LEVINE·FRICKE

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93P-182K

**WORK ORDER FOR SOIL EXCAVATION SERVICES
AND QUARTERLY GROUND-WATER MONITORING
ORO LOMA SANITARY DISTRICT TREATMENT PLANT
2600 GRANT AVENUE
SAN LORENZO, CALIFORNIA**

INTRODUCTION

Levine·Fricke has prepared this work order at the request of Mr. Michael Riddiford of Oro Loma Sanitary District ("Oro Loma"). It covers soil excavation services and quarterly ground-water monitoring for the last three quarters of 1993 at the Oro Loma Sanitary District Treatment Plant at 2600 Grant Avenue in San Lorenzo, California ("the Site"; Figure 1).

BACKGROUND

Soil Excavation

On the basis of information provided by Mr. Riddiford, we understand that two 2,500-gallon-capacity aboveground diesel tanks at the Site are used to fuel standby engines that drive sewage influent pumps. These tanks are set on a reinforced concrete slab with saddles. According to the plans we received from Mr. Riddiford, the slab is supported by piles extending approximately 50 feet below the base of the slab.

In September 1992, underground fuel piping connecting the tanks to the engines reportedly was removed and replaced with aboveground piping. We understand that, at the same time, diesel-affected soil around the underground piping also was excavated (to a depth of approximately 6 feet below ground surface [bgs]), along with diesel-affected soil in a smaller area next to the tanks; the latter excavation has not yet been backfilled. We understand that the volume of diesel-affected soil that was excavated is approximately 24 cubic yards.

Soil samples reportedly were collected from the base of the excavation and from the smaller excavation next to the tanks by Testing and Technology, Inc. ("T&T") in September 1992. In addition, T&T collected two grab ground-water samples near the former underground pipe location.

The samples were analyzed for total petroleum hydrocarbons as diesel (TPHd) and for the fuel constituents benzene, toluene, ethylbenzene, and xylenes (BTEX). Levine·Fricke conducted a subsequent investigation in January 1993, which consisted of drilling three soil borings and installing a shallow ground-water monitoring well in one of the borings.

The analytical results for soil samples collected to date are shown in Figure 2; the analytical results for water samples are shown in Figure 3.

Ground-Water Monitoring

The ground-water monitoring program was proposed in a Levine·Fricke report entitled "Report on a Soil and Ground-Water Quality Investigation in the Vicinity of Two Aboveground Diesel Fuel Storage Tanks at the Oro Loma Sanitary District Treatment Plant, 2600 Grant Avenue, San Lorenzo, California." dated March 23, 1993, and submitted to the Alameda County Health Care Services Agency (ACHCSA).

RATIONALE AND OBJECTIVES

In general, the California Regional Water Quality Control Board (RWQCB) and the ACHCSA require excavation of accessible fuel-affected soil to the extent feasible and a minimum of one year of quarterly ground-water monitoring before approving fuel-leak case closure. It is our experience that when fuel-affected soil extends below the shallow ground-water table, acting as a potential source of fuel in ground water, excavating to a few feet below the water table is enough to satisfy regulatory agency requirements for removing a source of petroleum hydrocarbons in ground water. In cases where ground-water monitoring results indicate that ground water is significantly fuel-affected, ground-water remediation and/or containment may also be necessary.

The objectives of the work described in this work order are as follows:

- to excavate and replace accessible diesel-affected soil around the tanks
- to measure shallow ground-water levels and assess shallow ground-water quality

SCOPE OF WORK

The scope of work consists of the following tasks, divided by soil excavation and ground-water monitoring.

Soil Excavation Tasks

Task 1: Preparation of Site Health and Safety Plan Addendum
Submit copy to dept.

Task 2: Excavation Subcontractor Services

Task 3: Engineering Observation and Soil Sampling

Task 4: Laboratory Analysis of Soil Samples

Task 5: Data Evaluation and Report Preparation for Soil Excavation

Task 6: Project Management for Soil Excavation

Ground-Water Monitoring Tasks

Task 7: Ground-Water Elevation Measurement and Ground-Water Sample Collection and Analysis

Task 8: Report Preparation for Quarterly Ground-Water Monitoring

Task 9: Project Management for Ground-Water Monitoring

These tasks are described in detail below.

SOIL EXCAVATION TASKS

Task 1: Preparation of Site Health and Safety Plan Addendum

Levine·Fricke's current Site Health and Safety Plan (HSP) does not cover soil excavation activities. To comply with Occupational Health and Safety Administration (OSHA) guidelines, Levine·Fricke will prepare an HSP addendum covering the physical and chemical hazards associated with soil excavation, requirements for personal protective equipment, safe working procedures, and emergency procedures.

samples will be collected using standard sampling techniques, preserved in a chilled ice chest, and transported to the laboratory following standard chain-of-custody procedures. They will be used in evaluating treatment and disposal alternatives.

The engineer will test backfill soil compaction using a soil nuclear density gauge.

The budget covers two and a half days of field activities. Any additional time required to complete the field work will be considered out of scope.

Task 4: Laboratory Analysis of Soil Samples

Soil samples will be analyzed by a state-certified laboratory for TPHd using EPA Method 8015 and for BTEX using modified EPA Method 8020. The budget covers a total of 10 samples: 8 samples from the excavation and 1 from each stockpile. The budget is based on normal laboratory turnaround for all the samples; if a faster turnaround is desired, laboratory surcharge costs (100 percent for a 2-day turnaround, 50 percent for a 3- to 5-day turnaround) will apply.

Task 5: Data Evaluation and Report Preparation for Soil Excavation

After the soil samples have been analyzed, Levine·Fricke will prepare a figure illustrating the new results and analytical results for previous soil sampling. The data will be evaluated to assess whether additional diesel-affected soil remains in the vicinity of the tanks.

Levine·Fricke will prepare a report describing the field methods used and presenting the results of the investigation, our conclusions, and recommendations for future work. Levine·Fricke will forward the report to Oro Loma in draft form to submit to the ACHCSA.

Task 6: Project Management for Soil Excavation

Levine·Fricke will coordinate the schedule for this work in consultation with the subcontractor and Oro Loma, verify that any necessary permits have been obtained, and communicate the investigation's progress to Oro Loma.

The project manager for soil excavation will be John Sturman, P.E., R.G., Senior Geotechnical Engineer. He will be the primary contact for Oro Loma and will oversee the technical

and compliance aspects of the project. Michael Stoll, Project Engineer, will cover the field activities and assist Mr. Sturman with project management. Ted Splitter, P.E., G.E., Principal Engineer, will provide overall technical and compliance review for soil excavation work.

GROUND-WATER MONITORING TASKS

Task 7: Ground-Water Elevation Measurement and Ground-Water Sample Collection and Analysis

Ground-water elevation will be measured and a ground-water sample collected at well MW-1 on a quarterly basis (in April, July, and October 1993). Depth to ground water will be measured before the sample is collected, using an electric water-level meter.

After the depth to ground water has been measured, three to five well volumes of water will be purged from the well. The water will be removed using a gasoline-powered centrifugal pump equipped with a clean suction hose, or by hand bailing using a clean Teflon bailer.

Ground-water parameters (pH, specific conductance, and temperature) will be monitored and recorded after each well volume is purged. The ground-water sample will be collected after these parameters have stabilized to within approximately 15 percent of the previous reading. This procedure is meant to generate a sample that is representative of the ground water in surrounding sediments.

If the well does not sustain a constant yield (i.e., goes dry), the well will be sampled after the water level has recovered to 80 percent of the water level before purging, or after two hours, whichever occurs first.

The ground-water sample will be collected using a clean Teflon bailer. A bailer field blank will be prepared and submitted for analysis. The purpose of this sample is to monitor laboratory and equipment decontamination quality assurance and quality control. All equipment used during ground-water sampling will be cleaned with Alconox (a laboratory grade detergent and/or steam cleaned prior to use. The samples will be placed in laboratory-supplied sample containers and will be cooled to 4 degrees Celsius. They will then be transported to Anametrix, Inc., a California-certified laboratory, for analysis under strict chain-of-custody protocol.

Water purged from the well during ground-water sampling will be pumped into the headworks of the sewage treatment plant.

Ground-water samples will be analyzed for total petroleum hydrocarbons as diesel using EPA Method 8015 and for benzene, toluene, ethylbenzene, and xylenes using modified EPA Method 8020. The bailer field blank will be analyzed for benzene, toluene, ethylbenzene, and xylenes using modified EPA Method 8020.

Task 8: Report Preparation for Quarterly Ground-Water Monitoring

Levine·Fricke will prepare a letter report on the results of each of the three rounds of ground-water monitoring within approximately two weeks of receiving analytical results from the laboratory. Levine·Fricke will forward each report to the Oro Loma Sanitary District for the District to submit to the ACHCSA. Each report will include the following: a description of the field methods used to collect the sample, a table summarizing the depth to ground water, a table summarizing that quarter's and historical analytical results, and a comparison of these results to previous results. These reports will be prepared under the supervision of a California registered engineer or geologist.

Task 9: Project Management for Ground-Water Monitoring

This task includes scheduling and cost tracking, interfacing with the Oro Loma Sanitary District, and subcontract management (for the laboratory). The project manager for the ground-water monitoring portion of this project will be Ms. Jo Ann Weber, Senior Project Hydrogeologist. Mr. Kenton Gee, Senior Staff Hydrogeologist, will oversee daily activities. Mr. Mark Knox, Chief Engineer, will provide technical review and oversight.

SCHEDULE

Initiation of office activities for the soil excavation tasks can begin within one week of authorization. We expect that the field activities can be completed within two to three days. We expect that the report will be submitted to Oro Loma within four or five weeks of field activities, based on receipt of laboratory results.