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WORK PLAN:
SUPPLEMENTAL ENVIRONMENTAL INVESTIGATION
at
Exxon Service Station No. 7-0236
6630 East 14th Street
Oakland, California

Prepared for

Exxon Company, US.A.
P.O. Box 4032
Concord, California 94524

Prepared by

RESNA Industries Inc.
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RESNA Project No. 170079.06

October 11, 1993

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October 8, 1993

Ms. Marla D. Guensler
Exxon Company, U.S.A.
P.O. Box 4032
2300 Clayton Road
Concord, California 94524

Subject: Work Plan for Supplemental Environmental Investigation, Exxon Service Station No. 7-0236, 6630 East 14th Street, Oakland, California.

Ms. Guensler:

At the request of Exxon Company U.S.A. (Exxon), RESNA Industries Inc. (RESNA) has prepared this work plan to evaluate the source and lateral extent of hydrocarbons in the soil and groundwater at the subject site, and for review and approval by the California Regional Water Quality Control Board (CRWQCB), and the Alameda County Department of Environmental Health.

Tasks associated with this proposed investigation includes: drilling five soil borings into first encountered ground water; collecting soil samples from the borings; collecting hydropunch groundwater samples in two of the borings; installing vapor extraction wells in three of the borings; submitting selected soil and groundwater samples for laboratory analysis; and preparing a report summarizing our field procedures, results, and conclusions.

SITE DESCRIPTION

Exxon Station No. 7-0236 is an operating retail gasoline station located on the northern side of East 14th Street between Havenscourt Boulevard and 66th Avenue in Oakland, California, as

depicted on the Site Vicinity Map (Plate 1). Structures at the site include a service station building with two multi-pump fuel dispenser islands and three underground fuel storage tanks and one used oil storage tank. The site is a mixed residential and light business district. Havenscourt Junior High School is located slightly south and across E. 14th Street from the site. The approximate locations of the station facilities, existing underground storage tanks and pump islands, the current use of adjacent lots, and other pertinent site features are shown on the Generalized Site Plan (Plate 2).

PREVIOUS WORK

In March 1991, Alton Geoscience (Alton) installed three on-site groundwater monitoring wells MW-1, MW-2 and MW-3. Analyses of soil and groundwater samples collected from the wells indicated hydrocarbons were present in the soil and groundwater beneath the site (Alton, December 21, 1992, Project No. 30-0401-02).

In March 1992, Alton installed two off-site groundwater monitoring wells MW-4 and MW-5, and two additional on-site groundwater wells MW-6 and MW-7 (Alton, December 21, 1992, Project No. 30-0401-02). Exxon initiated quarterly groundwater monitoring at the site in January 1992. The groundwater flow direction at the site is generally to the southeast.

PROPOSED WORK

This investigation is designed to further evaluate the source and lateral extent of hydrocarbons detected in the soil and groundwater at the subject site. The soil boring locations were selected using the results of the Alton report, subsequent quarterly groundwater monitoring reports, and offsite source evaluation. The specific tasks to be performed are summarized below and discussed in the sections that follow.

Step 1: Site Safety Plan and Permits

Field work will be performed by RESNA personnel in accordance with a site safety plan prepared for the site. This plan will describe the basic safety requirements for the subsurface investigation and the drilling of soil borings at the work site. The site safety plan is applicable to personnel and subcontractors of RESNA. Personnel at the site will be informed of the contents of the site safety plan before work begins. A copy of the site safety plan will be kept at the work site and will be available for reference by appropriate parties during the work. The RESNA field geologist will act as the Site Safety Officer.

RESNA will obtain applicable state and local permits related to the work to be performed at the site, including monitoring well permits and vapor extraction well permits.

Step 2: Soil Borings and Sampling

RESNA will contact Underground Services Alert before drilling to help locate public utility lines at the site. RESNA will hand auger boring locations to a depth of approximately 3 feet to 5 feet before drilling to reduce the risk of damaging underground structures. The locations of the proposed soil borings and vapor extraction wells are shown on Plate 2. The locations were selected to evaluate the source and lateral extent of hydrocarbons at the site. All work will be performed under the supervision of a registered geologist.

Soil borings will be drilled by a licensed C-57 well driller with a CME-55 (or similar) drill rig equipped with 6 or 8 inch augers for exploratory boring boreholes, and 10-inch-diameter, hollow-stem augers for vapor extraction well boreholes. Augers and sampling equipment will be steam cleaned before use to minimize the possibility of cross-hole contamination. If steam cleaning is performed onsite, the rinsate will be containerized and stored onsite. Drilling will be performed under the observation of a RESNA field geologist, and the earth materials in the borings will be classified while drilling using visual and manual methods according to the Unified Soil Classification System. The classification of soils encountered in the borings will be performed under the supervision of a California Registered Geologist.

The location of the five proposed soil borings are shown on Plate 2. Actual boring locations may be changed slightly in the field based on field observations and site restrictions. Soil borings will be drilled to approximately eight to ten feet below grade, where first groundwater is expected to be encountered. During drilling, soil samples will be collected every 5 feet, at obvious changes in soil stratigraphy, and from above first encountered groundwater. Samples will be collected with a California-modified, split-spoon sampler equipped with pre-cleaned brass sleeves. Samples will be collected by advancing the auger to a point just above the sampling depth and driving the sampler into the soil. The sampler will be driven 18 inches with a standard 140-pound hammer repeatedly dropped 30 inches. The number of blows required to drive the sampler each successive 6-inch interval will be counted and recorded to give an indication of soil consistency.

Soil samples will be monitored with a photoionization detector (PID), which measures hydrocarbon concentrations in the ambient air or headspace above the soil sample. Field instruments such as the PID are useful for indicating relative levels of volatile hydrocarbons in air and values are recorded on boring logs. Soil samples selected for possible chemical analysis will be sealed promptly with teflon tape and tight fitting plastic caps. The samples will be labeled, placed in water-tight plastic bags, and placed in iced storage for transport to the laboratory. Chain of Custody Records will be initiated by the geologist in the field, updated throughout handling of the samples, and sent with the samples to the laboratory. Copies of these records will be included in the final report. Cuttings generated during drilling will be segregated on the basis of field evidence of hydrocarbons, sampled, and stored onsite in Department of Transportation approved 55-gallon drums. RESNA will coordinate with Exxon for appropriate disposal of soil cuttings and rinse water.

Step 3: Well Construction

Vapor extraction wells VE-1, VE-2 and VE-3 will be constructed using thread-jointed, 4-inch-inner-diameter, Schedule 40 polyvinyl chloride (PVC) casing. No chemical cements, glues, or solvents will be used in well construction. The screened portion of each well will consist of factory-slotted casing with 0.010-inch-wide machined slots. We expect that the well screen will be installed from just above first encountered groundwater to within approximately three feet below

surface grade. Solid PVC casing will be installed from the top of each screen to the ground surface. The annular space in the well will be packed with pea gravel to approximately one-half foot above the slotted interval. A one-half to one foot bentonite plug will be constructed above the sand pack to prevent cement from entering the filter pack. The remaining annulus will be backfilled to grade with a slurry of cement and bentonite powder. The hole created by thehydropunch probe in VE-2 will be backfilled with bentonite before constructing the vapor extraction well. A typical well construction is shown in detail on Plate 3. missing

The vapor extraction wells will be protected with traffic-rated, utility boxes equipped with PVC or aluminum skirts, and set flush to grade with concrete. Each box has a seal to minimize surface-water infiltration and must be opened with a special wrench. The design of this box reduces the possibility of accidental disturbance of the well.

Step 4: Hydropunch Groundwater Sampling

A grab groundwater sample will be taken using the hydropunch method in the two borings, VE-2 and B-2, south of the pump islands, to help assess the lateral extent of dissolved hydrocarbons in groundwater. The drive rod and probe assembly is advanced through the subsurface until the probe is positioned across the top of the water-bearing zone. The probe is then retracted, leaving the screen exposed across the water bearing zone. A bailer is lowered down through the hollow drive rods into the water which has entered through the screen. The drive rods, screen assembly, and the sampler bailer are decontaminated after use at each sampling location. An in-situ groundwater sample is collected by retrieving the bailer and decanting the groundwater into a laboratory approved sample container. The samples will be labeled, placed in water-tight plastic bags, and placed in iced storage for transport to the laboratory. Chain of Custody Records will be initiated by the geologist in the field, updated throughout handling of the samples, and sent with the samples to the laboratory. Copies of these records will be included in the final report.

Step 5: Backfilling Exploratory Borings

The boreholes of exploratory borings B-1 and B-2 will be backfilled from the bottom of the boring to within one to one-half foot of the surface with a neat cement grout. After allowing the neat cement to set-up, a cap of concrete will be poured in the borehole flush with the existing surface.

Step 6: Laboratory Analyses

Soil samples selected for analyses from each boring will generally include the sample collected from just above the first encountered water. Analysis of soil and groundwater samples will be performed for TPHg and TPHd using modified EPA Method 8015 and for BTEX using EPA Methods 8020 and 602, respectively. Detection limits for the tests requested and concentrations present will be stated on the laboratory reports. Analytical methods and detection limits will conform to guidelines specified in the latest edition of the Tri-Regional Recommendations. Laboratory analyses will be performed by a laboratory certified by the State of California.

Step 7: Report Preparation

RESNA will prepare a report summarizing the results of our investigation of the subject site and our field and laboratory procedures. Field and laboratory data will be interpreted to further evaluate hydrocarbons in soil and dissolved hydrocarbons in groundwater originating from the subject site.

SCHEDULE OF OPERATIONS

Initiation of this investigation is dependent on gaining regulatory approval of this Work Plan and incorporation of any changes requested by regulatory agencies. RESNA can initiate work at the site within 1 to 2 weeks after receiving authorization to proceed. **If Exxon has not received regulatory approval of this work plan within 60 days, they will proceed as stated in Title 23, Article 11, Chapter 16, Sections 2722 (b)(5) and 2726 (c).**

PROJECT STAFF

Mr. Michael L. Siembieda, a Registered Geologist in the State of California, will be in overall charge of hydrogeologic facets, and Mr. Jerry Wilski will be in overall charge of engineering facets of this project. Mr. Keith Romstad, Branch Manager, will provide supervision of field and office operations of the project. RESNA employs a staff of geologists, engineers, and technicians who will assist with the project.

REFERENCES

California Regional Water Quality Control Board, San Francisco Bay Region. August 10, 1990. Tri-Regional Board Staff Recommendations for Preliminary Evaluation and Investigation of Underground Tank Sites.

Department of Health Services, State of California, October 24, 1990. Summary of California Drinking Water Standards.

Exxon Company, U.S.A. June 1991. Phase II Environmental Investigation Scope of Work-Amendments Specific to California.

Alton Geoscience. April 29, 1991. Preliminary Site Investigation Report, Exxon Service Station No. 7-0236, 6630 E. 14th Street, Oakland, California.

Alton Geoscience. June 17, 1992. Supplemental Site Investigation Final Report, Exxon RAS No. 7-0236, 6630 E. 14th Street, Oakland, California.

RESNA Industries Inc. July 28, 1993. Groundwater Monitoring Report, Exxon Station 7-0105, 193 Winton Avenue, Hayward, California, RESNA Project No. 170092.01

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If you have questions or comments regarding this work plan, please call (415) 382-7400.

Sincerely,
RESNA Industries Inc.

David R. DeMent
Project Geologist

Michael L. Siembieda
Geoscience Manager
R. G. No. 4007

Enclosure: Work Plan
Plate 1: Site Vicinity Map
Plate 3: Typical Well Construction Diagram
Appendix A: Field Protocol