Work Plan to Evaluate Possible Groundwater Migration Pathways Downgradient from 5050 Coliseum Way and 750-50th Avenue Oakland, California

November 12, 1996

3018.95-02

Prepared for

Volvo GM Heavy Truck Corporation

7900 National Service Road

Greensboro, North Carolina 27402-6115

Levine·Fricke·Recon

ENGINEERS, HYDROGEOLOGISTS & APPLIED SCIENTISTS

Printed on recycled paper

November 12, 1996 LF 3018.95-021

Mr. Dale Klettke
Alameda County Health Care Services Agency
Department of Environmental Health
1131 Harbor Bay Parkway
Alameda, California 94501

Subject: Work Plan to Evaluate Possible Groundwater Migration Pathways Downgradient from 5050 Coliseum Way and 750-50th Avenue, Oakland, California

Dear Mr. Klettke:

Enclosed for your review is a copy of the subject work plan. Levine·Fricke·Recon Inc. (LFR; formerly Levine·Fricke, Inc. and Recon) has prepared this work plan on behalf of Volvo GM Heavy Truck Corporation. This work plan was prepared in accordance with a mutual agreement reached in a meeting held on September 10, 1996, at the Alameda County Department of Environmental Health (ACDEH) in Oakland, California.

If you have any questions regarding this document, please call me (510-652-4500) or Mr. Robert Whelen of Volvo GM (910-393-2644).

Sincerely,

Kathleen A. Isaacson, R.G.
Principal Hydrogeologist

Enclosure

cc: Sumadhu Arigala, Regional Water Quality Control Board
Bob Whelen, Volvo GM Heavy Truck Corp.
Martha Boyd, Volvo GM Heavy Truck Corp.

CONTENTS

FIGURES

CERTIFICATION

All hydrogeologic and geologic information, conclusions, and recommendations in this document have been prepared under the supervision of and reviewed by a Levine·Fricke·Recon California Registered Geologist.

11/12/96

Kathleen A. Isaacson
Principal Hydrogeologist
California Registered Geologist (5106)

Date

1.0 INTRODUCTION

This work plan presents a scope of work to evaluate possible migration pathways immediately downgradient from the property located at 5050 Coliseum Way and 750-50th Avenue in Oakland, California (together, "the Site"; Figure 1). This work plan has been prepared by Levine·Fricke·Recon Inc. (LFR; formerly Levine·Fricke, Inc. and Recon), on behalf of Volvo GM Heavy Truck Corporation ("Volvo GM"), in accordance with a mutual agreement reached in a meeting held on September 10, 1996 at the Alameda County Department of Environmental Health (ACDEH) in Oakland, California. In that meeting, representatives of the ACDEH, Regional Water Quality Control Board (RWQCB), and Volvo GM agreed that groundwater flow direction and possible migration pathways for metals in groundwater immediately downgradient from the Site should be evaluated. Specifically, there is some concern that metals-affected groundwater leaving the Site may be migrating along the backfill material of existing utilities and eventually reaching surface water.

2.0 SITE BACKGROUND

This section provides a brief summary of site description and soil and groundwater quality conditions. A detailed discussion of site history, previous investigations, and investigation results is presented in the Remedial Investigation Report (LFR 1994).

2.1 Site Setting and Description

The Site is located approximately 0.5 mile northeast of San Leandro Bay in a predominantly industrial area of Oakland, California. The Site occupies approximately 6 acres of land and is occupied by two buildings. A large warehouse-type building at 5050 Coliseum Way contains office space and large service bays to maintain heavy trucks and other large vehicles. This building is surrounded by a concrete apron, and the remainder of the parking lot is paved with asphalt. The building on adjoining property at 750-50th Avenue is surrounded by landscaping, and the rest of the property is paved with asphalt.

2.2 Soil and Groundwater Quality Conditions

Environmental investigations have been conducted at the Site since 1990. Results of those investigations indicate that elevated concentrations of metals and low pH conditions are present in soil and groundwater beneath the Site. Metals detected at elevated concentrations in soil and groundwater include zinc, lead, cadmium, copper, nickel, and arsenic.

The Site occupies an area of Oakland that was predominantly tidal flats before placement of fill material. Fill material of varying thickness and types was placed over

the Young Bay Mud to allow for commercial, industrial, and residential development of western Oakland. Where present, the fill generally consists of gravelly sandy clay, silty sand, and gravel. Metallic slag; building materials such as brick and concrete; a variety of colored material ranging from powder to sand and larger particles; and other miscellaneous debris are present in or make up the fill.

Shallow groundwater has historically been encountered at depths ranging from 3 to 11 feet below ground surface (bgs). Shallow groundwater flow direction has historically been to the west, toward 50th Avenue which bounds the northwestern portion of the Site, and toward Coliseum Way, which bounds the southwestern portion of the Site. To complete an evaluation of off-site groundwater flow, the scope of work proposed below includes an evaluation of groundwater flow beneath and in the vicinity of 50th Avenue and Coliseum Way.

3.0 PROPOSED SCOPE OF WORK

The proposed scope of work has been developed and subdivided into five tasks as follows:

Task 1: Identify Subsurface Utilities Located Beneath 50th Avenue and Coliseum Way

Task 2: Install Temporary Piezometers and Collect Backfill/Soil and Grab Groundwater Samples for Laboratory Analysis

Task 3: Laboratory Analysis

Task 4: Evaluate Off-Site Groundwater Flow Direction

Task 5: Data Evaluation and Report Preparation

Each of these tasks is described below.

Task 1: Identify Subsurface Utilities Located Beneath 50th Avenue and Coliseum Way

A site map (Figure 2) has been prepared showing the general groundwater flow direction beneath the Site and the locations of a subsurface stream culvert; an open storm-water channel and a sanitary sewer line that run parallel to Coliseum Way; and two subsurface culverts and a sanitary sewer line that generally run beneath 50th Avenue. The locations of the utilities were determined based on review of drawings obtained from the Alameda County Flood Control and Water Conservation District and the City of Oakland, Planning and Building Department.

As indicated on Figure 2, the subsurface culverts beneath 50th Avenue and Coliseum Way flow into the open storm-water channel that runs parallel to Coliseum Way on the south side of the street, just southeast of the intersection of 50th Avenue and Coliseum Way. The open storm-water channel is in direct contact with San Leandro Bay.

To confirm the locations of these utilities, and to select sampling locations and depths that are likely to encounter the backfill material surrounding the utilities, a field meeting will be held with the City of Oakland's utility engineer and a private utility locator subcontractor. Once proposed backfill/soil and groundwater sampling locations have been marked, Underground Service Alert (USA) will be called to clear the area for remaining subsurface utilities (e.g., gas, electric, and telephone). Final sampling locations may be adjusted based on USA markings.

Task 2: Install Temporary Piezometers and Collect Backfill/Soil and Grab Groundwater Samples

Figure 3 shows the proposed locations for three temporary piezometers. The piezometers will be installed to evaluate off-site groundwater flow direction in the vicinity of the intersection of 50th Avenue and Coliseum Way, and to assess tidal influence on groundwater elevations in wells located near the subsurface culverts and open storm-water channel.

Figure 3 also shows proposed locations for the collection of backfill/soil and groundwater samples. The sampling locations were selected to evaluate water quality at several places in the backfill material surrounding the subsurface stream culvert that is nearest the Site, in the upgradient and downgradient directions from the Site. Final backfill/soil sample locations may be adjusted based on the results of Task 1 and groundwater elevation data obtained following installation of the temporary piezometers. Results of these sampling activities will be used to evaluate the possible impact that metals-affected groundwater leaving the Site may have on water quality within the backfill material, and to evaluate whether water containing metals or other compounds may be entering surface water via migration through the backfill.

Temporary Piezometer Installation

Encroachment permits will be obtained from the City of Oakland as necessary and well permits will be obtained from the Alameda County Flood Control and Water Conservation District, Zone 7 before field work begins. All field work will be conducted under the direction of a California Registered Geologist.

The three temporary piezometers will be installed using direct push sampling equipment. The direct push method uses a 2- to 2.5-inch-diameter outer drive casing, equipped with a steel drive point, to advance the boring to the desired depth. After each borehole has been advanced below the water table, small-diameter (3/4-inch to 1-inch diameter), flush threaded, schedule 40 PVC casing will be installed through the drive

casing to serve as a temporary piezometer. A sand filter pack will be placed through a tremie tube into the annular space around the PVC up to approximately 1 foot above the top of the screened interval. A 2-foot-thick annular seal, consisting of 1/8-inch bentonite chips hydrated with deionized water, will be added to the annular space above the sand pack. A cement-bentonite grout will then be applied through a tremie tube to the ground surface. As the temporary piezometer is constructed, the outer drive casing will be slowly removed, leaving the drive point in the ground. The upper 5 feet of the borehole will be enlarged to 6 inches in diameter to provide a 2-inch-diameter annular seal. A traffic-rated, flush-mounted steel well cover will be placed over each well to provide protection and ensure future access to the well.

All PVC materials will be steam cleaned with a high-pressure, hot-water washer before installation in the drive holes.

Each temporary piezometer will be developed using a combination of bailing, vacuum removal of sediment, and pumping. A minimum of 10 casing volumes of water will be extracted, and all free sediment will be removed from the casing.

Backfill/Soil Sampling Methodology

Continuous backfill/soil samples will be collected for lithologic description and possible laboratory analyses from seven locations. It is anticipated that backfill/soil borings will be completed to maximum depths of 15 feet to 20 feet bgs. Backfill/soil samples will be obtained using direct push technologies that utilize hydraulically driven, vibrated, or pushed soil coring systems to drive the sampler to the desired depth. Two nested sampling rods will be driven simultaneously. The small-diameter inner sampling rod will be used to obtain and retrieve the backfill/soil core, while the larger diameter (2-1/2-inch outer diameter) rod will serve as a temporary drive casing. Backfill/soil samples will be collected in a 1-11/16-inch-diameter by 6-inch-long stainless steel sleeve or a 3-foot-long butyrate sleeve inside the 3-foot-long sample barrel as both rods are advanced. Backfill/soil samples will then be removed from the inner sample barrel, and can be preserved for chemical analyses or used for lithologic description. After adding new sleeves, the drive sampler and inner rods will be lowered back into the outer drive casing and advanced to collect another 3-foot-long core.

All drive casings, inner sample barrels, inner rods, and tools will be cleaned with a high-pressure, hot water wash between holes. Sample barrels will be washed with Alconox (a laboratory-grade detergent) and double rinsed between samples collected in the same hole. All rinsate from the cleaning will be contained in 55-gallon drums at the project site.

Backfill/soil samples retained for chemical analyses will be immediately capped, labeled, and placed in a cooler for transport to the analytical laboratory under strict chain-of-custody procedures.

Groundwater Sampling Methodology

One grab groundwater sample will be collected for laboratory analyses from each backfill/soil sampling location. Once groundwater has been encountered in the borehole, the sample barrel and inner rods will be removed from the borehole and a 1-inch-diameter schedule 40 PVC casing with a 5-foot-long section of slotted well screen (0.01-inch slots) will be installed through the drive casing. The drive casing will be retracted approximately 3 feet to allow groundwater to flow into the borehole. Groundwater samples will then be collected using a 1-inch-diameter stainless steel bailer, disposable bailer, or peristaltic or bladder pump.

Groundwater samples will be poured directly from the bailer into a laboratory-supplied, 1-liter, unpreserved plastic bottle. Once the bottle is full, the groundwater sample will be filtered in the field using a 0.45-micron disposable filter. The filtered groundwater will be decanted into a laboratory-supplied 1-liter plastic bottle that has been preserved with nitric acid. Sample bottles will be capped, labeled, and placed into an ice-chilled cooler for transport to the analytical laboratory under strict chain-of-custody procedures.

Groundwater samples will also be collected for field measurements of pH.

Task 3: Laboratory Analysis

A minimum of two backfill/soil samples and one groundwater sample will be collected from each sampling location where backfill material is encountered, and submitted for laboratory analysis. Backfill/soil and groundwater samples will be submitted to American Environmental Network, Inc. (AEN), of Pleasant Hill, California, a state certified laboratory, for chemical analysis. Backfill/soil and groundwater samples will be analyzed for Title 22 Metals using EPA Method 200 Series. Groundwater samples will also be analyzed for general minerals. For quality assurance/quality control measures, a duplicate sample will be collected from one of the groundwater sampling locations and submitted to AEN for metals analysis.

Task 4: Evaluation of Groundwater Flow Direction

The top of the PVC casing for the temporary piezometers will be surveyed by a licensed surveyor to the nearest 0.01 foot. Casing elevations will be surveyed from an established benchmark and will be checked against surveyed top-of-casing elevations for existing on site monitoring wells.

To evaluate groundwater flow direction immediately downgradient from the Site, water-level measurements will be collected from selected wells on a weekly basis for one month. Each week for one month, water levels in wells on the Site and the newly installed temporary piezometers will be collected during one high tide period and one low tide period to evaluate tidal influence on off-site groundwater flow and to better

assess possible migration pathways for metals-affected groundwater that may be leaving the Site. Water-levels will be measured using an electronic sounding device to the nearest 0.01 foot.

Water-level measurements will be conducted in coordination with periodic water-level measurements conducted for adjacent sites when appropriate, to better evaluate groundwater flow direction in the site vicinity.

The temporary piezometers will be properly abandoned in accordance with ACDEH guidelines following completion of this task. All well abandonment activities will be conducted under the direction of a California Registered Geologist.

Task 5: Data Evaluation and Report Preparation

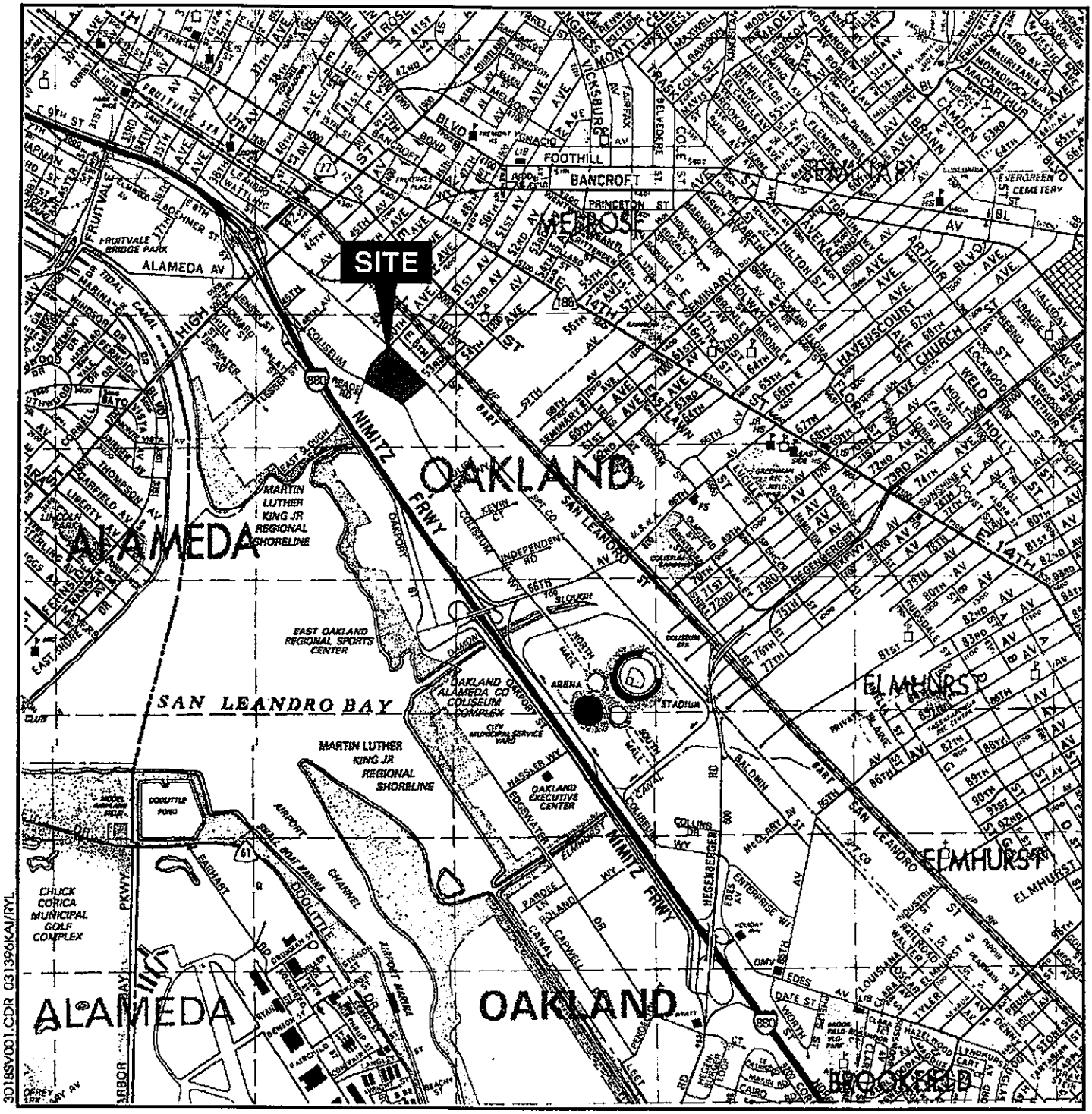
Groundwater elevation data collected in Task 4 will be compiled and contoured to evaluate off-site groundwater flow direction downgradient from the Site. Laboratory data for backfill/soil and groundwater samples will be compiled and reviewed in conjunction with existing data for the Site to evaluate off-site backfill/soil and groundwater quality conditions relative to on-site conditions. Groundwater flow direction and backfill/soil and groundwater quality data will then be evaluated together to develop a conceptual model illustrating possible migration pathways for metals-affected groundwater immediately downgradient from the Site.

4.0 SCHEDULE

It is anticipated that field work can be initiated within six weeks of approval by the ACDEH of this work plan. Field work, including weekly water-level measurements, can be completed within six weeks of beginning field work. A report describing investigation procedures and results can be prepared for submittal to the ACDEH will be completed in 10 to 12 weeks following completion of field work.

REFERENCES

LFR. 1994. Remedial Investigation Report, 5050 Coliseum Way and 750-50th Avenue, Oakland, California. September 19.



N

0 1/2 1 MILE

Figure 1 : SITE LOCATION, 5050 COLISEUM WAY AND 750-50TH AVENUE, OAKLAND, CA

PROPERTY BOUNDARY

750–50TH AVENUE

50TH AVENUE

AAA SALVAGE

5050 COLISEUM WAY

COLISEUM WAY

MW-4 SB-11 MW-1 LF-17 SB-16 B-4 B-3 SB-15 B-1 B-2 MW-3 MW-2 LF-F1 SB-8 LF-11 LF-15 SB-7 SB-21 LF-1 SB-12 LF-12B LF-12 SB-9 SB-13 LF-5 SB-14 LF-10 LF-6 SB-6 LF-7 SB-10 SB-17 SB-5 SB-1 LF-13 SB-18 LF-3 LF-9 SB-19 SB-4 LF-8 LF-18 LF-14 SB-2 SB-20 SB-3 LF-2 LF-4

Subsurface Creek Culvert

Approximate Groundwater Flow Direction

21" Sanitary Sewer

8" Sanitary Sewer

8" Sanitary Sewer

Stormwater Drainage Channel

PG&E TRANSFORMER FACILITY

EXPLANATION

- LF ● Monitoring well installed by Levine–Fricke
- MW ⊙ Monitoring well installed by Agua Terra Associates, 1991
- SB ◈ Soil sampling location Soil boring installed by others
- LF ◐ Grid–generated soil sampling location (up to 15 feet deep) completed as ground–water monitoring well
- B ⊕ Soil boring drilled by Aqua Terra Associates
- Subsurface creek culvert
- Sanitary sewer line
- Abandoned sanitary sewer

0 70 FEET

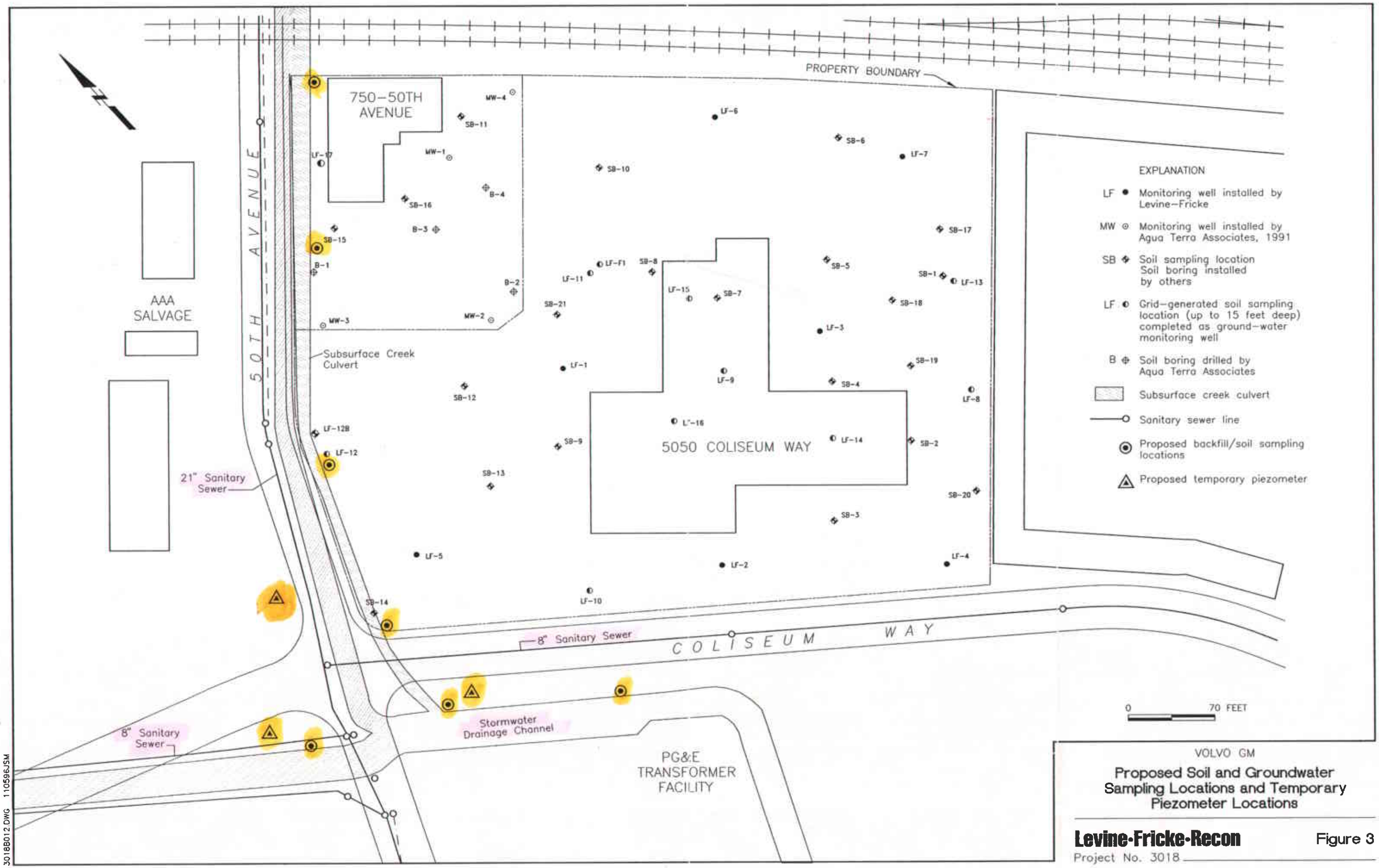
VOLVO GM

Site Vicinity Map Showing Previous Soil Borings, Existing Monitoring Wells, Subsurface Utilities and Approximate Groundwater Flow Direction

Levine-Fricke-Recon Figure 2

Project No. 3018.

3018B012.DWG 110596JSM



EXPLANATION

- LF ● Monitoring well installed by Levine–Fricke
- MW ⊙ Monitoring well installed by Aqua Terra Associates, 1991
- SB ✥ Soil sampling location Soil boring installed by others
- LF ◐ Grid–generated soil sampling location (up to 15 feet deep) completed as ground–water monitoring well
- B ⊕ Soil boring drilled by Aqua Terra Associates
- Subsurface creek culvert
- Sanitary sewer line
- Proposed backfill/soil sampling locations
- Proposed temporary piezometer

VOLVO GM

Proposed Soil and Groundwater Sampling Locations and Temporary Piezometer Locations

Levine-Fricke-Recon Figure 3

Project No. 3018

3018B012.DWG 110596JSM