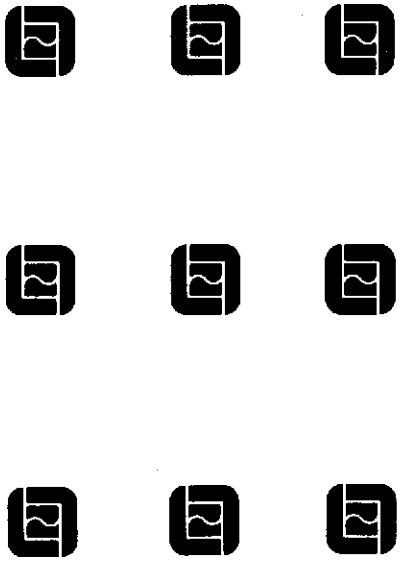

Work Plan for Supplemental Site Investigation and Conceptual Remedial Planning 625 Hegenberger Road Oakland, California

September 26, 1994
3015.94-04

Prepared for
Diversified Investment and
Management Corporation
400 Oyster Point Boulevard, Suite 415
South San Francisco, California 94080

LEVINE·FRICKE

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ENGINEERS, HYDROGEOLOGISTS & APPLIED SCIENTISTS

September 26, 1994 LF 3015.94-04

Mr. Barney Chan, Hazardous Materials Specialist
Alameda County Health Care Services Agency
Department of Environmental Health
Division of Hazardous Materials
1131 Harbor Bay Parkway, Room 250
Alameda, California 94502-6577

Subject: Work Plan for Supplemental Site Investigation and Conceptual Remedial Planning, 625 Hegenberger Road, Oakland, California

Dear Mr. Chan:

This work plan for Supplemental Site Investigation and Conceptual Remedial Planning is submitted by Levine•Fricke, Inc. ("Levine•Fricke") on behalf of Diversified Investment and Management Corp., for the former fuel service station site located at 625 Hegenberger Road, Oakland, California.

Sincerely,

John Sturman/SMH

John Sturman, P.E., R.G.
Senior Geotechnical Engineer

Susan M. Henry

Susan M. Henry, Ph.D.
Senior Project Environmental Engineer

Enclosures

cc: James T. Graeb, Diversified Investments and Management Corp.

3015\3015SS1.WP:FNC

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WORK PLAN FOR SUPPLEMENTAL SITE INVESTIGATION AND CONCEPTUAL REMEDIAL PLANNING 625 HEGENBERGER ROAD OAKLAND, CALIFORNIA

INTRODUCTION

This work plan presents Levine·Fricke's proposed scope of work and estimated budget to provide consulting services related to supplemental site investigation, and the development of a conceptual site cleanup plan for a former fuel station site located at 625 Hegenberger Road, Oakland, California ("the Site"). Levine·Fricke has prepared this work plan in accordance with a request from Mr. Dinesh Maniar, President, Diversified Investment and Management Corp.

BACKGROUND

The Site, located at the corner of Hegenberger Road and Collins Drive in Oakland (Figure 1), is the location of a former fuel service station. An active tune-up shop and convenience store are adjacent to the former fuel service station location. Soil and ground-water investigations conducted by Subsurface Consultants in 1988 and 1990 indicated that site soil and ground water contained gasoline and diesel petroleum hydrocarbons, as well as petroleum hydrocarbons characterized as oil and grease (Subsurface Consultants 1988 and 1990).

In October 1993, three underground storage tanks (USTs) and related structures were removed from the Site (Levine·Fricke 1994a). Five ground-water monitoring wells, installed by Subsurface Consultants (Subsurface Consultants 1990), are located on the Site. The ground water was monitored by HartCrowser during May 1993 (HartCrowser 1993), and by Levine·Fricke during December 1993 and June 1994 (Levine·Fricke 1994b, 1994c). On August 15, 1994, the well casing for monitoring well MW-16 was surveyed by Levine·Fricke personnel, and ground-water levels were measured over a six-hour period to assess tidal influence. A quarterly ground-water monitoring program has been implemented at the Site.

During UST removal and closure, two fuel islands, the dispensers, a canopy, three 12,000-gallon-capacity USTs, approximately 140 feet of associated piping, one 260-gallon-capacity sump, and approximately 250 cubic yards of soil were removed from the Site. The excavated soil is being stored on site until a treatment plan is implemented. Soils have been set on bermed plastic and have been covered completely with plastic, in accordance with the UST Closure Plan.

The reported chemicals of concern at the Site are gasoline, diesel, and petroleum hydrocarbons in the oil and grease (O&G) range. Results of ground-water monitoring, sampling of soil and ground water during the UST removal and closure operations, and sampling conducted by Subsurface Consultants indicate that gasoline, the gasoline constituents benzene, toluene, ethylbenzene, and toluene (BTEX), diesel, and petroleum hydrocarbons in the O&G range are present in site soils and ground water. Ground-water sampling detected gasoline and weathered diesel petroleum hydrocarbons in some monitoring wells.

The petroleum hydrocarbons in the O&G range have not been fully characterized. These hydrocarbons could potentially be constituents of motor O&G resulting from service station operations. Alternatively, they could result from a tar-like substance that has been identified at adjacent sites as part of the fill materials (Barney Chan, Alameda County Health Care Services Agency, Department of Environmental Health [ACDEH], personal communication, August 17, 1994). On August 18, 1994, Levine·Fricke personnel were examining the stockpile of excavated soil, and found some large chunks of solidified tar- or asphalt-like material.

Results of the quarterly ground-water sampling and the sampling associated with the UST removal and closure operations indicate that lead is generally not present in concentrations that exceed regulatory levels. Elevated concentrations of lead in soils were previously thought to be a concern at the Site based on the Subsurface Consultants sampling results. However, elevated lead concentrations appear to be present in the region in fill materials.

Previous Subsurface Investigations

Soil samples collected from borings drilled by Subsurface Consultants in 1988 and 1990 contained gasoline, diesel, and oil (Subsurface Consultants 1988 and 1990). Approximate boring locations are shown on Figure 2. The most elevated gasoline concentrations in soil were 5,600 milligrams per

kilogram (mg/kg), 2,200 mg/kg, and 1,000 mg/kg in borings 6, 7, and 23, respectively. The most significant diesel concentrations in soil were 6,400 mg/kg and 5,000 mg/kg in borings 7 and 9, respectively. The most significant O&G concentrations in soil were 100,000 mg/kg, 40,000 mg/kg, and 23,000 mg/kg in borings 7, 9, and 8 (MW-8), respectively.

Soil samples collected by Subsurface Consultants were also analyzed for total lead, soluble lead, organic lead, cyanide, volatile organics, semivolatile organics, and ethylene dibromide. Total lead was detected in soil at concentrations well below 1,000 mg/kg, the State of California total threshold limit concentration (TTLC), and was detected in all soil samples analyzed. Soluble lead was detected in three of six samples at concentrations slightly in excess of the State of California soluble threshold limit concentration (STLC) of 5 milligrams per liter (mg/l). Organic lead was detected in one of six samples at 0.9 mg/kg, which is below the TTLC of 13 mg/kg. Volatile and semivolatile organics as analyzed using EPA Methods 8010 and 8270 were not detected. Ethylene dibromide was not detected. Cyanide was detected at 0.49 mg/kg in one of two soil samples analyzed.

Soil samples collected during the UST removal and closure indicate that soil surrounding the USTs, the sump, and the product piping is affected by gasoline-, diesel-, and oil-range hydrocarbons. Total petroleum hydrocarbons as gasoline (TPHg), the petroleum hydrocarbon of greatest concern, was detected at concentrations up to 7,600 mg/kg (see Figure 2). BTEX concentrations were present at corresponding elevated levels. Total petroleum hydrocarbons as oil (TPHo) was detected at concentrations as high as 11,000 mg/kg. Total petroleum hydrocarbons as diesel (TPHd) was frequently below detection limits; the highest concentration detected was 140 mg/kg.

Soil samples collected during the UST removal were also evaluated for lead. Total lead was detected at concentrations well below the 1,000 mg/kg TTLC in all soil samples tested. Organic lead (methyl-ethyl and tetra-ethyl lead, additives in leaded gasoline) was detected in only 8 out of 23 soil samples, all below the TTLC of 13 mg/kg. Soluble lead was detected in all five of the soil samples analyzed for soluble lead. However, only one sample contained soluble lead in excess of the STLC. This was the sample that contained total lead at the highest concentration detected. The soluble lead concentration detected was 6 mg/l, slightly in excess of the STLC of 5 mg/l.

Analysis of ground-water samples collected by HartCrowser (HartCrowser 1993) on May 28, 1993 indicated that TPHg, BTEX, and TPHd were present in monitoring wells MW-8, MW-11, and MW-16. The most elevated TPHg and benzene concentrations (19 mg/l and 6.4 mg/l, respectively) were detected in monitoring well MW-8, which is approximately downgradient from the pump islands. The ground-water samples were also analyzed for organic lead, which was not detected.

Analysis of ground-water samples collected by Levine•Fricke (Levine•Fricke 1994b and 1994c) on December 22, 1993 and June 30, 1994 indicated that TPHg, BTEX, and weathered diesel were consistently present in monitoring wells MW-8 and MW-11. The most elevated TPHg and benzene concentrations were detected in monitoring well MW-8. The ground-water samples were also analyzed for total lead, which was not detected. Evaluation of ground-water levels indicated that tidal influence at the Site is not significant.

SCOPE OF WORK

A supplemental site investigation has been requested by ACDEH to further assess the extent of the petroleum hydrocarbons in the soil and ground water and to develop a site cleanup plan. Additional soil sampling for petroleum hydrocarbons is necessary to estimate the total volume of soils that will require excavation and treatment, and to identify soils that can be segregated for treatment or backfill.

The objectives of this scope of work are to obtain the additional necessary information concerning the extent of the hydrocarbons in the soil, to develop appropriate cleanup goals, and to prepare a conceptual site cleanup plan. The specific objectives of the supplemental site investigation are as follows:

- Determine the lateral and vertical extent of petroleum hydrocarbons associated with the former USTs in the soil
- Identify the petroleum hydrocarbons identified as TPHo or O&G, and determine if they are similar to the tar-like substance found in fill materials on adjacent sites
- Better assess the lateral extent of affected ground water

- Evaluate whether there is an off-site source(s) that may have affected site soil and/or ground water
- use the data collected during these activities to assess remediation options and costs

This scope of work includes the following tasks.

Task 1: Installation and Sampling of Soil Borings and Ground-Water Monitoring Wells

Task 2: Laboratory Analysis of Soil and Ground-Water Samples for Supplemental Site Investigation Activities

Task 3: Data Evaluation and Supplemental Site Investigation and Conceptual Remediation Plan Report Preparation

These tasks are described below.

Task 1: Installation and Sampling of Soil Borings and Ground-Water Monitoring Wells

This task includes drilling and soil sampling of 10 to 13 soil borings, collection of two grab ground-water samples from selected borings, installation, development, and sampling of one new ground-water monitoring well, and sampling of five existing monitoring wells (Figure 2). The ground-water monitoring and analysis conducted as a part of the supplemental site investigation will also be used to fulfill the quarterly ground-water monitoring requirement of the ACDEH.

Before field activities begin, appropriate drilling permits will be acquired from the Alameda County Zone 7 Flood Control and Water Conservation District. In addition, a geophysical utility survey will be conducted to locate underground utilities in the vicinity of the proposed well and soil borings. Underground Service Alert will also be informed of proposed drilling locations. The well and soil boring locations may be adjusted depending on accessibility, permitting requirements, and utilities.

All drilling, well installation, and sampling activities will be conducted under the supervision of an experienced Levine·Fricke hydrogeologist. Sampling and well completion activities will follow State of California standards. Borings will be drilled using the hollow-stem auger method.

Soil borings will be sampled at approximately two depths to assess the vertical and lateral extent of petroleum hydrocarbons in soil and ground water. Soil borings will be completed to approximately 10 feet below ground surface (bgs). Borings will be backfilled to the ground surface with cement grout. Drill cuttings generated during drilling will be contained and stored on site with existing excavated soils.

The ground-water monitoring well will be installed downgradient from the former UST location. Based on depth-to-water measurements reported for the Site, Levine·Fricke anticipates completing the well at a maximum depth of approximately 10 to 15 feet bgs. The monitoring well will be constructed of 4-inch-diameter, schedule 40 polyvinyl chloride (PVC) casing. The top of the perforated interval will extend above the first saturated sediments. Length of well screen will be selected based on lithologic data obtained during sampling and on depth to first water encountered in sediments. We anticipate that approximately 10 feet of well screen will be installed. The monitoring well will be developed to establish better hydraulic communication between the well and surrounding sediments.

After the well has been installed, the top of the PVC well casing relative to mean sea level will be surveyed by Levine·Fricke personnel with respect to existing on-site wells. Horizontal well locations will also be measured in relation to street center lines and existing buildings.

Ground-water monitoring activities include depth to water measurements and sampling and analysis of ground water. Procedures for depth-to-ground water measurements, ground-water sampling and analysis, and waste management are as follows.

Before each ground-water sampling event begins, depth to ground water in monitoring wells MW-1 through MW-6 will be measured to the nearest 0.01 foot relative to the top of the PVC casing using an electric water-level meter. These measurements will be used to calculate the ground-water flow direction at the Site.

Sampling and analysis will be conducted in accordance with monitoring requirements established by the ACDEH. Ground-water samples will be collected from the five existing monitoring wells. Approximately 3 to 5 well casing volumes of

water will be removed from each well before a water sample is collected. If a well cannot sustain a yield (i.e., if the well pumps dry), the well will be allowed to recover for 2 hours or to 80 percent of the original static water level before sample collection.

All equipment will be steam cleaned before wells are purged and sampled. The wells will be purged using either a clean Teflon bailer or a centrifugal pump. Specific conductance, pH, and temperature will be measured during this purging process and recorded on water quality sampling information sheets. Samples will be collected after these parameters have stabilized.

Ground-water samples will be collected using a clean Teflon bailer. The samples will be decanted into three laboratory-supplied, 40-milliliter glass vials with appropriate preservatives. Each vial will be filled to capacity, capped, and checked for trapped air bubbles. If an air bubble is observed, the vial will be discarded and a new preserved vial will be filled. The samples will immediately be placed in an ice-chilled cooler for transportation to the laboratory. All samples will be submitted to the laboratory under strict chain-of-custody protocol.

Quality-control procedures will consist of collecting one duplicate ground-water sample and one bailer blank.

Ground water generated during purging and sampling of the wells will be temporarily drummed and stored on site. The drums containing wastewater will be labeled with the warnings "Nonpotable Wastewater" and "Do Not Handle or Drink," the date, and the generator's name and address. Levine·Fricke will assist Diversified Investment and Management Corp. in identifying disposal options for wastewater based on water quality results.

Task 2: Laboratory Analysis of Soil and Ground-Water Samples for Supplemental Site Investigation Activities

The soil samples will be analyzed for TPHg using EPA Method 5030, GCFID; for TPHd and TPHo using EPA Method 3550, GCFID; and for BTEX using EPA Method 8020.

A soil sample containing a significant concentration of petroleum hydrocarbons identified as TPHo will be evaluated using "fuel fingerprinting" techniques, together with a sample of the tar-like material found on the adjacent site. This analysis will assist in identification of the petroleum

hydrocarbons in the O&G range, and will determine if the oil-range petroleum hydrocarbons found on the Site are similar in composition to the tar-like material found on adjacent sites.

Ground-water samples will be sent to a state-certified laboratory for analysis for TPHg using EPA Method 5030, GCFID; for BTEX using EPA Method 8020; and for TPHd and TPHo using EPA Method 3510, GCFID.

The samples will be analyzed by a state-certified analytical laboratory. Samples will be analyzed on a regular schedule (with a 7-working-day turnaround, or approximately 10 days total turnaround time).

Task 3: Data Evaluation and Supplemental Site Investigation and Conceptual Remediation Plan Report Preparation

Following completion of the field work, a report will be prepared that will present soil and ground-water sampling results and conclusions, and include figures and tables summarizing the laboratory results. This report will include lithologic logs, a description of the field activities, and a summary of analytical results for soil and ground-water samples. After Diversified Investment and Management Corp. has reviewed a draft of this report and review comments have been incorporated, the report will be finalized and submitted to ACDEH.

After cleanup goals have been established with the regulatory agencies, Levine·Fricke will estimate the volume of soil that will require excavation, evaluate cleanup alternatives for the excavated soil, and prepare a conceptual cleanup plan for the Site. Approximate cost estimates for two cleanup approaches will be developed.

ESTIMATED SCHEDULE

Levine·Fricke can begin work on this project within one week after authorization from Diversified Investment and Management Corp. ACDEH has indicated an October 3, 1994 deadline for completion of site investigation activities, and a November 15, 1994 deadline for submittal of the report. We expect that the field work can commence within two weeks of authorization by Diversified Investment and Management Corp. We expect that the field activities related to the supplemental site investigation will be completed within two and a half days, barring unexpected conditions.

Barring unforeseen difficulties, Levine·Fricke anticipates that a supplemental site investigation and conceptual cleanup plan report can be prepared and submitted for review by Diversified Investment and Management Corp. within six weeks after the field portion is finished. It is anticipated that the ground-water monitoring conducted during the supplemental site investigation will represent the autumn quarterly monitoring event.

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Golden West, Inc. 1993. Underground Tank Closure Plan for 625 Hegenberger Road, Oakland, California. Prepared for the Alameda County Health Care Services Agency.

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——. 1994b. Ground-Water Monitoring Technical Report for December 1993, 625 Hegenberger Road, Oakland, California. January 27.

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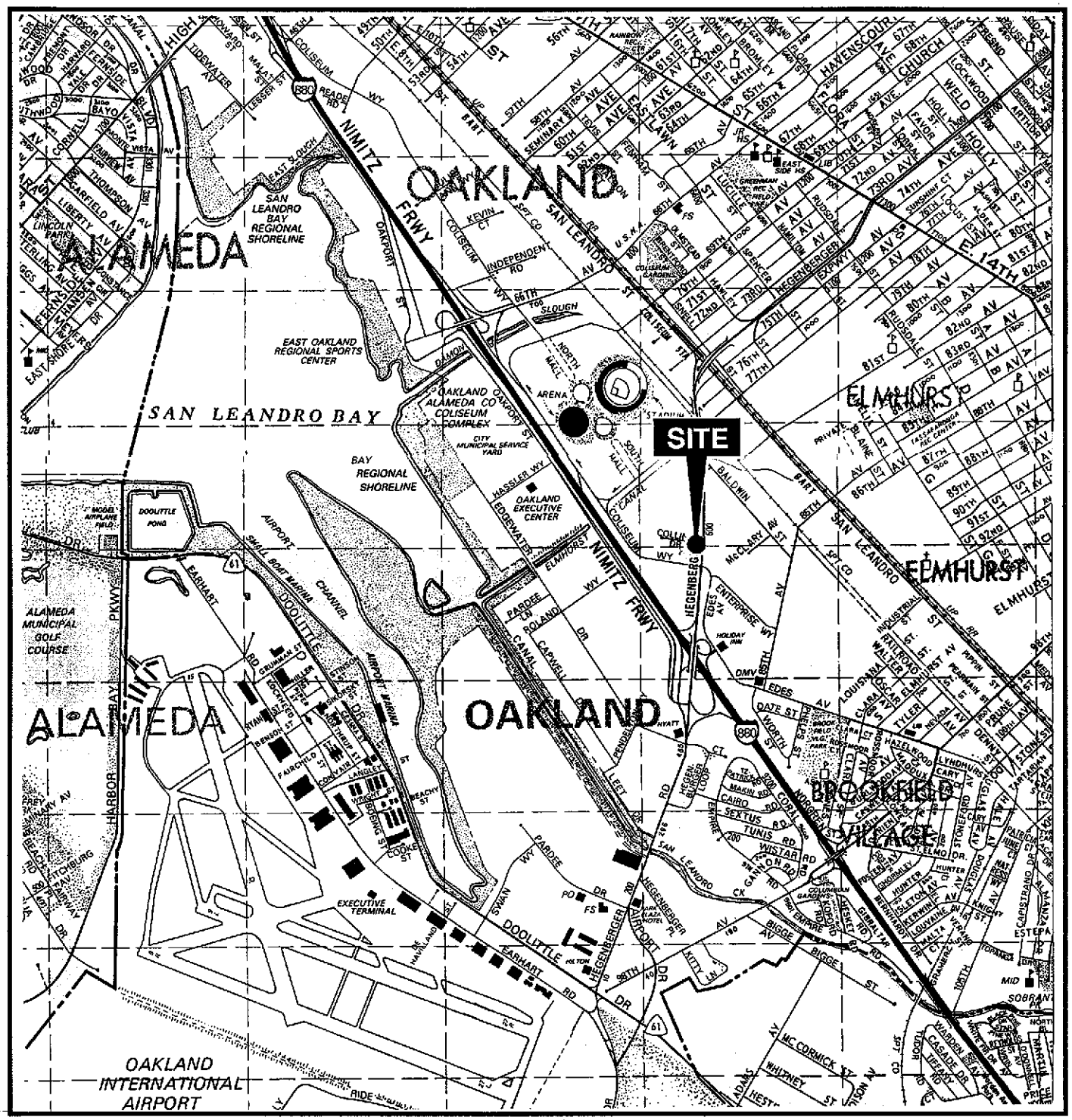

MAP SOURCE:
Thomas Bros. Map
Alameda and Contra Costa Counties
1994 EDITION

Figure 1: SITE VICINITY MAP

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SMH1SEPT94RYL

3015C001.SMH:DAT 090194

EXPLANATION

- Soil boring by Subsurface Consultants, 1988-1990
- Monitoring well; soil borings by Subsurface Consultants
- Soil sample by Levine•Fricke, UST Removal, 1993; (sample depth @ former UST location, 6-8 bgs) (sample depth @ former product piping location, 4-6 bgs)
- Approximate ground-water flow direction
- 3200 — TPHg concentration in parts per million (ppm)
- 1000 5' — TPHg concentration (ppm) @ 8 feet
- ND — Non-detect
- NA — Not analyzed
- TPHg — Total petroleum hydrocarbons as gasoline
- Approximate location of proposed monitoring well
- Approximate location of proposed soil boring/grab ground-water sample
- Approximate location of proposed soil boring

CONVENIENCE STORE

TUNE-UP SHOP

638 HEGENBERGER

625 HEGENBERGER

HEGENBERGER ROAD

COLLINS DRIVE

MW-10 NA

ND 2.5 ND 11 — 23

ND 15 — 19

ND 4 — 18

ND 2.5 ND 11 — 17

1000 8 — 22

590 — 15

940 — 74 — 14 — 1600 — 160 — ND — 450

FORMER PUMP ISLANDS

FORMER PRODUCT PIPING LOCATION

75 4' 4 6.5' — MW-16

26 2' 5600 6' 2100 7.5' 3500 10.5' — 6

FORMER SUMP LOCATION

14 — ND 5.5

100 5.5' 250 11' — 20

3800 — 3200 — 3 — NA

7500 — NA — 1 — 1300 — FORMER UST LOCATION — 8500 — 6000 — 3200 — 3000 — 5000 — 490 — NA — 2

7 — 1500 6' 2200 7.5' ND 10.5'

9 — 170 5' 150 6.5' ND 9'

13 — ND 1.5 ND 4.5'

MW-11 NA

4 — ND 5 11 8'

NA

5 — 28 4' 10 5' 5 7.5' 200 8'

21 — ND 3' ND 10'

FORMER PUMP ISLANDS

add Grav H2O

0 25 FEET

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Figure 2 :

APPROXIMATE LOCATIONS OF SOIL BORINGS AND MONITORING WELLS AND TPHg CONCENTRATIONS IN SOIL

Project No. 3015

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