



July 27, 1999

47729.1

Ms. Juliet Shin
Alameda County Environmental Health Services
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Work Plan
Soil and Groundwater Investigation
9th Street and Broadway
Oakland, California

Dear Ms: Shin:

On behalf of the City of Oakland (City), Harding Lawson Associates (HLA) presents this Work Plan for a soil and groundwater investigation at 9th Street and Broadway in Oakland, California (Site), see Plate 1. The Site is currently used as a parking lot, primarily serving as commercial parking for people shopping in the Oakland Chinatown area. The City of Oakland Redevelopment Agency intends to transfer the property to a developer for construction of a low-rise hotel on the western portion of the Site. The objective of this investigation is to gather the necessary data to complete an appropriate risk assessment, consistent with the intended site use, and obtain no-further-action closure from the Alameda County Environmental Health Services (ACEHS).

This Work Plan provides details of the scope of work necessary to satisfy the additional site characterization data requested in your letter to the City dated November 12, 1998. This includes characterizing the chemical compounds found in soil samples collected during previous investigations, assessing groundwater quality, and providing data on the groundwater gradient and flow direction at the Site.

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July 27, 1999
47729.1
Ms. Juliet Shin
Alameda County Environmental Health Services
Page 2

Harding Lawson Associates

APPROACH

HLA will advance two soil borings at the locations presented on Plate 2. Proposed soil boring 28 is located to the south of the BART tunnel near an area with historical concentrations of total petroleum hydrocarbons (TPH) as diesel and gasoline. The second soil boring (29) will be located to the north of the BART tunnel in an area where no previous groundwater samples have been collected. Borings are anticipated to be advanced to a total depth of 35 feet below ground surface (bgs). Two soil samples from each boring will be preserved and analyzed at a California-certified laboratory for chemical constituents. One sample collected from the vadose zone will be collected and analyzed for physical soil parameters. Temporary well casings will be placed in the borings and left until sufficient groundwater has entered the borings to allow for the collection of a groundwater sample, or for up to one week. Groundwater samples will also be collected from three existing groundwater monitoring wells; MW-7, MW-20, and MW-21; located on or adjacent to the Site.

This Work Plan outlines the following three tasks:

- Collection of soil and groundwater samples from two locations at the Site
- Sampling of the three existing groundwater monitoring wells
- Preparation of a report summarizing the sampling activities and analytical results

Task 1: Soil and Groundwater Sampling

Prior to initiating the field activities, HLA will obtain a drilling permit from the Alameda County Public Works Agency (ACPWA). HLA will contract California Utility Services of San Ramon, California to perform a utility survey of the proposed sample locations and contact Underground Service Alert 48 hours prior to any intrusive activities. HLA will obtain the necessary permits from the City to perform the sampling activities described below.

HLA will contract Gregg Drilling and Testing Company of Martinez, California (Gregg), a California-licensed drilling company, to advance two geoprobe sample cores to a depth of 35 feet below ground surface (bgs). Soil samples will be collected continuously in 1 $\frac{3}{4}$ -inch by 4-foot PVC liners from near-surface to final depth. A HLA engineer or geologist will log borings in accordance with ASTM D2487-85 Unified Soil Classification and will screen the soil samples with a photo-ionization detector (PID). HLA will select a minimum of two soil samples per boring to be submitted for chemical analyses

July 27, 1999

47729.1

Ms. Juliet Shin

Alameda County Environmental Health Services

Page 3

based on field observations and PID readings. One of the soil samples from each boring will be collected at or near the capillary fringe. Groundwater level measurements collected on the day of soil sampling from the monitoring wells will be used to supplement observation of soil saturation to determine appropriate sample depths. The soil samples will be preserved by placing Teflon film at the end of each sample, covering the ends with plastic caps, sealing with paraffin or non-adhesive rubberized tape, and then placing in a cooler chilled with ice or Blue Ice. The soil samples will be delivered under chain-of-custody protocol to Curtis & Tompkins, Ltd. (C&T) of Berkeley, California for chemical testing.

Two selected soil samples from each boring will be analyzed for the following constituents:

- TPH as gasoline and diesel in accordance with EPA Test Method 8015 modified (TPH diesel samples will be subjected to a silica gel cleanup prior to analysis)
- Polycyclic-Aromatic Hydrocarbons (PAHs) in accordance with EPA Test Method 8310
- Volatile Organic Compounds (VOCs) and methyl tertiary butyl ether (MTBE) in accordance with EPA Test Method 8260B
- California Code of Regulations (CCR) list of 17 Metals; silver, arsenic, barium, beryllium, cadmium, cobalt, chromium, copper, mercury, molybdenum, nickel, lead, antimony, selenium, thallium, vanadium, and zinc by various EPA methods
- Semivolatile Organic Compounds (SVOCs) in accordance with EPA 8270

The above analyses will adequately characterize the chemical constituents potentially present at the site according standard EPA test methods, including petroleum hydrocarbon compounds previously identified. These analyses provide more comprehensive information than fuel fingerprinting regarding the presence of potentially hazardous materials that are EPA analytes. We will conduct a fuel fingerprint analysis by comparing selected samples' chromatograms against fuel standards. One additional soil sample will be collected from the vadose zone and analyzed for the following physical soil parameters:

- Total organic carbon, moisture content, density and soil porosity

The results of these analyses will be used in the RBCA risk assessment.

After reaching final depth, a temporary well casing will be placed in the borings and left a maximum of one week to allow groundwater to infiltrate the boring. The borings will be covered and, if necessary, a safety

July 27, 1999

47729.1

Ms. Juliet Shin

Alameda County Environmental Health Services

Page 4

cone will be placed over the soil boring. Prior to sampling, HLA will determine the water level with an electronic water sounder. HLA will collect groundwater samples using new polyurethane tubing and a peristaltic pump, unless depth to groundwater necessitates using a clean stainless steel bailer. Groundwater samples will be placed in laboratory-prepared sample containers. Groundwater samples to be submitted for metals analysis will be filtered and preserved in the field. All groundwater samples will be immediately sealed, labeled, placed in a cooler chilled with ice or Blue Ice to be delivered under chain-of-custody protocol to C&T.

Groundwater samples will be analyzed for the following constituents:

- TPH as gasoline and diesel in accordance with EPA Test Method 8015 modified (TPH diesel samples will be subjected to a silica gel cleanup prior to analysis)
- VOCs and MTBE in accordance with EPA Test Method 8260B
- PAHs in accordance with EPA Test Method 8310
- CCR list of 17 Metals; silver, arsenic, barium, beryllium, cadmium, cobalt, chromium, copper, mercury, molybdenum, nickel, lead, antimony, selenium, thallium, vanadium, zinc
- SVOCs in accordance with EPA 8270

All downhole boring and sampling equipment will be decontaminated prior to use at each boring. Upon completion of both the soil and groundwater sampling, the soil borings will be tremie grouted to near surface and finished with an asphalt cold patch.

Task 2: Existing Monitoring Well Sampling

HLA will also sample the two onsite monitoring wells, MW-20 and MW-21, and MW-7, located offsite near the northeast corner of the property. Prior to sampling HLA will measure the water level of each well with an electronic water sounder. HLA will then purge at least three well volumes of water from each well with either a bailer or submersible pump. Temperature, pH, and conductivity will be monitored during purging. When these parameters stabilize and groundwater levels are at least 80 percent of pre-purge levels, HLA will collect groundwater samples from each well with a clean disposable Teflon bailer. A duplicate sample will be collected from MW-21. Samples will be drained from the bailer into laboratory-prepared sample containers. Groundwater samples to be submitted for metals analysis will be filtered and

July 27, 1999
47729.1
Ms. Juliet Shin
Alameda County Environmental Health Services
Page 5

preserved in the field. All groundwater samples will be immediately sealed, labeled, placed in a cooler chilled with ice or Blue Ice to be delivered under chain-of-custody protocol to C&T. Samples will be accompanied by a trip blank, provided by the analytical laboratory, from time of collection until delivery to the laboratory. The trip blank will be analyzed for VOCs in accordance with EPA Method 8260B. Groundwater samples will be analyzed for the following constituents:

- TPH as gasoline and diesel in accordance with EPA Test Method 8015 modified
- PAHs in accordance with EPA Test Method 8310
- CCR list of 17 Metals; silver, arsenic, barium, beryllium, cadmium, cobalt, chromium, copper, mercury, molybdenum, nickel, lead, antimony, selenium, thallium, vanadium, zinc
- VOCs and MTBE in accordance with EPA Method 8260B
- SVOCs in accordance with EPA 8270

All equipment used in the monitoring wells will be decontaminated in a solution of Alconox and water and then rinsed with deionized water prior to purging each well. This water will be contained and disposed of as discussed below.

Investigation Derived Waste

All soil generated during drilling procedures will be stored in labeled 55-gallon drums at a location specified by the City of Oakland pending results of chemical analysis of the soil samples. A composite sample will be collected from the soil drums and analyzed for TPHd, TPHg, TPHmo, BTEX, metals and reactivity, corrosivity, and ignitability. Purged groundwater and decontamination water will be stored in 55-gallon DOT drums for subsequent disposal. Groundwater drums will be sampled and analyzed for TPH as gasoline, TPH as diesel, TPH as motor oil, benzene, toluene, ethylbenzene and total xylenes prior to disposal. We have assumed that HLA will dispose of the soil and water as non-hazardous material.

Task 3: Preparation of Report

Following completion of the sample activities and receipt of chemical analysis results, HLA will validate the data and assess the precision, accuracy, completeness, and overall quality of the data. We will then prepare a letter report for submittal to the City and the ACEHS. The letter report will include a description


July 27, 1999
47729.1
Ms. Juliet Shin
Alameda County Environmental Health Services
Page 6

of the sample activities, tabulated chemical results, a site plan, groundwater elevation data and gradient flow direction information, boring logs, a discussion of the results, and recommendations for any additional work necessary to obtain site closure.

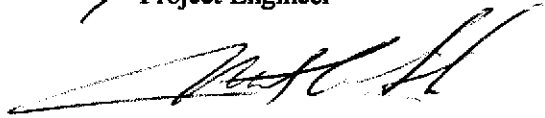
The City of Oakland requests that you provide your comments directly to Mr. Mark Hersh of the City of Oakland. If you have any questions regarding this work plan, please contact either of the undersigned.

Yours very truly,

HARDING LAWSON ASSOCIATES



James McCarty
Project Engineer



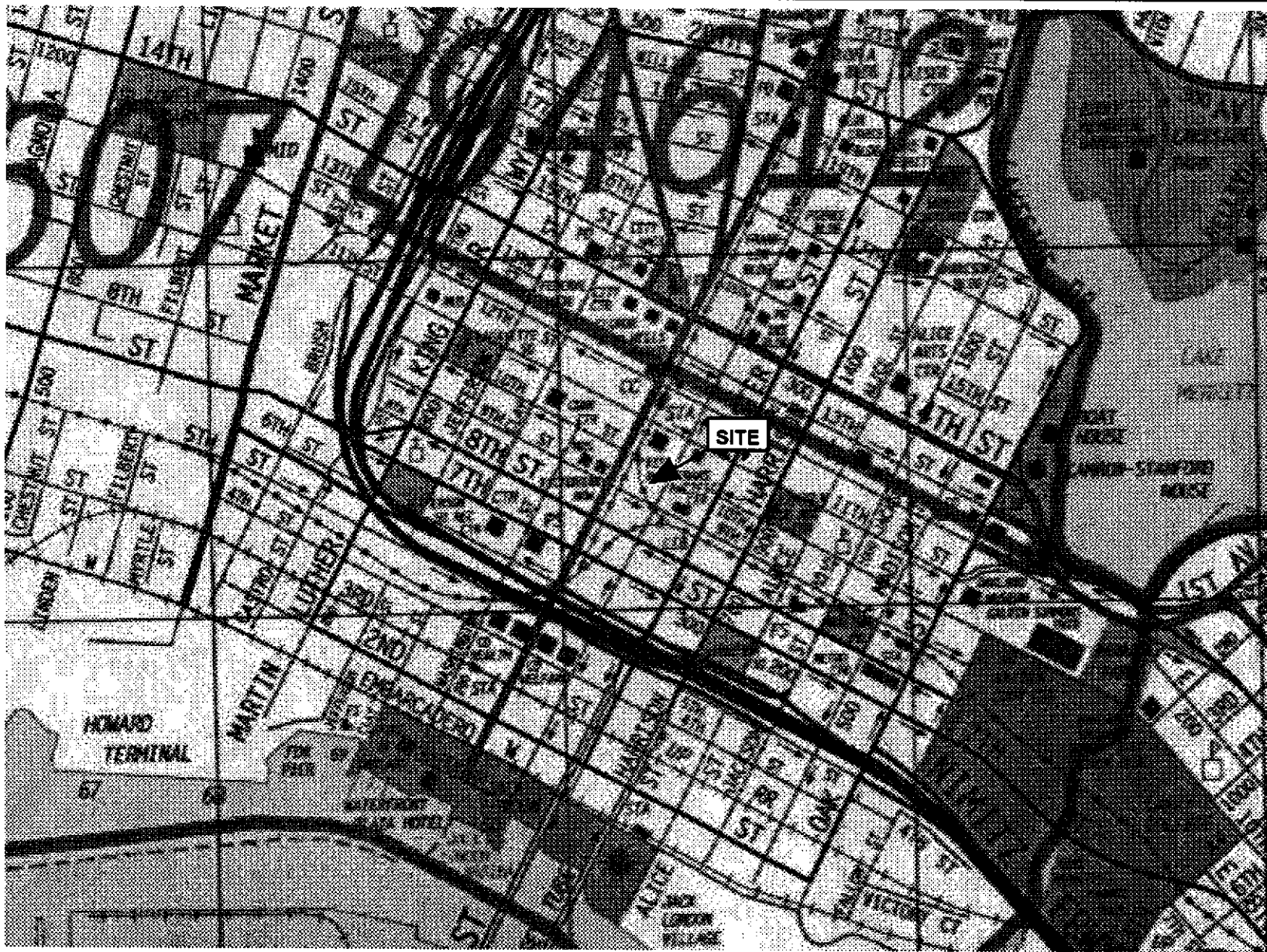
Michael A. Sides, P.E.
Senior Engineer

JGM/VSH/mlw/47729/037288L

1 copies submitted

Attachments: Plate 1 – Vicinity Map
Plate 2 – Site Map

cc: Mark Hersh City of Oakland
Public works Agency
Environmental services Division
250 Frank H Ogawa Plaza, Suite 5301
Oakland, California 94612



Reference: Thomas Brother's Map, 1997



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VICINITY MAP
9th Street and Broadway
Oakland, California

PLATE

1

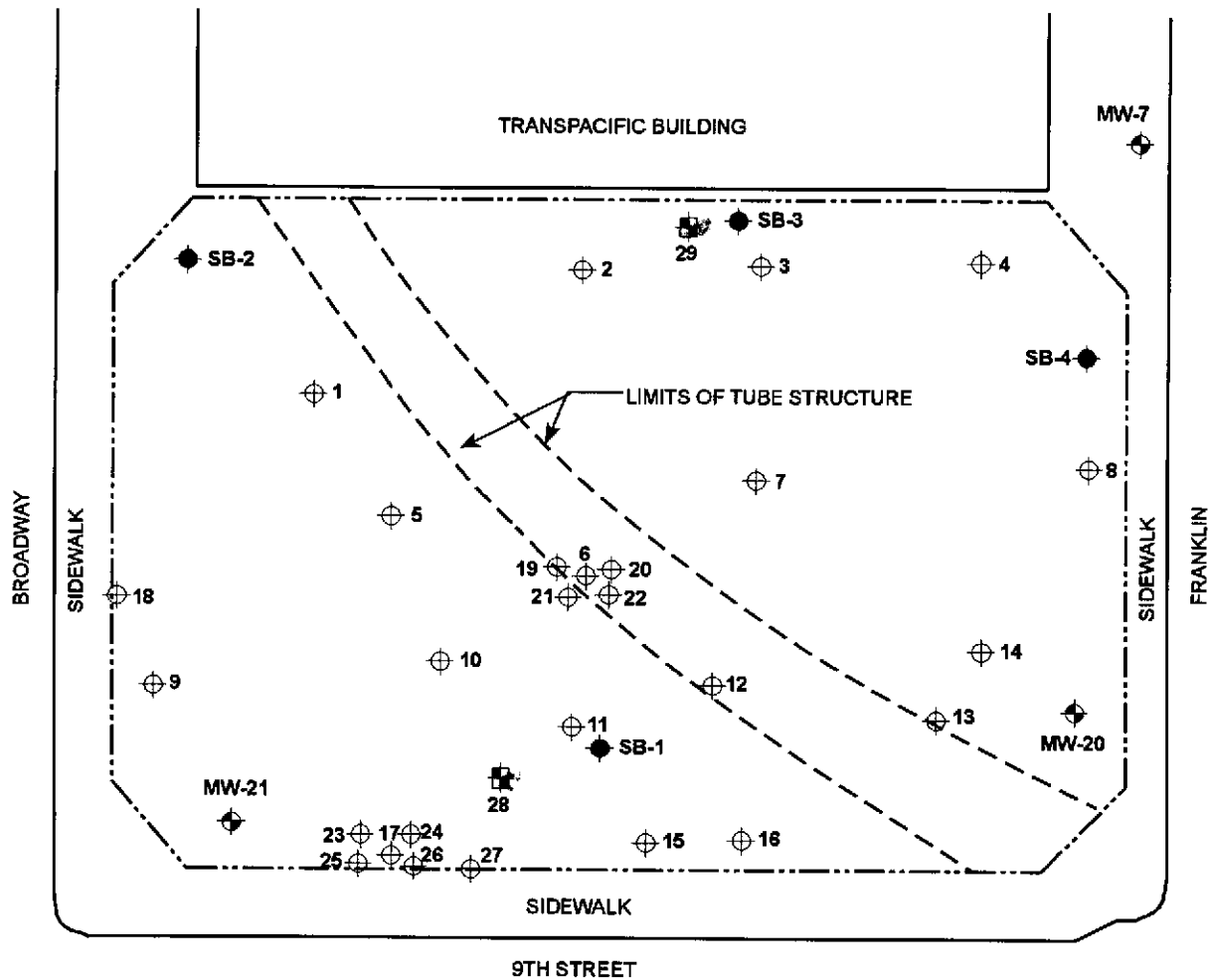
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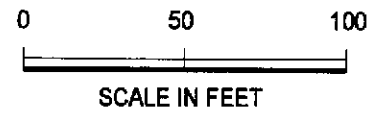
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REVISED DATE



LEGEND

-  MW-20 Groundwater Monitoring Well Location
-  10 Soil Boring Location (HLA, 1993)
-  SB-3 Soil Boring Location (SECOR, 1998)
-  28 Proposed Soil Boring Location (HLA, 1999)
-  Property Line



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SITE MAP
9th Street and Broadway
Oakland, California

PLATE
2

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47729

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