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14 April 1997

Mr. Eric Van Riper
Environmental Response Division
Michigan Department of Environmental Quality
Shiawassee District Office
10650 S. Bennett Drive
Morrice, Michigan 48857-9782

Work Order No. 01138-079-002

Re: Subsurface Soil Sampling Plan
Characterization Study for Frontage Development
Linden Road Site
Genesee County, Michigan

Dear Mr. Van Riper:

Roy F. Weston, Inc. (WESTON®), on behalf of General Motors (GM) has prepared this sampling plan related to the Linden Road Site. The sampling activities described herein will serve to evaluate cleanup of an approximately 300-foot-wide frontage zone within the site, along Linden Road, to meet the commercial sub-category III criteria as indicated in the January 1996 Remedial Action Plan (RAP) and in the December 1996 Addendum to the RAP for the Linden Road site. The proposed sampling investigation is intended to fully characterize the subsurface material within at least a 400-foot-wide zone by collecting and analyzing soil, fill, and waste samples from several representative locations, describing the lithology of subsurface material at every proposed location , and to delineate the boundaries of any material that may need special management prior to developing the area for potential use under the commercial sub-category III criteria.

Specifically, the investigation is intended to determine the horizontal and vertical extent of fill and/or waste material present in the proposed frontage zone and also verify if the constituents of the subsurface material exceed MDEQ generic criteria for industrial/commercial properties.

The following paragraphs describe details of the proposed soil sampling plan.

Grid Coordinate System

The proposed subsurface soil/sediment sampling locations are shown in Figure 1. In order to collect samples from locations representing the entire proposed frontage zone, samples will be

collected based on a site grid coordinate system as shown in Figure 1. Prior to sampling, a cartesian grid coordinate system will be established on the eastern portion of the site which includes the proposed frontage zone, for horizontal control. The grid will cover a 400-foot wide area that covers the proposed frontage zone. The coordinate points will be placed at 100-foot intervals north and west of the Southeast corner of the site. Each grid coordinate point will be marked with a wooden stake driven firmly into the ground. The approximate coordinates will be written on the stake in indelible ink to ensure easy identification.

- should survey grid.

Sampling Methods

Soil/sediment sampling and description of subsurface material will be performed using three different methods depending on the sampling location, accessibility, depth to the water table, and efficiency of selected method at each location. These methods will include soil borings using hollow-stem augers (HSA) mounted to a drill rig, auger probes using solid-stem augers (SSA) mounted to a drill rig, and use of manually operated hand augers.

Soil Borings

Borings should extend into native soils. If GW is encountered sample it.

A total of 28 soil borings will be drilled at locations denoted as "S" on Figure 1, to obtain additional data regarding the subsurface material based on visual observations and chemical analysis. Soil borings will be drilled using an ATV-mounted drill rig with four 4.25-inch ID HSAs. Continuous samples will be collected using a split-spoon sampling device. All samples will be screened with a photoionization detector (PID). Soil borings will be drilled to the depth of at least 2 feet into native soil or to the water table, whichever is encountered first. A minimum of one sample representative of subsurface fill/waste will be collected and retained for chemical analysis from each soil boring location. Additional samples may be retained for analysis should the visual observations, PID readings, or the nature of material indicate need for additional characterization. Representative samples will also be collected from native soils encountered during drilling. All samples and sample handling procedures will be consistent with the initial Site Investigation work Plan (WESTON, 1990).

Auger Probes

Auger probes will be drilled at locations denoted as "A" (Figure 1) to visually characterize subsurface material and to determine consistency of the subsurface material vertically and laterally within the subject area. The auger probes will be installed with a drilling rig using 3-inch diameter solid-stem augers. The augers will be drilled until native soil is encountered or to the depth of the water table (estimated to be 10 to 15 feet) and then withdrawn without removing cuttings from the auger flights. The soil cuttings on the auger probes will be examined visually and logged by the on-site geologist. Samples will not be collected for chemical analysis during

Should the visual Results indicate something unusual (PID Reading)

the auger probe investigations. A total of 26 auger probe locations are proposed as shown in Figure 1.

Hand Augers

Hand auger locations are denoted as "H" in Figure 1. Hand auger locations are intended to replace either soil borings or auger probe locations based on accessibility, ease of sampling and the locations being at or near the water table such as the depressions and water logged areas of the study area. Hand augers will be drilled to a maximum of 5 feet from the surface or to the water table. At locations where surface water is present, hand auger drilling will not extend below a depth of 2 feet. Sediment samples will also be collected using the hand auger. A single soil or sediment sample will be collected as appropriate at each of the hand auger locations. Based on known site conditions, a total of 16 hand auger locations are proposed.

It should be noted the actual sample locations may be relocated based on site conditions during drilling. Any such modifications to the sampling locations will be documented and actual locations will be measured and recorded relative to the grid coordinates.

Laboratory Analysis

It is estimated that a total of fifty (50) soil/sediment samples (including 5 QA/AC samples) will be retained for analysis and will be submitted for chemical analysis to an MDEQ-approved laboratory. These samples will include representative samples collected from native soil samples present beneath the fill/waste material. Samples will be analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), "Michigan Ten Metals", and polychlorinated biphenyls (PCBs). The analytical data will be validated by a WESTON chemist in accordance with applicable United States Environmental Protection Agency (U.S. EPA) procedures.

Report

Upon receiving laboratory analytical results, a summary report presenting the findings of the sampling investigation described herein will be prepared and submitted to MDEQ. The report will also include figures showing the lateral and vertical extent of any waste material within the area of concern and data tables comparing analytical data to applicable MDEQ reference concentrations.

Schedule

GM plans to establish the grid coordinate system during the week of 14 April 1997 and commence drilling and sampling activities during the week of 21 April 1997. The report documenting the findings of the sampling investigation will be submitted to MDEQ within one month of receiving laboratory analytical results.

Upon completing the current sampling investigation, GM will evaluate clean-up of the proposed frontage zone (as appropriate) to meet the commercial Subcategory III criteria. As indicated in GM's December 1990 Addendum to the January 1996 RAP, if commercial use of the above-referenced frontage appears feasible. GM will seek MDEQ's approval for modifying relevant portions of the RAP and will pursue a zoning modification from the local zoning authority for this frontage.

If you have any questions or require additional information, please call me at (847) 918-4018.

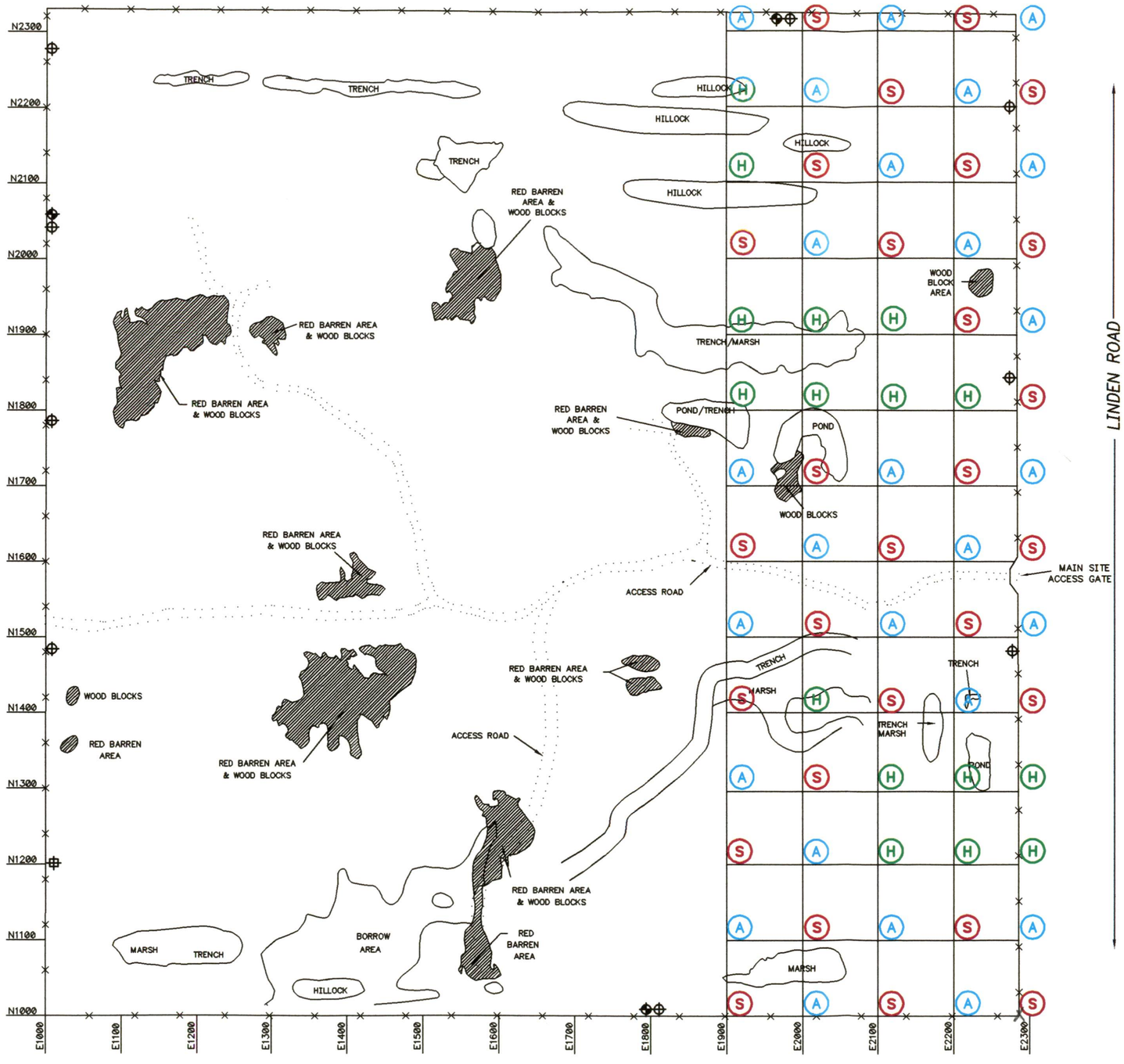
Very truly yours,

ROY F. WESTON, INC.

S. Babusukumar, P.G.
Project Manager

SB/sl
Enclosure

cc: R. Metcalf, GM
E. Peterson, GM



N
0'
200'
SCALE

LEGEND

- S — PROPOSED SOIL BORING LOCATION
- A — PROPOSED AUGER PROBE LOCATION
- H — PROPOSED HAND AUGER LOCATION
- EXISTING SHALLOW MONITORING WELL LOCATION
- EXISTING DEEP MONITORING WELL LOCATION
- EXISTING PIEZOMETER LOCATION

FIGURE 1

WESTON MANAGERS DESIGNERS/CONSULTANTS
Three Hawthorn Parkway
Vernon Hills, Illinois
60061

PROPOSED SOIL SAMPLE LOCATIONS
DELINEATION OF FRONTAGE AREA

LINDEN ROAD LANDFILL SITE
Flint, Michigan

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