface water ponds (2 through 5) south of the main building and west of the foundry previously existed on the property. These ponds were formerly used to collect surface drainage and drainage from processes inside the building. Twenty ground-water monitoring wells are located on site with five of the twenty monitoring wells located in two parking lot areas north of the manufacturing building. Additionally two production wells (Torrington Wells T-3 and T-4) are located within the east and west portion of the main building, respectively.

1.2 Project Background

Numerous assessments have been conducted at the project site since 1984. The Law Environmental report entitled "Summary Report of Previous Assessment Activities" (Report) and dated September 10, 1992 presents a summary of previous work and data collected to date by others.

1.3 Objectives

The objective of initial assessment activities generally outlined in this work plan is to further evaluate the surface and subsurface characteristics of the project site to develop feasible remedial action alternatives.

2.0 EVALUATION OF PREVIOUS ASSESSMENT

The following sections provide a brief summary of existing data compiled during previous assessment activities by others at the project site. Details of previous assessment activities are presented in the Law Environmental Report dated September 10, 1992.

2.1 Regional Geology

The geology of the South Bend area generally consists of glacially deposited sediments consisting of sands and gravels with clay layers varying in lateral extent and vertical thickness. Underlying these glacial deposits is shale of Devonian or Mississippian age (Klaer and Stallman, 1984).

2.2 Site Hydrogeology

Previous assessment activities by others have identified two separate aquifers beneath the site which are reportedly separated by a sandy clay layer estimated to be 20 to 30 feet in thickness. The upper aquifer is reportedly believed to be approximately 60 feet in thickness while the lower aquifer is reportedly 90 feet in thickness. Shale is the underlying bedrock as reported by Canonie Engineers in their report titled "Report of Environmental Assessment" dated 1984, and is encountered at a depth of approximately 180 feet below the ground surface.

Ground-water level data previously collected indicates a general ground-water flow direction toward the north. However, site specific subsurface characteristics may influence direction and rate of movement beneath the site. As additional data is collected and analyzed, a more detailed interpretation of hydrogeologic characteristics can be formulated.

3.0 HYDROGEOLOGIC ASSESSMENT

The following sections describe the activities planned to collect geologic and ground-water data to further characterize the site. Soil gas sampling, monitoring well installation, drilling, soil and ground-water sampling will be performed as a part of the proposed work. Although not presented herein as part of this phase of work, an aquifer test may be considered during a later phase based upon soil and ground-water analytical results collected during the hydrogeologic assessment. During field activities site personnel will comply with the project health and safety plan (HSP).

3.1 Soil Gas Sampling

A comprehensive soil gas sampling program will be implemented to identify potential contaminant source areas and guide the locations of soil borings and subsequent monitoring well installations. Soil gas sampling will consist of hydraulically pushing or hammering hollow steel probes fitted with detachable drive tips to predetermined depths. Soil gas will be extracted by a vacuum pump through polyethylene tubing attached to the top of the steel probe. A syringe will be used to withdraw soil gas samples from a rubber segment in the vacuum line. A gas chromatograph (GC) will be utilized to analyze each soil gas sample.

3.2 Soil Borings

To further evaluate the subsurface geologic conditions of the project site, soil borings will be drilled to obtain stratigraphical lithologic data. The soil borings will be drilled using procedures as generally described in ASTM D1586-84. The purpose of the soil borings is to evaluate the lithology and permeability characteristics of the soils which underlie the site and facilitate the installation of ground-water monitoring wells. The soil borings will generally be completed utilizing hollow stem auger techniques unless

subsurface conditions are such to require alternative techniques such as rotary drilling using bentonite drilling fluid. Soil samples will be recovered with split barrel samplers using Standard Penetration Test (SPT) procedures (ASTM 1586-84). Soil test boring logs will be recorded to assist in the development of geologic cross-sections.

3.3 Monitoring Well Installation

Selected soil boring locations will be completed as ground-water monitoring wells. Ground-water monitoring wells may be of two types depending upon site specific conditions encountered. Although the inside diameter and screen slot size of ground-water monitoring wells may vary depending on the anticipated use for the well, similar construction details will be common to the types of wells which will be installed at the site during this phase of assessment. Type II ground-water monitoring wells are constructed with a bottom section of machine slotted well screen and solid riser pipe with threaded joints which extends to ground surface. The length of the screened section may be varied to intercept specific subsurface zones. A course sand pack will be installed around the screened interval and extend at least two feet above the top of the monitoring well screen. A bentonite seal at least two feet thick will be placed on top of the sand pack and a cement/bentonite grout in the remainder of the bore hole annulus to ground surface.

Type III ground-water monitoring wells (should they be necessary) consist of an outer casing of PVC material set at the desired depth and grouted in place. Type III ground-water monitoring wells reduce the potential to carry contamination down into a discrete zone of interest during drilling. A monitoring well will then be constructed by drilling through the center of the outer casing to the desired depth and completing the well similarly to a Type II ground-water monitoring well. Each monitoring well will be completed with a protective cover and lockable cap.

3.4 Surveying

Following installation of ground-water monitoring wells, ground surface and top of casing elevations for each monitoring well will be surveyed for vertical control. The location of each well will be measured from existing site features for horizontal control. Each new ground-water monitoring well will be surveyed to the nearest 0.01 foot by a registered surveyor. The site benchmark used during the survey of the existing ground-water monitoring wells will be utilized. This will assist in correlating water level data obtained from the existing monitoring wells and water level data from the newly installed ground-water monitoring wells.

3.5 Monitoring Well Development and Sampling

Existing and newly installed ground-water monitoring wells and production wells will be developed then sampled. Ground-water monitoring well development will consist of removing at least three to five well casing volumes of water from each well utilizing air lift, bailing, or pumping techniques. A detailed description of air lifting, bailing, and pumping materials and techniques will be included in the Quality Assurance Project Plan (QAPP). Following monitoring well development, ground-water samples will be collected for laboratory analyses. Ground-water sampling procedures will be described in the QAPP.

3.6 Decontamination

Downhole drilling equipment will be steam cleaned prior to use and between boring locations. Pressurized steam will be used to remove visible excess materials from augers, drill rods, drill bits, and parts of the drill rig which may contact augers, rods or split barrel samplers. Steam cleaning will be performed in a decontamination area constructed to allow the collection of decontamination fluids and the placement of these

into drums for disposal. Split barrel soil samplers will be cleaned between samples with non-phosphatic detergent and a brush to remove excess material. The split barrel sampler will then be rinsed with tap water followed by reagent grade isopropyl alcohol and deionized water. Water level measuring devices will be decontaminated with phosphate-free detergent and tap water, then rinsed with deionized water between water level measurements. Dedicated, disposable bailers well be utilized for ground-water sample collection.

3.7 Drilling and Decontamination Fluid Disposition

Drilling and decontamination fluids and soil cuttings will be containerized and temporarily stored on site. Representative samples of generated materials will be submitted for laboratory analyses to identify proper disposal alternatives.

4.0 SOIL AND GROUND-WATER QUALITY ASSESSMENT PROGRAM

Following initial assessment activities generally described in this work plan, field data and results of laboratory analyses will be evaluated. Evaluation of initial assessment data will assist in amending or revising the work plan to achieve the final objective of the field assessment plan. The final objective is to characterize the nature and extent of contamination, assess the level of risk presented by the site and develop remedial alternatives. Quality assurance/quality control (QA/QC) requirements necessary for accurate interpretation of the data will be discussed in the QAPP.

5.0 RISK ASSESSMENT PROGRAM

A baseline risk assessment will be performed to evaluate potentially adverse effects to human health and the environment. The objectives of a baseline risk assessment may be obtained by generally characterizing the following:

- Toxicity of hazardous substances present in relevant media
- Environmental fate and transport mechanisms
- Potential human and environmental receptors
- Risk characterization (extent of anticipated impact)
- Levels of uncertainty associated with the items listed above

The risk assessment will generally consist of contaminant identification, exposure assessment, toxicity assessment and risk characterization.

6.0 DATA EVALUATION AND REPORTING

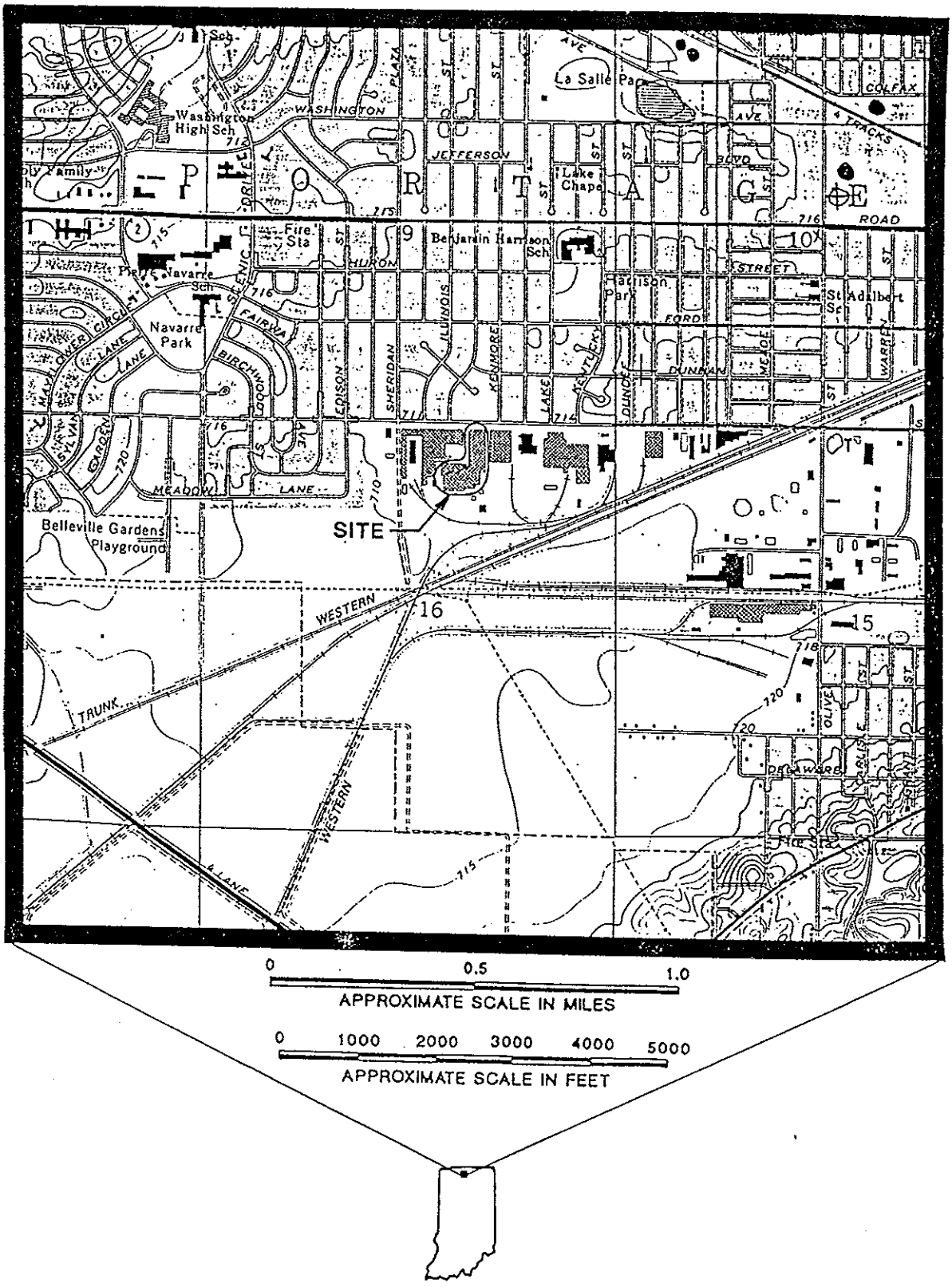
Following characterization of site conditions, a draft remedial investigation report will be prepared to include the results of field activities associated with site characterization, physical characteristics of the site, nature and extent of contamination, contaminant fate and transport, risk assessment, conclusions and recommendations for future work.

7.0 SCHEDULE

Field activities will commence as outlined in the mutually agreed upon schedule between Law Environmental and Capsule. Completion of individual tasks will be contingent upon site specific and weather conditions. The estimated date for submittal of the Sampling and Analysis Plan (SAP) to Capsule is September 21, 1992. Site characterization is scheduled to begin on October 19, 1992.

FIGURE

SOURCE: U.S. GEOLOGICAL SURVEY; 7.5 MINUTE SERIES (TOPOGRAPHIC)
SOUTH BEND WEST, INDIANA QUADRANGLE; PHOTOREVISED 1986.



DRAWN BY JCM CHECKED BY _____

THE TORRINGTON COMPANY 3702 WEST SAMPLE STREET SOUTH BEND, INDIANA PROJECT NO. 53-2645	LAW ENVIRONMENTAL, INC. LOUISVILLE, KENTUCKY	SITE LOCATION MAP FIGURE 1

APPENDIX A

SCHEDULE

SCHEDULE

ID	NAME	SCHEDULE START	SCHEDULE FINISH
10	Law Review Background Date/Prepare Draft Summary Report with RI Work Plan	8/03/92	8/24/92
11	Capsule/Torrington Review Draft Summary Report and RI Work Plan	8/24/92	8/31/92
12	Law Rework Draft Summary Report and RI Work Plan	8/31/92	9/10/92
13	Capsule/Torrington Review and Finalize Summary Report and RI Work Plan	9/14/92	9/28/92
14	UEA Review Summary Report and RI Work Plan	9/28/92	10/09/92
15	Law Prepare SAP (FSP, QAPP AND HSP)	8/21/92	10/05/92
16	Capsule/Torrington Review SAP	10/05/92	10/12/92
17	Law Rework SAP	10/12/92	10/19/92
18	Capsule/Torrington Review and Finalize SAP	10/19/92	10/26/92
19	UEA Review SAP	10/26/92	11/09/92
20	Begin Site Characterization (Mobilize)	11/09/92	11/23/92

Note:

SAP will provide a more extensive Schedule beyond Item No. 20