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ENVIRONMENTAL ENGINEERING, INC
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September 26, 2003

Ms. Eva Chu
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Subject: Chevron Gasoline Service Station
Site Address: 3519 Castro Valley Boulevard, Castro Valley, CA

Dear Ms. Chu:

As you requested in your letter of June 16, 2003, enclosed for your review is a copy of SOMA's "Workplan to Conduct Off-Site Soil and Groundwater Investigation at Chevron Gasoline Service Station" located at the subject address.

Thank you for your time in reviewing our report. If you have any questions or comments, please call me at (925) 244-6600.

Sincerely,

Mansour Sepehr, Ph.D., PE
Principal Hydrogeologist

REGISTERED PROFESSIONAL ENGINEER
MANSOUR SEPEHR
No. C042928
Exp. 3-31-04
CIVIL
STATE OF CALIFORNIA

Enclosure

cc: Mr. Mirazim Shakoori w/enclosure

ENVIRONMENTAL ENGINEERING, INC.
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WORKPLAN TO CONDUCT OFF-SITE SOIL AND GROUNDWATER INVESTIGATION AT CHEVRON GASOLINE SERVICE STATION

3519 Castro Valley Boulevard

Castro Valley, California

September 25, 2003

Project 2760

Prepared for

Mr. Mirazim Shakoori
3519 Castro Valley Boulevard
Castro Valley, California 94546

Prepared by

SOMA Environmental Engineering, Inc.
2680 Bishop Drive, Suite 203
San Ramon, CA 94583

Certification

This report has been prepared by SOMA Environmental Engineering, Inc. on behalf of Mr. Mirazim Shakoori, the property owner of 3519 Castro Valley Boulevard, Castro Valley, California to comply with the Alameda County Health Care Services' workplan request letter, dated June 16, 2003.

Mansour Sepehr, Ph.D., P.E.
Principal Hydrogeologist

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1.0 Introduction

This workplan has been prepared by SOMA Environmental Engineering, Inc. (SOMA) on behalf of Mr. Mirazim Shakoori, the property owner. As shown in Figure 1, the property is located at 3519 Castro Valley Boulevard, Castro Valley, California, (the "Site").

The Site is an active Chevron station located within in a mixed commercial/residential area of Castro Valley, California at the southeast corner of Castro Valley Boulevard and Redwood Road. The elevation of the subject property is approximately 178 feet above mean sea level and the Site's topography slopes gently to the south. Current remedial work at the Site removed three single-walled fiberglass USTs with volumes of 6,000, 8,000, and 10,000 gallons and a waste-oil tank (WOT) with a volume of 1,000 gallons. Two large USTs were installed in the northwest portion of the Site to replace the smaller tanks.

The previous consultant, URS Corporation, provided relevant project documents with a Site Background and Document Transfer letter, dated July 14, 2003. The following two sections are based on the information provided in that letter.

1.1 Background

Prior to 1989, the Site was a Mobil service station. In 1984, three single-walled fiberglass gasoline USTs with capacities of 6,000, 8,000, and 10,000-gallons were installed in the southeast portion of the Site. In 1988, a 1,000-gallon double-walled WOT was also installed to replace a 380-gallon single-walled steel WOT.

In 1989, the subject property was transferred from Mobil to British Petroleum (BP). In March 1994, the subject property was transferred to Mr. Mirazim Shakoori who operated the Site as a Chevron station.

In September 2003, the existing USTs were excavated from the southwest portion of the Site. These USTs were replaced with one 12, 000 gallon UST and one 20,000 gallon UST in the northwest portion of the Site. During this process, 2 possibly 3 monitoring wells were damaged. SOMA is in the process of decommissioning these wells.

1.2 Previous Investigations

In September 1988, Kaprealian Engineering, Inc. (KEI) removed the original 380-gallon WOT and observed holes in this UST. Confirmation soil samples from the bottom of the excavation - at 8.5 feet below ground surface (bgs) - contained benzene at 6.8 micrograms per kilogram (ug/Kg or parts per billion) and toluene at 9.5 ug/Kg. The laboratory analysis did not detect total petroleum hydrocarbons (TPH) or total oil and grease (TOG). In March 1989, an Unauthorized Release Report (URR) was submitted to Alameda County Health Care Services (ACHCS).

In September and October 1992, Environmental Science & Engineering, Inc. (ESE) drilled five soil boreholes and converted the boreholes into monitoring wells (ESE-1 through ESE-5) that ranged in depth from approximately 23 to 30 feet bgs. The maximum level of soil contamination was detected in monitoring well borehole ESE-5 at a depth of 10.5 feet bgs with 220,000 ug/Kg TPH-g, 1,400 ug/Kg benzene, 8,200 ug/Kg toluene, 3,300 ug/Kg ethylbenzene, and 18,000 ug/Kg xylenes. ESE encountered petroleum hydrocarbon contaminants in all the monitoring wells with maximum levels detected in ESE-1, located west of and adjacent to the three USTs. This well contained TPH-g at 2,300 ug/L, benzene at 370 ug/L, toluene at 160 ug/L, ethylbenzene at 17 ug/L, and xylenes

at 110 ug/L. A URR for this documented release was submitted to the ACHCS in March 1993.

In December 1994, ACC Environmental Consultants, Inc. (ACC) conducted an investigation along the western edge of the property for the Redwood Boulevard road-widening project. ACC drilled five boreholes to a maximum depth of 10 feet bgs. The maximum level of petroleum hydrocarbon contaminants detected in the road-widening boreholes was 59,000 ug/Kg TPH-g, 5,890 ug/Kg benzene, 220,000 ug/Kg ethylbenzene, and 540,000 ug/Kg xylenes.

In July 1995, Alisto Engineering (AE) installed three additional monitoring wells. AE installed two of the wells, MW-6 and MW-8, on-site, and the third well, MW-7, on the adjacent property southeast of the Site. In February and March 1996, AE also advanced several hand-augered boreholes in the vicinity of the former western pump island and product lines. The boreholes were hand-augered to a maximum depth of 8.5 feet bgs. AE reported that petroleum hydrocarbon contamination increased with depth and the highest concentration was encountered at the capillary fringe. Subsequently, in the following month, April 1996, AE decommissioned well MW-8 on the western margin of the Site to accommodate the road-widening project along Redwood Boulevard.

1.3 Quarterly Monitoring

Since 1992, quarterly monitoring has been conducted at the Site. In 1999, the sampling schedule was modified to include semi-annual sampling of ESE-5 and ESE-7. Prior to SOMA, URS Corporation, Cambria Environmental Technology, Inc., Blaine Technical Services, AE, and ESE conducted these monitoring and sampling events.

Based on joint monitoring events with the adjacent former Shell station to the west, the groundwater flow direction varied from north/northwest to

south/southeast and primarily to the northeast. Based on monitoring events since the cessation of the joint monitoring, the groundwater flow direction has usually been to the south and east. For the last four years, MtBE has been detected in off-site well MW-7 at 95 to 4,400 ug/L and most of these detections were above 1,000 ug/L. With consistent on-site groundwater flow direction toward the southeast/south, contaminated groundwater has been migrating off-site towards the adjacent commercial property located south of the Site.

In a letter dated June 16, 2003, Eva Chu (ACHCS) required an additional investigation to delineate the horizontal and vertical extent of the off-site MtBE plume. This workplan has been prepared to address the ACHCS directive.

2.0 Scope of Work

Based on the results of the past investigative results and the ACHCS directive, the proposed scope of work includes delineating the off-site extent of the groundwater petroleum contaminants emanating from the subject site. SOMA organized the scope of the proposed investigation into the following tasks:

Task 1: **Permit Acquisition, Off-Site Access Arrangement, and Preparation of a Site Health and Safety Plan and Utility Clearance**

Task 2: **Drilling Temporary Well Boreholes and Collecting Soil and Grab Groundwater Samples**

Task 3: **Laboratory Analysis**

Task 4: **Report Preparation**

The following is a brief description of the above tasks.

2.1 Permit Acquisition, Off-Site Access Arrangement, and Preparation of a Site Health and Safety Plan and Utility Clearance

Prior to commencing field activities, SOMA will obtain drilling permits, and arrange for off-site access. SOMA will obtain a drilling permit from the ACHCS and obtain an access agreement from each of the off-site property owners before fieldwork begins.

A Site Health and Safety Plan (HASP) will also be prepared to address safety provisions during field activities and provide procedures to protect the field crew from physical and chemical hazards resulting from drilling and sampling. The HASP will establish personnel responsibilities, general safe work practices, field procedures, personal protective equipment standards, decontamination procedures, and emergency action plans.

To comply with the HASP, SOMA will also contact Underground Service Alert (USA) to clear the proposed drilling areas of underground utilities. Following the USA clearance, a private utility locator will also survey the proposed drilling areas to locate additional subsurface conduits.

2.2 Drilling Temporary Well Boreholes and Collecting Soil and Grab Groundwater Samples

The results of previous groundwater sampling events indicate that petroleum hydrocarbon contamination has migrated off-site to the south/southeast. In the first quarter monitoring event of 2003, off-site well MW-7 contained 1,100 ug/Kg of MtBE. To delineate the off-site groundwater plume extending from the Site, SOMA plans to drill a total of five off-site temporary well boreholes. As shown in Figure 2, SOMA will advance the boreholes along the probable groundwater flow direction in order to evaluate the extent of the off-site groundwater chemical plumes.

Based on prior investigative results, the proposed depths of the temporary well boreholes will be approximately 30 feet bgs. However, the actual depths of temporary well boreholes will be decided during their installation based on the field observations.

To drill the temporary well boreholes, a truck mounted direct-push technology (DPT) drill rig will be used. DPT is a relatively fast method of collecting soil and grab groundwater samples and does not generate soil cuttings that require disposal.

Prior to drilling each borehole, all of the drilling equipment advanced into the subsurface will be thoroughly decontaminated to minimize the potential of cross-contamination between boreholes. During the drilling, SOMA's geologist will log continuous soil cores from each borehole. At least one soil sample will be submitted to the lab from each borehole location at the interface between the vadose zone and saturated sediments (capillary fringe) and analyzed for the presence of TPH-g, BTEX, and MtBE. From at least two locations, the collected soil samples will be analyzed for bulk density and total organic carbon content. During drilling, a photo ionization detector (PID) will be used to screen the soil cores and to monitor the ambient air at the boreholes. Based on the PID readings, some of the collected samples will be analyzed by the laboratory.

When the borehole has been advanced to the designated depth, a temporary PVC well casing will be installed into the borehole. The well casing will consist of a factory slotted screen with 0.010" slots installed into the water-bearing zone and blank casing extended to just below the surface grade. To secure the water-bearing zone from surface contamination, a cap will be emplaced on the blank casing section and a hydrated bentonite seal will be emplaced around the upper six inches of the temporary well casing. A temporary asphalt or concrete seal will

also be emplaced over the top of the capped casing to secure the temporary well from cross-contaminating surficial fluids.

After installing the temporary wells, SOMA anticipates that the water-bearing formation may seep very slowly and require at least a few days to yield enough water for sampling. After this waiting period, SOMA field personnel will use a ½-inch diameter disposable bailer or a Watera™ sampler to collect grab groundwater samples. SOMA personnel will then transfer the groundwater sample collected from each borehole into 40-mL VOA vials. The samples will be stored in a cooler with ice pending delivery to Curtis & Tompkins, Ltd., Analytical Laboratories. The soil and grab groundwater samples will be analyzed for TPH-g, BTEX, and MtBE. After sampling, all boreholes will be properly sealed with neat cement grout.

2.3 Laboratory Analysis

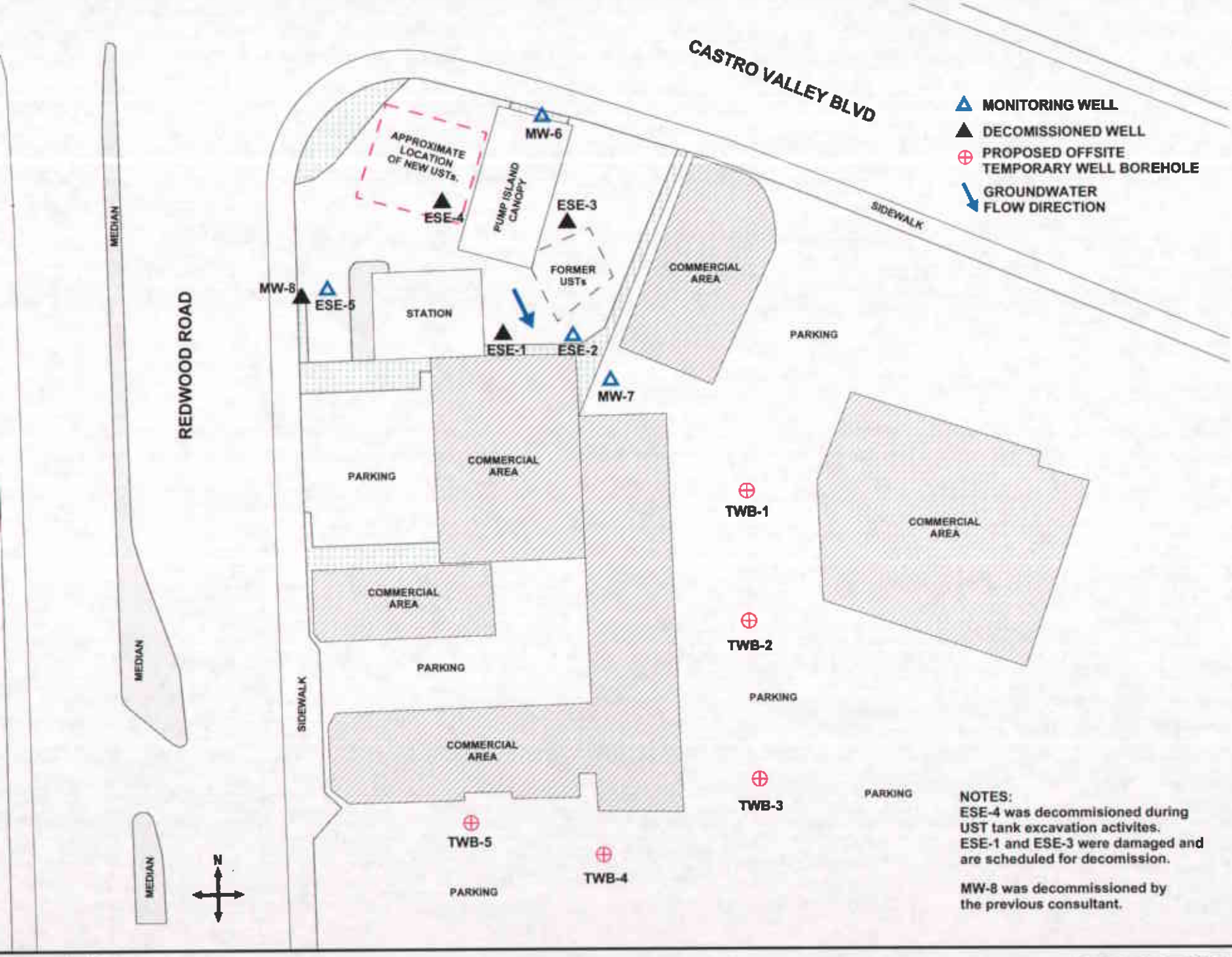
The soil and grab groundwater samples will be analyzed for TPH-g, BTEX, and MtBE. TPH-g will be measured using EPA Method 5030/8015 GCFID. EPA Method 8021B will be used to measure BTEX and MtBE. The presence of MtBE in soil and groundwater samples will be confirmed using EPA Method 8260B.

2.4 Report Preparation

A technical report will be prepared to document the soil and groundwater conditions and the extent of the petroleum chemical contamination in the soil and groundwater. The technical report will include figures, tables, a detailed description of the field investigation procedures, the results of soil and groundwater evaluations, as well as our recommendations for installing groundwater monitoring wells if warranted.

Figures

Figure 1: Site vicinity map.



oximate scale in feet

40 80

Figure 2: Site map showing locations of existing monitoring wells, decomissioned wells, and locations of proposed offsite temporary well boreholes.

SOMA ENVIRONMENTAL ENGINEERING, INC.