

Erler & Kalinowski, Inc.

Consulting Engineers and Scientists

1730 So. Amphlett Blvd., Suite 320
San Mateo, California 94402
(415) 578-1172
Fax (415) 578-9131

20 November 1996

Mr. Sumadhu Arigala
Regional Water Quality Board,
San Francisco Bay Region
2101 Webster Street, Fifth Floor
Oakland, CA 94612

Subject: Work Plan for Additional
Off-Site Groundwater Investigation
Former Oil Recycling Site
Oakland, California
(EKI 930040.07)

Dear Mr. Arigala:

Erler & Kalinowski, Inc. ("EKI") is pleased to submit to the Regional Water Quality Control Board, San Francisco Bay Region ("RWQCB") this work plan for additional off-Site groundwater investigation at the former oil recycling site located at 4200 Alameda Avenue Oakland, California ("Site"). The sampling activities proposed in this work plan are based upon requests made by you and Mr. Barney Chan of the Alameda County Department of Environmental Health ("ACDEH"). This work plan is divided into four sections as follows: (1) Site description, (2) results of previous on-Site and off-Site investigations, (3) physical characteristics of the Site, and (4) the proposed further off-Site investigation.

SITE DESCRIPTION

The Site is located at 4200 Alameda Avenue in Oakland, California. The Site was developed as an oil recycling facility and oil recycling took place on the Site from approximately 1925 to 1981. Waste oil received by the facility primarily consisted of oils from automobiles, railroad locomotives, aircraft, and electrical transformers. Stoddard solvent was also reportedly recycled at the facility until approximately 1978. No activities have occurred on the Site since oil recycling was discontinued.

Demolition of above grade structures and excavation of underground structures was performed as part of the planned redevelopment of the Site. Demolition of the majority of the above ground tanks was performed in October and November 1995. Demolition of

the remaining above grade structures and removal of underground tanks and appurtenances (e.g., pipelines, sumps, catch basins, utilities) was conducted between March and July 1996. The Site has been graded and is covered with approximately 2 inches of asphalt pavement. The asphalt pavement is sloped to drain to gutters located along Alameda Avenue and East 8th Street. EKI has previously submitted a report summarizing the demolition and excavation activities.

RESULTS OF PREVIOUS INVESTIGATIONS

Available data indicate that petroleum hydrocarbons are present in soil and groundwater at the Site. Halogenated volatile organic compounds ("VOCs"), benzene, toluene, ethyl benzene, total xylenes ("BTEX"), and semivolatile organic compounds ("SVOCs") were detected only at low concentrations in soils. Detected concentrations of halogenated VOCs and BTEX in groundwater are believed to be associated with free-phase petroleum hydrocarbons as opposed to being dissolved in groundwater itself. No appreciable migration of these compounds, and only minimal migration of petroleum hydrocarbons, have been observed in groundwater from the Site.

Petroleum hydrocarbons in soil and groundwater at the Site are characteristic of motor oil and are predominantly high molecular weight (with carbon chain lengths between C₁₆ and C₃₆). The American Society for Testing and Materials states in its *Standard Guide for Risk-Based Corrective Action Applied at Petroleum Release Sites* that petroleum hydrocarbons of this type are "relatively viscous and insoluble in groundwater and relatively immobile in the subsurface." This statement is supported by available data that show a lack of petroleum hydrocarbon migration in groundwater at the Site.

In February 1996, EKI conducted an off-Site groundwater investigation to confirm that there has been no significant migration of chemicals in groundwater from the Site. The findings of this investigation are discussed in detail in EKI's report, dated 16 May 1996, entitled *Off-Site Groundwater Investigation Report, Former Oil Recycling Site, 4200 Alameda Avenue, Oakland, California*. The off-Site investigation indicated no vertical migration of chemicals below the upper water-bearing unit (which is encountered at depth of about 10 feet below ground surface). In the upper water bearing-unit, there was no appreciable migration of BTEX, VOCs, or arsenic, and only minimal migration of petroleum hydrocarbons. These petroleum hydrocarbons are predominantly high molecular weight (with carbon chain lengths between C₁₆ and C₃₆) and, as described above, tend to be immobile in groundwater. With the exceptions of the samples closest to the Site (within 50 feet), petroleum hydrocarbons were either not detected or were not characteristic of fuel hydrocarbons associated with the Site.

PHYSICAL CHARACTERISTICS OF THE SITE

Summarized in this section are the physical setting, geology, and hydrogeology of the Site.

SURFACE FEATURES

The Site is a small, triangular-shaped property that encompasses less than 35,000 ft² or 0.8 acres. The Site is bounded by Alameda Avenue along its western side, East 8th Street along its east-southeastern side, and the former American National Can Company ("ANCC") Site along its northern side. The Site is essentially flat. The elevation change across the entire Site is less than 2 feet or 1 percent.

GEOLOGY AND HYDROGEOLOGY

Soils immediately underlying pavement on- and off-Site consist of artificial fill extending to approximately 1.5 to 4 feet below ground surface ("bgs"). This artificial fill overlays a silty clay that extends to a depth of 6 to 15 feet, bgs. Contained within this silty clay are 1 to 2 foot thick discontinuous lenses of clayey gravel and silty sand.

When was boring 5 ft deep?

Located beneath the silty clay is the first water-bearing unit. This first water-bearing unit ranges in thickness from approximately 1 to 5 feet and consists of clayey sands, sandy gravel, gravely sand, and sandy gravel. Below this first water-bearing unit are clays and silty clays that extend to the maximum depth explored (i.e., 50 feet bgs). Interbedded in these clays and silts are thin discontinuous sand lenses. The thickest of these discontinuous sand lenses was encountered between 38 and 40 feet and are 1 to 1.5 feet thick. These discontinuous sand lenses are considered the next deeper permeable unit.

Groundwater elevations in on-Site wells indicate that bulk groundwater movement on the 4200 Alameda Avenue Site is to the south in the direction of San Leandro Bay.

PROPOSED FURTHER OFF-SITE INVESTIGATION

On the basis of the results of the on-Site and off-Site investigations, RWQCB and ACDEH staff have requested additional sampling activities to demonstrate that immiscible hydrocarbons on groundwater do not exist beyond sampling locations CPT-1 and CPT-3 (Figure 1). To make this demonstration, EKI proposes to collect grab

groundwater samples from six additional locations and analyze the samples for VOCs, BTEX, and the presence of immiscible petroleum hydrocarbons as described below.

Task 1 - Obtain Permits and Clear Proposed Sampling Locations

EKI will review available utility maps before drilling soil borings and collecting grab groundwater samples. This review is intended to aid in evaluating potential preferential groundwater flow pathways that may necessitate moving one or more of the proposed sampling locations shown on Figure 1. Upon completing this review and notifying the RWQCB in any changes in the proposed sampling locations, EKI will obtain a drilling permit from the Alameda County Flood Control and Water Conservation District.

EKI will also notify Underground Service Alert of planned drilling activities and will retain a contractor to investigate sampling locations for the possible presence of abandoned or otherwise unmarked underground obstructions. The contractor will use electronic line locators and resistivity instruments to clear sampling locations. Actual sampling locations may vary from those shown on Figure 1.

Task 2 - Drill Enviro-Core Soil Borings and Collect Groundwater Samples

Groundwater samples will be collected at six downgradient locations (Figure 1) using the Enviro-Core™ sampling system. The Enviro-Core™ system consists of a hydraulically-operated sampling rig that simultaneously drives an outer drive casing and a sample barrel attached to inner sampling rods. The sample barrel liner retains the soil core as the sample barrel is driven into the ground. The sample barrel will be driven into the ground in intervals of 3 feet. After being driven three feet, the inner sampling rods and sample barrel will be removed from the borehole. The outer drive casing will remain in the borehole while the sample barrel is removed, in order to prevent the borehole from collapsing. In this manner, the borings will be continuously sampled from ground surface to the total depth of the boring. It is anticipated that the borings will extend to the top of the first encountered saturated permeable unit, located at a depth of approximately 10 to 15 feet below ground surface. Soil samples will be logged by a geologist under the supervision of a California registered geologist. Soil samples will be screened for the presence of VOCs with a flame ionization detector or photo ionization detector.

Upon completing a boring to total depth, a groundwater sample will be obtained from the first saturated permeable unit identified during borehole logging. As described above, the outer rods will be deployed to an appropriate sampling depth. A one-inch PVC screen will be inserted into the outer rods and the rods will be retracted to allow the boring to fill with groundwater. The screen will remain in the borehole overnight to allow time for

immiscible petroleum hydrocarbons, if any, to accumulate in the boring. Groundwater will be collected by lowering a pre-cleaned Teflon[®] or stainless steel bailer through the screen. Upon retrieval of the bailer, water samples will be transferred to the appropriate laboratory-supplied bottles and preserved as appropriate for the analyses to be performed. Sample containers will be labeled with unique identification numbers and placed in a cooler with ice for temporary storage and transport to the analytical laboratory. Chain-of-custody forms will be completed and accompany the samples to the laboratory. In addition, the water samples will be inspected for the presence of immiscible petroleum hydrocarbons.

Each boring will backfilled with cement grout tremied into place after finishing sampling.

Task 3 - Perform Laboratory Analyses of Samples

A total of six groundwater samples will be collected during the Enviro-Core[™] investigation. For quality assurance/quality control purposes, one equipment rinsate blank will be collected and tested for each day of field work. One duplicate sample will also be analyzed.

The groundwater quality assurance quality control samples will be analyzed for the following:

- Total purgeable petroleum hydrocarbons (as gasoline) by EPA Method 8015m
- Total extractable petroleum hydrocarbons (as diesel) by EPA Method 8015m
- Fuel Fingerprint (as motor oil) by EPA Method 8015m
- BTEX by EPA Method 8020
- Halogenated VOCs by EPA Method 8010

All samples will be analyzed on a standard 10 working day turnaround.

Task 4 - Survey Locations

The horizontal and vertical locations of the soil borings will be measured by a licensed land surveyor. The survey data will be used to locate the sampling locations with respect to existing monitoring wells and Site features.

20 November 1996
Additional Off-Site Investigation Work Plan
Page 6

Task 5 - Evaluate Data and Prepare Report

The results returned by the analytical laboratories will be compiled into appropriate tables and figures. A report will be prepared for submittal to the ACDEH and RWQCB that will include the results the off-Site investigation. The report will present the field sampling procedures, boring logs, as well as groundwater analytical procedures, and associated documentation.

PROJECT SCHEDULE

EKI will initiate permitting upon the RWQCB approval of the work plan. It should be recognized that the schedule for completing the work plan may be contingent upon obtaining access from property owners. The time to negotiate access agreements with individual property owners is unknown. Tasks 1 through 5 can be completed between 6 to 8 weeks after the RWQCB has approved the work plan and access agreements with the property owners have been obtained.

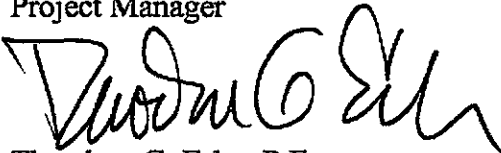
Please call if you have questions.

Very truly yours,

ERLER & KALINOWSKI, INC.

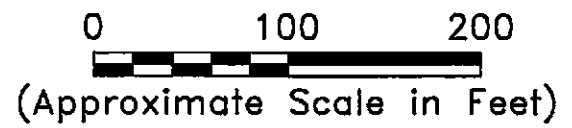
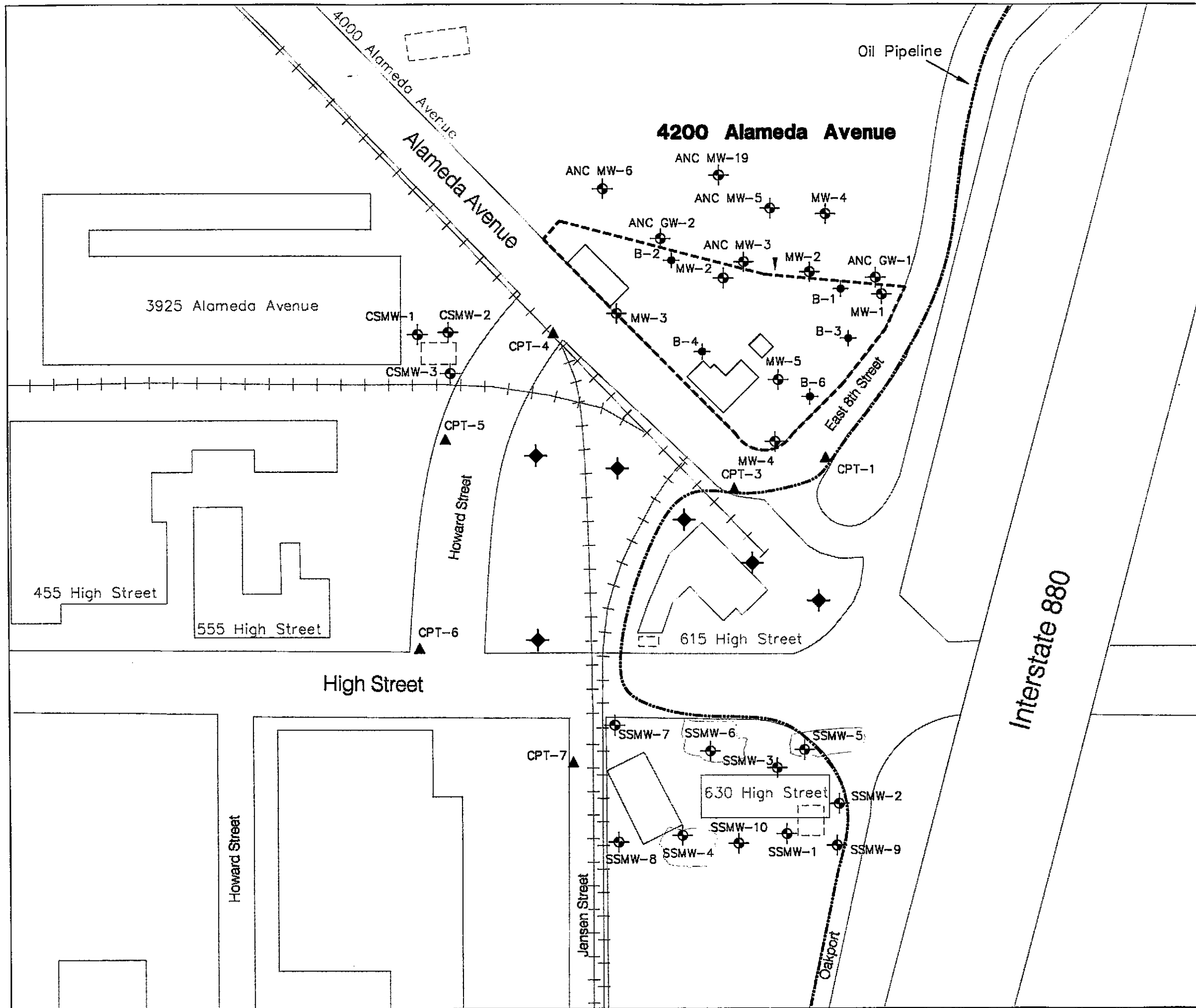


Andrew N. Safford, P.E.
Project Manager



Theodore G. Erler, P.E.
President

cc: Mr. Larry Webster
Mr. William Wick, Crosby, Heafy, Roach & May
Mr. Barney Chan, Alameda County Department of Environmental Health



LEGEND

- Site Boundary
- ⊕ Monitoring Well
- ⊙ Soil Boring
- ▲ CPT/PIPP Sampling Location
- ◆ Proposed Grab Groundwater Sample Locations
- ⌚ Approximate Location of Former Underground Storage Tanks

Notes:

1. All locations are approximate.
2. Basemap from 1993 Pacific Aerial Survey photograph.

Erlor & Kalinowski, Inc.

Site Map and Proposed
 Grab Groundwater Sample
 Locations
 4200 Alameda Avenue
 Oakland, CA
 November 1996
 EKI 930040.07
 Figure 1