environmental service

by Papineau, R.E.A. 791

ENVIRONMENTAL PROTECTION

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RECORD OF TRANSMITTAL

TO: **Mr. Don Hwang**

cc. **Mr. Jack Sumski, Jr.**

FROM: **Marc Papineau**

DATE: **1/10/2001**

REFERENCE: **1723 Fruitvale Avenue Oakland, California**
(ES Project 2000-033.02)

Enclosed please find the following item: **Proposed Sampling Plan, dated January 9, 2001 (see Note below).**

NOTE:

The Proposed Sampling Plan has been reviewed and signed by Mark Armstrong, the Registered Geologist who will oversee the work.

A Drilling Permit Application will be submitted to the Alameda County Public Works Agency, Water Resources Section, 399 Elmhurst Street, Hayward, on January 12, 2001.

Please call Marc Papineau as soon as possible to convey changes or clarifications, if any, and to confirm approval of the Proposed Sampling Plan.

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PROPOSED SAMPLING PLAN No. 2
January 9, 2001

Additional soil and ground water sampling at 1723 Fruitvale Avenue in Oakland, California, is proposed in response to the Alameda County, Health Care Services Agency, Environmental Health Services, letter dated January 3, 2001. As requested in its letter, the required work is intended to expand upon previous work by 1) delineating the extent of detectable concentrations of perchloroethylene (also known as tetrachloroethene or PCE) in soil at 10 feet, 15 feet, and 20 feet below grade surface (bgs) and 2) delineating the extent of detectable concentrations of PCE in ground water.

Background Information
The letter report titled *Specified Soil and Ground Water Sampling and Laboratory Analyses for 1723 Fruitvale Avenue, Oakland, California*, dated November 27, 2000, prepared by Environmental Service, summarizes results of soil and ground water sampling completed on November 14, 2000. According to the report, concentrations of perchloroethylene (PCE) were detected in soil at sample location SB-5, and a concentration of PCE was detected in ground water at sample location SB-6. See Figure 1 for locations.

PCE concentrations in soil at sample location SB-5 were 9.8 parts per billion (ppb) at 11.5 feet, 19 ppb at 16.5 feet, and 43 ppb at 20.5 feet below grade surface (bgs). The concentration of PCE in ground water was 290 ppb at sample location SB-6, approximately 10 feet south southeast of SB-4/SS-2. At a previous soil boring and excavation location labeled as SB-4/SS-2 concentrations of PCE had been detected in the range of 24 to 34 ppb in soil at depths of 10 feet or 11 feet bgs.

In comparison the U.S. EPA, Region 9, Preliminary Remediation Goals for PCE in soil are 5.7 mg/kg for residential land and 19 mg/kg for industrial land. The U.S. EPA Maximum Contaminant Level (MCL) for drinking water is 5 ppb. The original PCE concentration in the composite soil sample SB-4 (5 feet and 10 feet bgs) was previously reported in error as 24 mg/kg and above the PRGs (*Limited Phase II Environmental Investigation Report, 1723 Fruitvale Avenue, Oakland, California,* Basics Environmental, December 22, 1999, pp. 3-2 and 4-1).

Local Geology and Ground Water Conditions Ground water at the Property is encountered in a yellowish brown clayey sandy gravel and clayey sand at approximately 21 feet bgs. The static ground water level was approximately 20.5 feet bgs on November 14, 2000. The clayey sandy gravel and clayey sand overlay sandy clay and are themselves overlain by 19 feet of highly plastic silty clays and silt. The thickness of the ground water-bearing formation may be 6.5 feet, based upon available information.

The slope of the shallow ground water surface was researched based upon well monitoring performed at 1450 Fruitvale Avenue in Oakland. Three monitoring wells were constructed at 1450 Fruitvale Avenue on September 25, 2000. The ground water surface on October 16, 2000, was reported at an elevation of 24 to 27 feet above mean sea level datum (msl), with a gradient of 0.116 feet per foot sloping down toward the southeast (AEI Consultants, November 22, 2000). At the subject Property, therefore, the expected slope of the ground water surface is from the rear of the Property toward Fruitvale Avenue.

Bibliography

AEI Consultants, November 22, 2000. *Monitoring Well Installation and Sampling Report, 1450 Fruitvale Avenue, Oakland, California*, AEI Project Number 3581.

Basics Environmental, July 12, 2000. *Phase III Environmental Site Remediation, 1723 Fruitvale Avenue, Oakland, California.*

Basics Environmental, December 22, 1999. *Limited Phase II Environmental Investigation Report, 1723 Fruitvale Avenue, Oakland, California.*

Environmental Service, November 27, 2000. *Specified Soil and Ground Water Sampling and Laboratory Analyses for 1723 Fruitvale Avenue, Oakland, California*, ES Project Number 2000-033.01.

Sampling Rationale

Alameda County on January 3, 2001, requested information to enable assessment of both 1) the extent of detectable concentrations of PCE in soil and 2) the extent of detectable concentrations of PCE in ground water. The proposed sampling, therefore, is intended to satisfy the joint requirements for delineation of the soil source and delineation of the ground water plume.

One monitoring well and two piezometers will enable assessment of the true ground water surface elevation and slope on the Property. Drilling of the bore holes for these will provide an opportunity to sample the soil east, west, and south of the known detectable concentrations of PCE in soil, that is east, west, and south of locations SB-5 and SB-4/SS-2. Based upon the monitoring at 1450 Fruitvale Avenue and available information for the Property (1723 Fruitvale Avenue), the monitoring well should be placed southeast of the suspected source of PCE in soil, with a screened interval through the entire ground water-bearing formation, that is, from approximately 19 feet to 26 feet bgs.

In view of the absence of detectable concentrations of decomposition by-products (*e.g.*, cis-1,2-DCE, TCE, and DCA) an old release or a minor release is suspected. The center of that release is unknown but may have occurred farther north of locations SB-4/SS-2. One interpretation of the pattern of increasing PCE concentration with increasing depths (9.8 ppb at 11.5 feet, 19 ppb at 16.5 feet, and 43 ppb at 20.5 feet) is that location SB-5 is a distance away from the center of the release, near the edge of detectable PCE concentrations in soil. Therefore, to complete the assessment of the extent of detectable concentrations of PCE in soil, additional bore holes may be drilled on a second day of drilling. If so, these would be placed to enable soil sampling north of locations SB-5 and SB-4/SS-2 which so far are the only locations of known detectable concentrations of PCE in soil.

Proposed Sampling, Laboratory Analyses, and Report

Sampling described below is generally consistent with the required sampling described by Alameda County. Exceptions or clarifications, if any, are noted:

1. Use a portable or low-clearance auger rig to drill up to five (5) bore holes, SB-7 for construction of a monitoring well (MW-1), SB-8 and SB-9 for two (2) piezometers, and SB-10 and SB-11 for additional soil sampling (see Figure 1).

2. Drill additional bore holes SB-10 and SB-11 generally north of SB-4/SS-2, for the purpose of collecting soil samples only.

3. Stop at 5, 10, 15, and 20 feet to collect soil samples driven into the split spoon sampler loaded with brass sleeves. Sampling Protocols are attached as Attachment A.

4. Complete bore hole SB-7 as a 2-inch diameter monitoring well (MW-1), screened from approximately 20 to 26 feet. Complete bore holes SB-8 and SB-9 as 2-inch diameter wells, screened from approximately 20 to 26 feet, for primary use as piezometers (MWP-2 and MWP-3). Monitoring well and piezometer construction schematics are illustrated in Attachment B.

5. Test three (3) vadose-zone soil samples (SB-7, 8, and 9-15 feet bgs) and three (3) capillary fringe soil samples (SB-7, 8, and 9-20 feet bgs) for PCE concentration in accordance with U.S. EPA Method 8010. Additionally, test four (4) vadose-zone soil samples (SB-10-10, SB-11-10, SB-10-15, and SB-11-15) and two (2) capillary fringe soil samples (SB-10-20 and SB-11-20) for PCE concentration in accordance with U.S. EPA Method 8010. Testing will be performed by a California DHS, ELAP-participating laboratory certified to perform U.S. EPA Method 601/8010.

6. Perform a Well Location and Elevation Survey by a Licensed Surveyor.

7. Develop and later purge monitoring well MW-1 and piezometers MWP-2 and MWP-3. Place soil cuttings, well development water and purge water in 55-gallon drums, for proper disposal pending receipt of laboratory analytical results.

8. Test the three (3) ground water samples for PCE in accordance with U.S. EPA Method 601/8010. Piezometers MWP-2 and MWP-3 may subsequently be used for water elevation measurements and will not subsequently be used for sampling if initial PCE concentrations in the ground water samples collected from those wells are less than the MCL (5 ppb).

9. Prepare a concise letter report with laboratory analytical results, Sample Chain-of-Custody, sample location map, well location and elevation survey plat, ground water surface elevation map, well construction and exploratory soil boring logs signed by the Registered Geologist.

Proposed Schedule

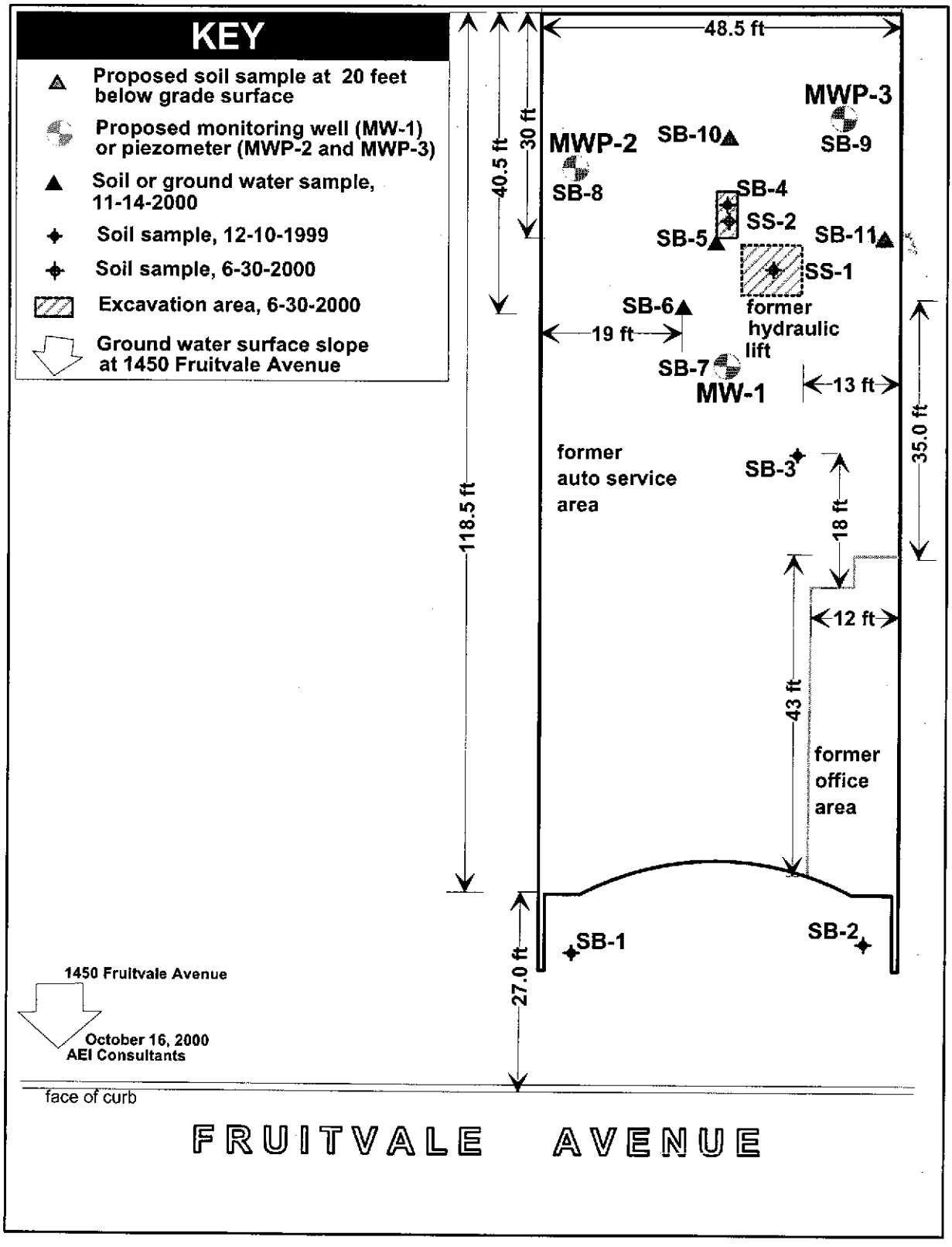
A permit will be applied for at the Water Resources Section of Alameda County Public Works Agency by January 12, 2001. Drilling is tentatively scheduled for January 24 and 25, 2001. Well development will be performed within 1 week after well construction, that is by January 31. Well sampling is tentatively scheduled for February 2, 2001. All laboratory analytical results for soil and ground water samples are expected due by February 9. The Soil and Ground Water Investigation Report will be completed by February 26, 2001.

Proposed Exceptions and Clarifications
Piezometers MWP-2 and MWP-3 may subsequently be used for water elevation measurements and will not subsequently be used for sampling if initial PCE concentrations in the ground water samples collected from those wells are less than the MCL (5 ppb).

Marc Papineau

Marc Papineau, Project Manager

R. Mark Armstrong, R.G. #6134 **January 9, 2001**



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5.0 ft
10.0 ft

Figure 1
Sample Location Map
1723 Fruitvale Avenue
Oakland, California

ATTACHMENT A
SAMPLING PROTOCOLS

Soil Sampling

Soil samples shall generally be collected using a driven method, at intervals of five feet and at changes in lithology. Appropriate driven methods include 1) a slide hammer and spoon loaded with one (1) six-inch long x 2-inch diameter brass sleeve (manual method), 2) a drop hammer and California-modified, split-spoon sampler, containing three (3) six-inch long x 2-inch diameter brass sleeves, or 3) a hydraulic push method. With a split spoon, soil samples can be collected by advancing the auger to a point immediately above the desired sampling depth and then driving the spoon sampler 6 inches (manual) or else 18 inches through the center of a hollow-stem auger (drill rig). With a standard drop hammer and drop height, blow counts per 6-inch increment will be recorded by the technician on an Exploratory Soil Boring Log, one for each bore hole.

After recovery of the spoon sampler, the brass sleeves will be removed and one sleeve containing a full soil sample will be promptly sealed with Teflon sheet and plastic end caps at both ends. The technician will mark the Exploratory Soil Boring Log to show the depth of all samples and specifically the depth of the samples selected for delivery to a laboratory for testing. The technician will label the sample sleeve and place it in an ice chest, pending delivery to a laboratory certified by the State of California to perform the required testing. The technician will record any and all problems associated with sampling on the Exploratory Soil Boring Logs or else in the notebook. The logs and field notebook will be retained for at least three years.

For each interval, the technician will observe the soil to describe the soil color, type, moisture content, and odor. The technician will use the Unified Soil Classification System and Munsell Soil Color Charts to identify the soil type and colors encountered in the exploratory bore holes. A copy of the Unified Soil Classification System and Munsell Soil Color Charts will be on site during exploration. The technician will describe on the Exploratory Soil Boring Logs the soil encountered at 5-foot intervals and at transitions in soil type, even if different from a 5-foot interval. The technician also will note any soil discoloration or malodor on the Exploratory Soil Boring Log.

Optionally, depending on the approved Sampling Plan, the technician may use a Photo-Ionization Detector (PID) to record presence of detectable concentrations of organic vapor if any is present in the soil samples. PID readings are to be made consistently by placing the PID probe within a few millimeters of the open end of the soil sample immediately after the sleeve is removed from the split spoon. PID readings if made shall be recorded on the Exploratory Soil Boring Logs in the column labeled "PID Reading." Alternatively, the soil from a second or third sleeve may be placed in a plastic bag and then the head space in the bag tested with the PID. Measurements from a PID can be used to indicate organic vapor concentrations in soil but cannot be used to duplicate or as a substitute for laboratory analysis.

Prior to reusing the spoon or California-modified, split-spoon, the technician will wash and rinse the spoon with trisodium phosphate or sodium bicarbonate soap and distilled water. Only clean auger shall be placed down hole. If sufficient clean auger is not available, steam cleaning may be performed on-site to avoid cross-contamination between bore holes.

Monitoring Well Sampling

Allow the concrete on the wells to cure for at least 48 hours after construction. Then develop each well by pumping and surging to remove suspended sediment. Alternately pump the ground water from the well into a 55-gallon drum and use a surge block to thrust up and down. Pumping and surging will be repeated until the pumped water appears to be clear and relatively free of suspended sediment.

Before purging, the technician will measure the depth to water in each well to the nearest hundredth of one foot (approximately 1/8 inch) using a water level sounder. The depth to water should be measured consistently from the top of well casing at a permanent mark or notch, or else from the top of the north side of the casing in the absence of a permanent mark or notch. Record the depth on a Ground Water Monitoring Log, one for each well.

After well development, and before sampling, the technician will purge three to four well casing volumes from each well or until temperature, pH, and specific conductance have stabilized. Purging can be performed with a submersible pump or by hand bailing. Record the temperature, pH, and specific conductance of the ground water during purging on the Ground Water Monitoring Log.

Well casing volume is calculated using a factor of 0.16 gallons per foot of water column for a 2-inch diameter well or 0.64 gallons per foot of water column for a 4-inch diameter well. The length of the water column is calculated by subtracting the depth to water from the total depth of the well.

Ground water samples will be collected using dedicated, disposable, polyethylene bailers, one for each well. For most sampling, bailers should have bottom emptying devices. Lower the bailer suspended from clean line into the well, until the bailer is submerged in the ground water, and then remove the bailer from the well. Use the bottom emptying device to pour the sample slowly from the bailer, filling the sample containers without agitation. Selection of sample containers and preservatives shall depend on the kind of laboratory analyses and shall be confirmed in advance with the laboratory.

The technician will label the samples and place them in an ice chest storage, pending delivery to a laboratory certified by the State of California to perform the required testing. The technician will record any and all problems associated with sampling on the Ground Water Monitoring Logs or else in the field notebook. The logs and field notebook will be retained for at least three years.

Transportation of Samples

The technician will initiate a Sample Chain-of-Custody for all samples. The technician will transport soil and ground water samples in an ice chest with water ice or blue ice, under proper Sample Chain-of-Custody, as soon as feasible after collection, to the laboratory designated to perform analyses.

ATTACHMENT B

WELL CONSTRUCTION SCHEMATIC

DRILL RIG: Diedrich D-25 SURFACE
BORE HOLE DIAMETER (INCHES): 6 ELEVATION:

DATE DRILLED:
LOGGED BY:
REVIEWED BY:

SOIL DESCRIPTION & CLASSIFICATION

DEPTH (FEET)	SOIL TYPE	SAMPLE	BLOWS/FT	PID READING (PPM)	REMARKS	WELL CONSTRUCTION
0					Christy box flush	
					Blank casing Sch 40 PVC 2-inch diameter	
5						
10					Neat cement	
15					Bentonite plug	
20					Filter Pack: Lonestar 2/12 Well casing:Sch 40 PVC 0.010-inch slot	
25					Bottom: 26 feet	

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EXPLORATORY SOIL BORING LOG

PROJECT LOCATION:
1723 Fruitvale Avenue Oakland, CA

PROJECT No. 2000-033.01
DATE 1-9-2001

BORING No. MW-1/ SB-7