SITE CHARACTERIZATION PLAN (PHASE II)

ENGELHARD CORPORATION

CLEVELAND, OHIO

OCTOBER 1995

B. KOH AND ASSOCIATES, INC.
11 West Main Street
Springville, NY 14141

SITE CHARACTERIZATION PLAN (PHASE II)
ENGELHARD CORPORATION
CLEVELAND, OHIO

PROJECT NAME AND SITE LOCATION

Engelhard Corporation
1000 Harvard Avenue, Cleveland, Ohio

APPROVED

B. Koh and Associates, Inc.

PROJECT DIRECTOR

Theodore G. Adams

Theodore G Adam 10/5/95

Signature / Date

APPROVED

Engelhard Corporation

ENGELHARD TECHNICAL ADVISOR

L. Max Scott

L Max Scott 10/5/95

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ENGELHARD PROJECT MANAGER

Andrew Kopas

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Signature / Date

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TABLE OF CONTENTS

LIST OF FIGURES

SITE CHARACTERIZATION PLAN (PHASE II)
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1.0 INTRODUCTION

This Site Characterization Plan outlines activities to be completed as part of a Phase II investigation for the pavement and soils surrounding Building G-1 at the Engelhard Corporation site, located at 1000 Harvard Avenue, Cleveland, Ohio. The information and data collected during performance of this Site Characterization Plan are intended to supplement investigations and data of previously completed work as documented in the Site Characterization Plan (Phase I), Engelhard Corporation, Cleveland, Ohio, May 1995.

The efforts outlined in this work plan are to be carried out in accordance with all standard field, analytical, and quality control/quality assurance (QA/QC) procedures as presented in the Site Characterization Plan (Phase I), Engelhard Corporation, Cleveland, Ohio, May 1995. The purpose of this plan is to identify and describe the field activities to be completed during the Phase II characterization. If not already provided in the Site Characterization Plan (Phase I), detailed procedures for a particular activity have been included in this document.

1.1 Purpose and Objectives

The purpose of the characterization work described in this Site Characterization Plan is to collect additional data required to complete characterization of pavement and soils surrounding Building G-1 at the Engelhard Corporation site located at 1000 Harvard Avenue, Cleveland, Ohio. The additional data will be collected to complete the surface and subsurface radiological characterization of the site. Specific objectives of this plan are to:

- Refine vertical and horizontal extent of radiological contamination;

- Define estimates and concentrations of contaminated soil and pavement materials;
- Determine extent of contamination (if any) of Cuyahoga River sediment
- Provide site specific input parameters for use in pathway analysis and risk assessment (if necessary);
- Assess and define potential groundwater migration pathways

1.2 Scope

The activities described in this plan include: drilling shallow soil borings into the pavement and soils surrounding Building G-1 at various locations; collection of subsurface soil samples for radiological properties; collection of surface soil samples for radiological properties; collection of sediment samples for radiological properties; sampling of groundwater for radiological properties; and collection of additional surface contamination information of concrete surfaces currently covered with asphalt. Additional surface and subsurface sampling may be performed at selected off-site location(s), if warranted. A select number of samples (4) of surface and subsurface soil samples will be analyzed for total metals (Target Analyte List - inorganic). Pending the results of the analysis, appropriate metals will be analyzed via the Toxic Characteristic Leaching Procedure (TCLP).

Discussion of each of these activities is presented in the following sections.

2.0 Site Characterization Activities (Phase II)

2.1 Drilling and Sampling - Subsurface Soil

2.1.1 General

The purpose of additional drilling and soil sampling is to further define subsurface conditions at the Engelhard site. Borings will extend to depths similar to those previously drilled (i.e. 4 to 6 feet) to further define limits of contaminated soil. Soil samples will be collected and submitted for radiological testing U^{238} via gamma spectroscopy. Information obtained from these activities will be used to define the depth and extent of the radiological contamination. This data will be used to assess migration pathways within the subsurface (if necessary) and for subsequent remedial alternative planning.

2.1.2 Specific

To further define subsurface conditions at the Engelhard site, forty-nine (49) borings are to be drilled into the pavement and soils surrounding Building G-1 at locations shown on Figure 1. The borings have been located based on the interpretation of shallow soil borings completed as part of the initial site characterization activities (Phase I) at the Engelhard site. Borings will extend into the underlying soils and are anticipated to be completed down to approximately 4 to 6 feet. Actual boring locations will be based on field access and site conditions at the time of boring installation.

2.2 Surface Soil

As part of Phase I, ninety-two surface soil samples were collected from the Engelhard site and analyzed for uranium via gamma spectroscopy. Evaluation of the results indicate selected surface "hot spots" surrounding the Building G-1. Additional surface samples (12) will be collected to further define the lateral extent of the contamination. This information together with the subsurface soil information will be used to estimate volumes of contaminated soil and to assist in the planning of remedial alternatives.

The surface soil samples will be analyzed for uranium via gamma spectroscopy. Figure 2 presents the selected surface soil sampling locations.

2.3 Cuyahoga River Sediment Sampling

The Argonne radiological survey report (ANL April 1984) documented that traces of yellow cake were visible on the river bank just east of Building K-1. The report indicated the need for an examination of the outfall area, as well as the river bottom both upstream and downstream of the outfall, and the stormwater/process sewer system.

As part of Phase I characterization effort, sediment samples were collected from the bank immediately below the 007 outfall. Results of the analysis indicated total uranium concentrations below the unrestricted use release criteria of 35 pCi/g.

Based on the ANL preliminary assessment, additional sampling of the Cuyahoga River sediment in the area ne. .he 007 outfall, as well as, areas upstream and downstream will be performed. Approximately 9 sediment samples will be collected (1 upstream, 8 downstream) at locations shown in Figure 3. The sediment samples will be analyzed for U^{238} via gamma spectroscopy.

2.4 Groundwater Monitoring

During Phase I characterization efforts, several (9) existing upstream and downstream groundwater wells were selected to monitor the groundwater pathway and to determine potential impacts of the contaminated soil on local groundwater. Since these wells have not been sampled for several years, it was decided as part of the Phase II characterization efforts to sample the selected wells for at least 2 more sampling campaigns. Figure 4 presents the location of the groundwater monitoring wells.

The monitoring wells that will be sampled during Phase II include: DM-5, DM-11, DM-14, DM-27R, DM-28R, DM-29R, DM-30R, RMW-35 and RMW-41. One additional well (RMW-38) will be sampled during Phase II. This well was not sampled during Phase I because it could not be located.

Two weeks prior to the sampling effort, the wells will be purged once each week and prior to actual sampling, to ensure equilibrium conditions.

Groundwater samples will be analyzed for gross alpha, gross beta and total uranium as discussed in the Phase I Site Characterization Plan.

2.5 Pavement and Asphalt

During Phase I, it was discovered that a layer of asphalt had been placed on top of the concrete walkways and roadways located in the south portion of the G-1 Building. Random locations were selected where the asphalt was removed and the concrete layer below was surveyed. Results of the surveys indicate that the concrete surface is contaminated above the release criteria. The extent of the contamination is unknown.

Therefore, to determine the extent of the contamination, the asphalt covering the concrete located from Borehole 55 to Boreholes 51 and 53 will be removed to allow access to the concrete surface. Scans(100%) will be performed on the concrete surfaces followed by direct measurements and smears, where required. Figure 4 presents the area(s) where the asphalt layer will be removed and surface scans and direct measurement performed.

Samples of concrete from these areas and other locations will be analyzed via gamma spectroscopy.

3.0 SITE CHARACTERIZATION REPORT

A report will be prepared which document the characterization efforts (Phase I and II). The report will summarize the results, identify the extent of surface and subsurface contamination as well as, provide estimates of the volumes of contaminated soil.

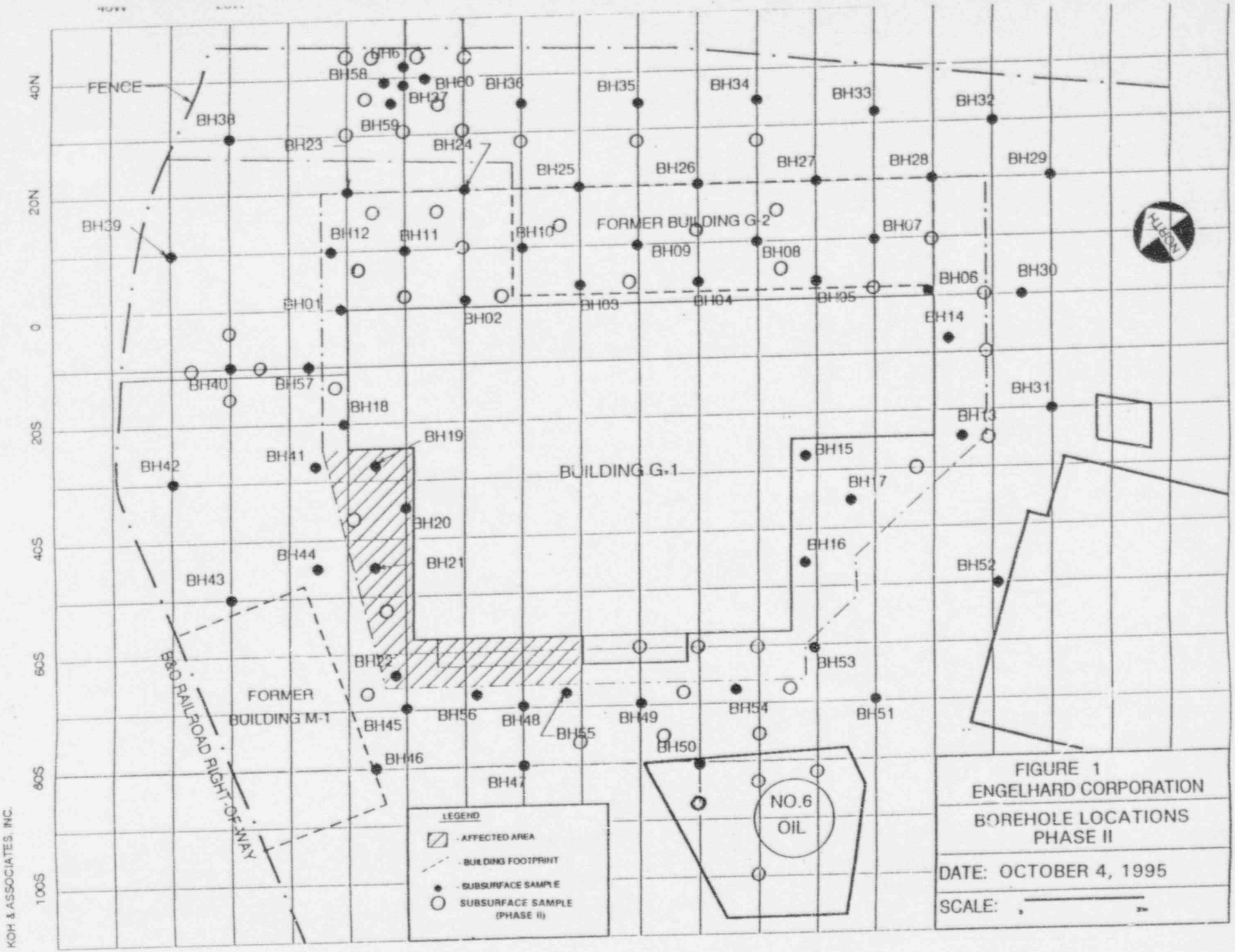

FIGURE 1
ENGELHARD CORPORATION
BOREHOLE LOCATIONS
PHASE II
DATE: OCTOBER 4, 1995
SCALE:

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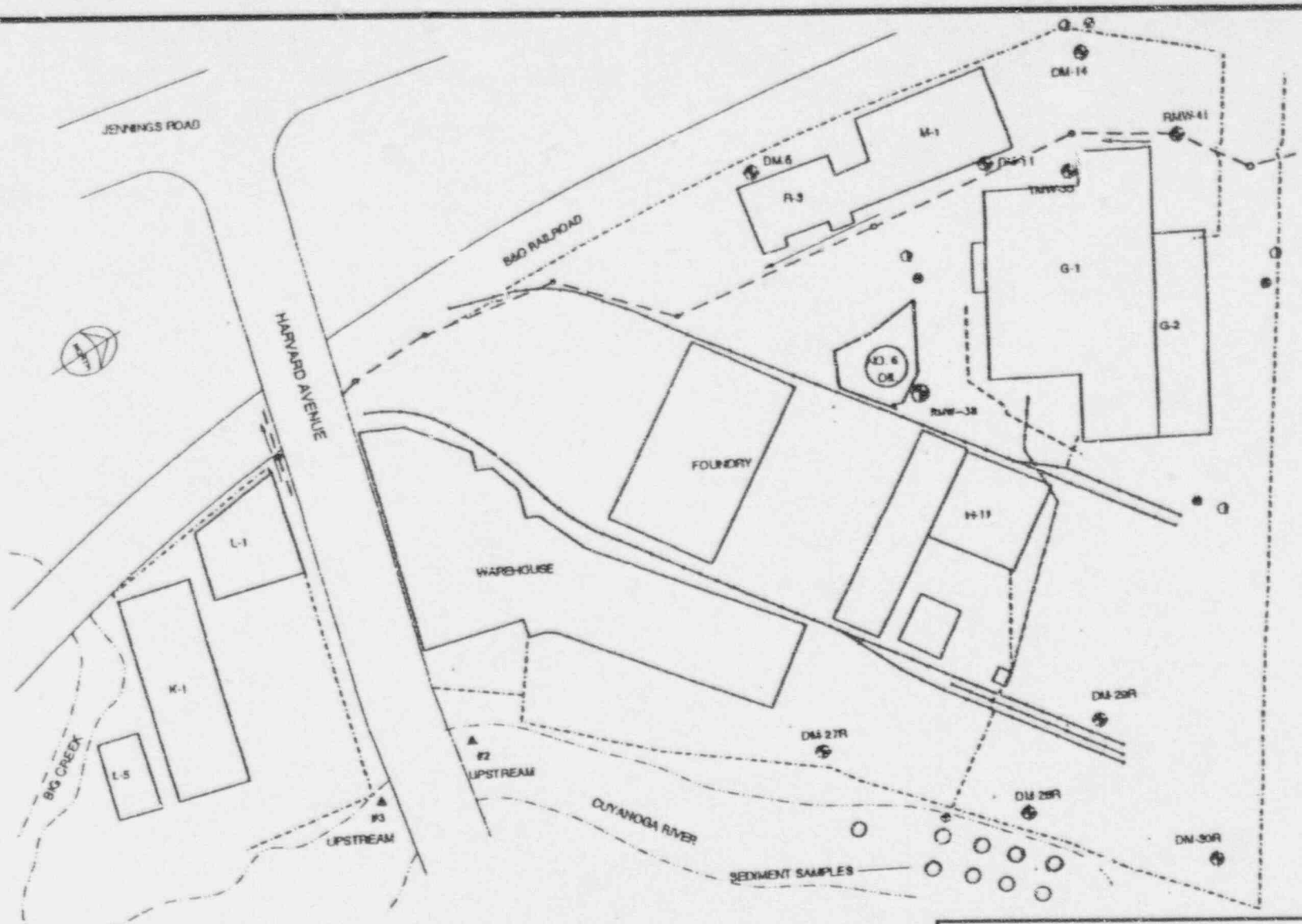

FIGURE 3

SEDIMENT/GROUNDWATER SAMPLE LOCATION MAP - PHASE II

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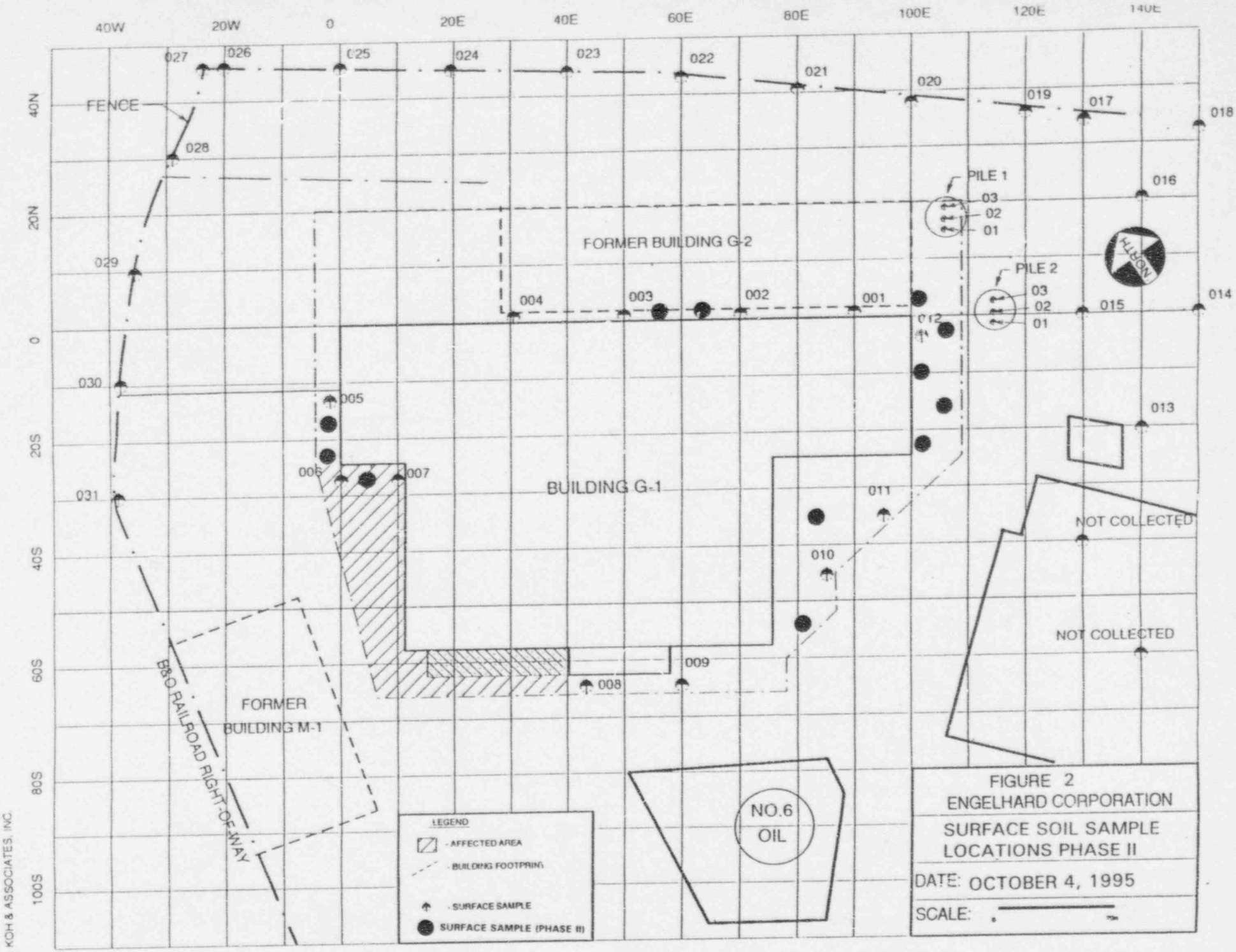

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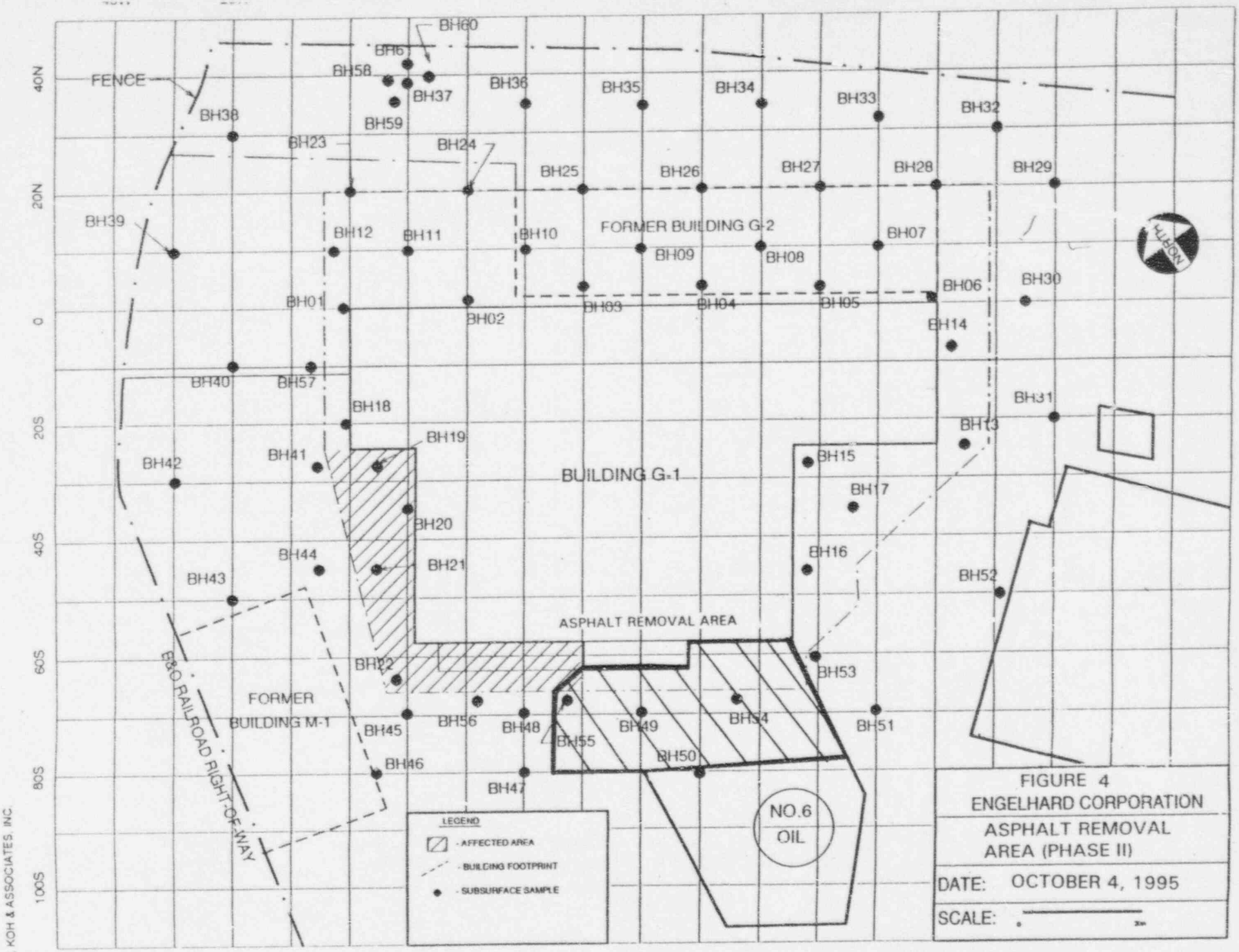

FIGURE 4
ENGELHARD CORPORATION
ASPHALT REMOVAL AREA (PHASE II)
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