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November 7, 2007

Mr. Jerry Wickham
Alameda County Environmental Health Services
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502

RECEIVED

2:53 pm, Nov 07, 2007

Alameda County
Environmental Health

Subject: Multi-Phase Extraction Pilot Test Workplan
3609 International Boulevard
Oakland, California
Fuel Leak Case #RO0000265

Dear Mr. Wickham:

On behalf of the owner, Mr. Abolghassem Razi, SOMA Environmental Engineering, Inc. (SOMA) has prepared this workplan for the Alameda County Environmental Health Services (ACEHS), describing the proposed multi-phase extraction (MPE) pilot test at 3609 International Boulevard, Oakland, Alameda County, California (the Site).

The objective of the MPE pilot test will be to evaluate MPE as a supplemental remedial action to reduce the mass of fuel hydrocarbons within the chemical source area at the Site.

MPE Pilot Test

The MPE pilot test will determine the feasibility of dewatering the contaminated zone and removing the contamination through vacuum-enhanced volatilization in wells near the source of groundwater contamination. Pilot testing is required to determine the degree of steady-state dewatering necessary to expose the source of contamination, air/water yields necessary to achieve steady-state drawdown, and VOC mass removal rates at extraction wells.

MW-1 and MW-3 are the closest existing groundwater monitoring wells, located next to the USTs within the chemical source area, and will be utilized as the MPE extraction wells. BTEX and TPH-g concentrations historically have been reported higher in MW-1 and MW-3 than in surrounding groundwater monitoring wells. SOMA believes that chemical concentrations at MW-1 and MW-3 can be reduced, which will aid in bringing the Site closer to closure. Figure 1 shows locations of all monitoring wells.

SOMA's review of the boring logs for MW-1 and MW-3 disclosed the presence of a hydrocarbon smear zone (Smear Zone) above, at, and below the capillary fringe. The Smear Zone represents an area of contamination identified as light gray, gray to blue-green gray staining of soils above, at, and below the capillary fringe, accompanied by moderate to strong hydrocarbon odor. Over the period of record for quarterly monitoring at the Site, groundwater samples collected from monitoring wells MW-1 and MW-3 have consistently exhibited elevated levels of dissolved-phase constituents. The presence of dissolved-phase constituents in the groundwater suggests that the Smear Zone at these locations is potentially a source of the dissolved-phase hydrocarbons in the samples collected from these wells. The presence of a Smear Zone at groundwater monitoring wells MW-1 and MW-3 support utilizing these two wells as locations for MPE pilot testing.

SOMA will utilize a self-contained mobile treatment system (MTS) to conduct the pilot test. The MTS is equipped with an electrical generator, liquid ring vacuum pump, air/water separator vessel, discharge hoses and traffic-rated hose ramps, downhole stingers, and a thermal/catalytic oxidizer for vapor treatment. The liquid ring pump is powered by a 25-horsepower electric motor and is capable of up to 29 inches of mercury vacuum influence. The oxidizer utilizes propane as supplemental fuel that is stored on board in a DOT-approved container, and operates under a valid various locations BAAQMD permit. Physical and chemical parameters including applied vacuum, soil vapor extraction flow rates, oxidizer temperature, volume of groundwater extracted, VOC concentrations, and induced vacuum, will be monitored, measured and recorded.

MPE pilot testing should continue long enough to define steady-state dewatering, rather than for an arbitrary time frame. The typical time frame to approach a steady-state dewatering condition varies, but is usually less than 8 hours. During steady-state dewatering, groundwater and soil vapor are extracted with extracted groundwater routed through the existing groundwater treatment system on the Site for treatment and extracted soil vapor treated by the oxidizer on board the MTS.

Vacuum measurements to determine an area of influence will be collected at adjacent monitoring wells MW-2, MW-7 and MW-6 using magnehellic gauges, and at MW-1 and MW-3 when not in use as pilot test extraction wells. Concentrations of VOCs in soil vapor demonstrate removal of contamination and are measured continuously with a photo-ionization detector on board the MTS. A representative sample of the extracted soil vapor will also be collected in Tedlar bags and analyzed for TPH-g, BTEX and MtBE using USEPA Test Methods TO-3 and TO-15. For the pilot test, the representative sample will be collected at achievement of steady-state drawdown. A sample will also be obtained from the oxidizer stack to demonstrate compliance with BAAQMD's various locations permit conditions. These samples will be submitted to a California state-certified environmental laboratory for analyses.

Mr. Jerry Wickham
ACEHS
November 7, 2007
Page 3 of 3

SOMA appreciates your prompt attention to this matter. If you have questions or require additional information or clarification, please contact the undersigned at (925)734-6400. SOMA looks forward to receiving your approval to implement the MPE pilot test described above at this Site.

Sincerely,



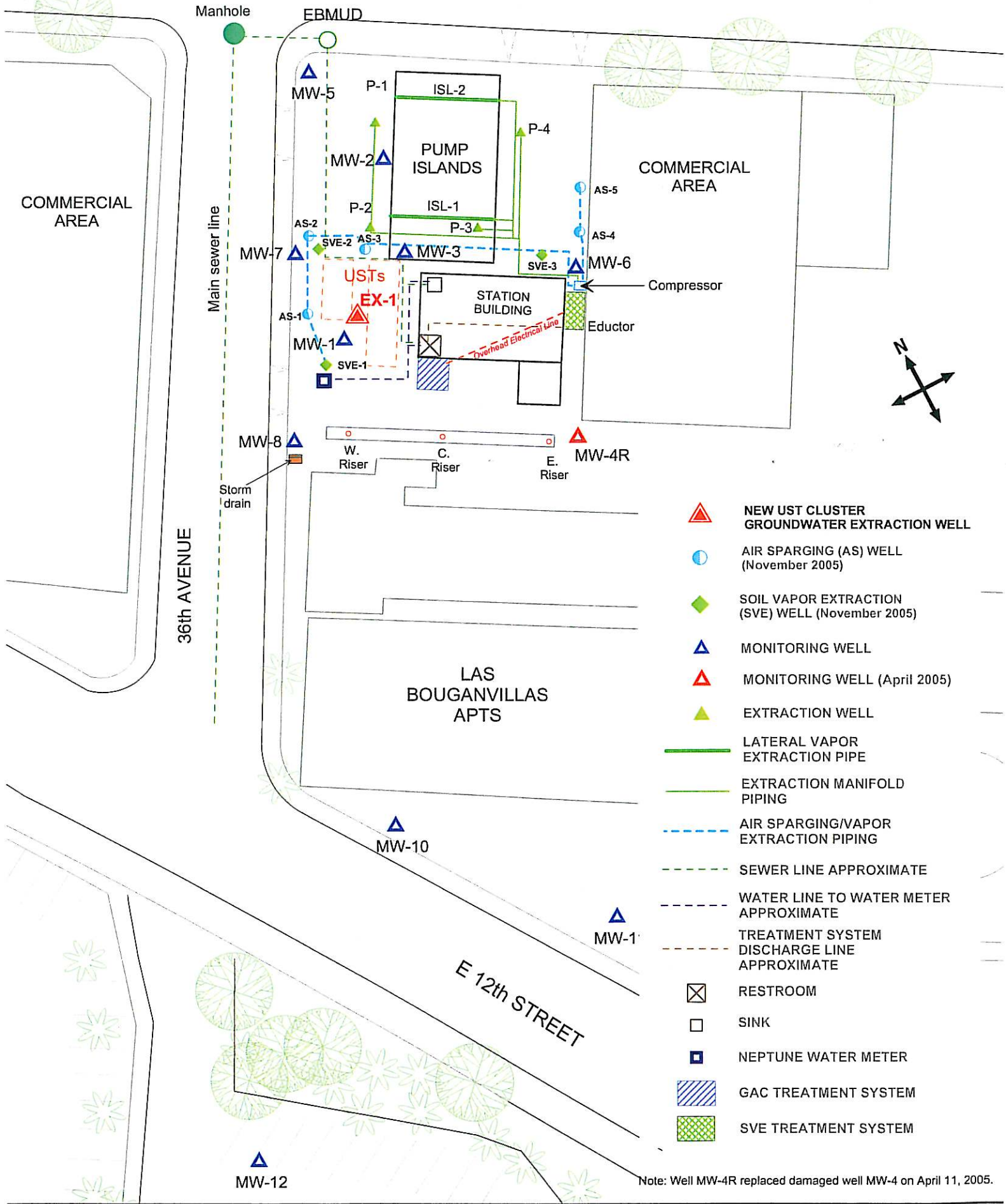
Mansour Sepehr, Ph.D., P.E.
Principal

Attachment: Figure 1 (Site Map)

cc: Mr. Abolghassem Razi



INTERNATIONAL BLVD



- NEW UST CLUSTER GROUNDWATER EXTRACTION WELL
- AIR SPARGING (AS) WELL (November 2005)
- SOIL VAPOR EXTRACTION (SVE) WELL (November 2005)
- MONITORING WELL
- MONITORING WELL (April 2005)
- EXTRACTION WELL
- LATERAL VAPOR EXTRACTION PIPE
- EXTRACTION MANIFOLD PIPING
- AIR SPARGING/VAPOR EXTRACTION PIPING
- SEWER LINE APPROXIMATE
- WATER LINE TO WATER METER APPROXIMATE
- TREATMENT SYSTEM DISCHARGE LINE APPROXIMATE
- RESTROOM
- SINK
- NEPTUNE WATER METER
- GAC TREATMENT SYSTEM
- SVE TREATMENT SYSTEM

Note: Well MW-4R replaced damaged well MW-4 on April 11, 2005.

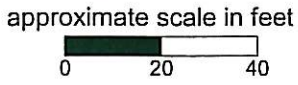


Figure 1: Site map showing the location of all monitoring wells.

