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February 10, 1992

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Barney M. Chan
Hazardous Materials Specialist
Alameda County Department of Environmental Health
Hazardous Materials Program
80 Swan Way, Room 200
Oakland, California 94621

Subject: Groundwater Monitoring Plan
FAA Oakland TRACON Facility

Dear Mr. Chan:

Advanced Sciences, Inc. (ASI) is pleased to present a proposed well installation and groundwater monitoring plan with a schedule for a suspected spillage of diesel near a former underground diesel tank at the Federal Aviation Administration (FAA) Oakland Airport Terminal Radar Approach Control (TRACON) facility. Analytical results of a soil sample collected during the removal of the underground tank indicated a total petroleum hydrocarbon (TPH) concentration above the Alameda County Department of Environmental Health (DEH) recommended cleanup level of 100 milligrams per kilogram (mg/kg) in the tank backfill soil, though this sample may be invalid. TPH concentrations also were detected in groundwater beneath the tank. To obtain regulatory site closure, the FAA must demonstrate low or nondetectable concentrations of TPH in the tank backfill soil and that TPH concentrations detected in the groundwater are not related to the FAA tank. This proposal addresses soil sampling and analysis within the former tank backfill and the installation of up to three monitoring wells at the site with groundwater sampling and analysis in an attempt to obtain site closure from the Alameda County DEH and the California Regional Water Quality Control Board (CRWQCB).

SITE BACKGROUND

The site is located at 8250 Earhart Road, Oakland in the northeast quarter of the southwest quarter of Section 20, Township 2 South, Range 3 West of the San Leandro 7 1/2-minute quadrangle, Alameda County, California (Figure 1). The FAA Oakland Airport TRACON facility consists of a control building with an emergency generator and a former underground 1,000-gallon-capacity diesel tank (Figure 2). The land is located in a portion of a former U.S. Navy fuel storage area, is owned by Alameda County, is administered by the Port of Oakland, and is leased by the FAA. The facility is at an elevation of approximately 7 feet above mean sea level (MSL).

The FAA contracted with ASI to conduct soil sampling following the removal of the tank by the FAA. The 1,000-gallon-capacity diesel tank was removed by the FAA on May 2, 1991, under a permit issued by Alameda County DEH. Upon excavation, the tank appeared intact with no visible leaks or holes. ASI field personnel observed no soil staining and detected no hydrocarbon odors adjacent to or in the soil beneath the tank. In addition, TPH and benzene, toluene, ethylbenzene, and xylenes (BTEX) were not detected in soil samples collected beneath the tank. A soil sample collected in the tank backfill was received by the laboratory in a broken container; thus, sample integrity had been compromised and the analytical results may not be valid.

Groundwater was observed and sampled in the tank pit excavation at a depth of approximately 5 feet below ground surface. This groundwater sample (TRACON-1) had a TPH concentration of 36.6 milligrams per liter (mg/l), with the majority of hydrocarbons slightly less than, at, and greater than C_{23}, indicating the presence of hydrocarbons heavier than the diesel fuel previously stored in the FAA tank. The analytical results also indicated BTEX was not detected in the groundwater beneath the tank. These petroleum hydrocarbons may be fuel from 12 abandoned concrete underground fuel tanks beneath the FAA TRACON facility parking lot (Attachment 1). ASI reported these results to Mr. Barney Chan of the Alameda County DEH in a letter dated August 30, 1991. In this letter, ASI requested site closure from the Alameda County DEH.

On July 26, 1991, in a letter to Mr. Charley Chamness of the FAA, Mr. Barney Chan of the Alameda County DEH stated that the site had experienced an unauthorized release of petroleum hydrocarbons and requested a work plan to assess the impact to soil and/or groundwater and assess the extent of any impact.

In a letter to Mr. Chamness dated September 16, 1991, Mr. Chan rejected the site closure request of the August 30, 1991 letter from ASI. In addition, Mr. Chan requested:

- chromatograms of the diesel fuel used in the FAA TRACON tank and chromatograms of fuel oil standards,
- a chromatogram of the "stockpile" soil sample,
- evidence of an upgradient source of the fuel oil, and
- a complete history of fuel contents used in the FAA TRACON tank.

This proposal addresses the issues presented by Mr. Chan.

SCOPE OF WORK

The FAA contends that the soil sample collected and analyzed from the soil backfill is invalid due to the laboratory receiving the soil in a broken container. To assess TPH concentrations within the soil backfill, ASI proposes to collect three soil samples within the former FAA TRACON diesel tank location at depths of approximately 5, 6, and 7 feet below the ground

surface. The soil samples will be analyzed for TPH and BTEX concentrations, and if TPH concentrations are above 100 mg/kg, then the type of petroleum hydrocarbons within the soil will be identified (fuel fingerprint).

Also, the FAA contends that TPH concentrations detected in groundwater beneath the former tank location are due to abandoned U.S. Navy underground fuel tanks or other preexisting tanks at or near the site. ASI is currently conducting a Phase I site assessment for the FAA TRACON facility. Information from this Phase I site assessment will be used to identify other potential sources of petroleum hydrocarbons. Also, soil samples collected on May 2, 1991, indicate that the soils in and adjacent to the tank pit do not contain hydrocarbons with the exception of one possibly invalid sample, which indicates that the surrounding soil may not be a source of hydrocarbons detected in the groundwater. To assess the TPH concentrations within the groundwater, ASI proposes to install and sample at least one monitoring well within or adjacent to the former tank location. Collected water samples will be analyzed for TPH and BTEX concentrations, and if TPH concentrations are above 1 mg/l, then the type of petroleum hydrocarbons within the water will be identified (fuel fingerprint).

If TPH and BTEX are not detected, or if TPH is below the Alameda County DEH recommended cleanup level of 100 mg/kg in the soil backfill, or if the type of fuel detected in the groundwater is other than diesel, then ASI will request regulatory site closure from the Alameda County DEH and CRWQCB on behalf of the FAA. This request will be based upon the concept that a release of petroleum hydrocarbons did not occur from the FAA TRACON diesel tank, hydrocarbons in the groundwater are from preexisting tanks within the jurisdiction of the Port of Oakland, and an Underground Storage Tank Unauthorized Release was issued in error.

I don't know about this

Based on a discussion with Mr. Chan, if the groundwater beneath the site is tidally influenced, then the FAA will not be required to demonstrate upgradient sources of hydrocarbons other than diesel but rather potential adjacent sources. Also, Mr. Chan indicated that at least three wells must be installed at the site to be in compliance with the CRWQCB Tri-Regional Recommendations. ASI proposes that three wells be installed at the site.

Soil Sampling and Analysis

ASI personnel will collect three samples within three locations from the former FAA TRACON diesel tank backfill at depths of approximately 5 to 7 feet below the ground surface. Clean imported soil was placed above 5 feet in depth and native material occurs below approximately 7 feet in depth. Soil samples will be collected using a backhoe. Each soil sample will be placed into a 250-milliliter (ml) glass jar, sealed with a Teflon-lined cap, labeled, logged, placed into a sealable plastic bag, placed into an insulated cooler with ice, and shipped to Terra Tech Laboratory of Santa Ana, California, or Calscience Environmental Laboratory of Stanton, California, under strict chain-of-custody protocol.

Should collect 1 sample @ 7' or deeper

The samples will be analyzed for TPH using California Department of Health Services (DHS) methodology and BTEX using EPA Method 8020. If TPH concentrations above 100 mg/kg are detected, then the type of petroleum hydrocarbons within the soil will be assessed (fuel fingerprint).

Well Installation, Development, and Sampling

Up to three monitoring wells will be installed adjacent to the former underground tank location (Figure 3). The wells will be installed within the former tank location (Well AW-1), 35 to 40 feet to the northwest of the former tank (Well AW-2), and within 15 feet of the 12 concrete tanks in the FAA TRACON parking lot (Well AW-3). Drilling and well installation will be performed by Hogate Exploration Drilling Company of Loomis, California, a licensed C-57 driller.

The wells will be installed using 8-inch outside diameter, hollow-stem augers. The well screen will be placed from a depth of 5 to 15 feet and will consist of 0.010-inch, factory-slotted, flush-threaded, 2-inch-diameter polyvinylchloride (PVC) and 2-inch-diameter PVC blank. The filter pack will consist of 10 x 20 silica sand placed at a depth of 4 to 15 feet. A bentonite slurry will be installed from 1 to 4 feet in depth and a flush-mounted, lockable protective well cover will be cemented over the well. Top of casing elevations will be established by a California-certified land surveyor.

The wells will be developed using a surge block and pump method. Development will not be vigorous due to the fine-grained nature of the surrounding Bay mud. Water purged from the wells will be placed into 55-gallon drums, labeled, and stored at the site.

Water Level Monitoring

Following well development, an automated water level recording device will be installed in Well AW-2. This device will measure changes in the water level of the well every hour for three days. The water level data will be used to assess tidal influences on groundwater beneath the site. In addition, prior to sampling, the water elevation in the wells will be measured to the nearest 100th of a foot.

Groundwater Monitoring

Approximately one month following development activities, the wells will be purged of at least three borehole volumes of water and sampled with disposable Teflon bailers. During purging activities, the pH, temperature, and conductivity of the purged water will be monitored and recorded.

After purging the wells, groundwater samples will be collected and placed into a liter amber glass jar, two 40-ml glass vials, and a 250-ml plastic bottle. The 40-ml glass vials will be sealed with a Teflon-lined cap with no headspace. The jars, vials, and bottles will be labeled, logged, and placed into an insulated cooler with ice and shipped to Terra Tech Laboratory, under strict chain-of-custody protocol.

The water sample in the liter glass jar will be analyzed for TPH concentrations using California DHS methodology, the samples in the two 40-ml vials will be analyzed for BTEX concentrations using EPA Method 602, and the sample in the plastic bottle will be analyzed for total dissolved solids (TDS) and salinity. If TPH concentrations are detected above 1 mg/l, then the type of petroleum hydrocarbons within the water will be identified (fuel fingerprint).

Reporting

Three to four weeks after receipt of the groundwater analytical results, ASI will submit a Groundwater Monitoring Report to the Alameda County DEH and the CRWQCB. If groundwater is significantly impacted by waters of the San Francisco Bay and/or if TPH and BTEX concentrations are nondetectable, are below marine quality goals, or are predominantly a petroleum hydrocarbon other than diesel, then ASI will request site closure on behalf of the FAA.

If site closure is not granted, then ASI will sample the wells every three months, starting three months after the initial sampling. ASI will submit a report requesting site closure after each quarterly sampling as appropriate. Quarterly sampling will continue until site closure is granted or a maximum of four rounds of well sampling have occurred. If significant quantities of diesel are detected in the groundwater, then an alternative plan will be proposed.

CONCLUSION

ASI can install the wells and sample the soil within the former tank pit during early March 1992, and sample the groundwater during late March 1992. A Groundwater Monitoring Report may be submitted to the Alameda County DEH in late April 1992.

ASI will perform and oversee all work in accordance with generally accepted standards of professional engineering and geologic practice. Our recommendations, specifications, or professional opinions would conform with these same standards. No other warranty is either expressed or implied.

If you have any questions or comments, please contact Len Sinfield or me at (619) 560-8552.

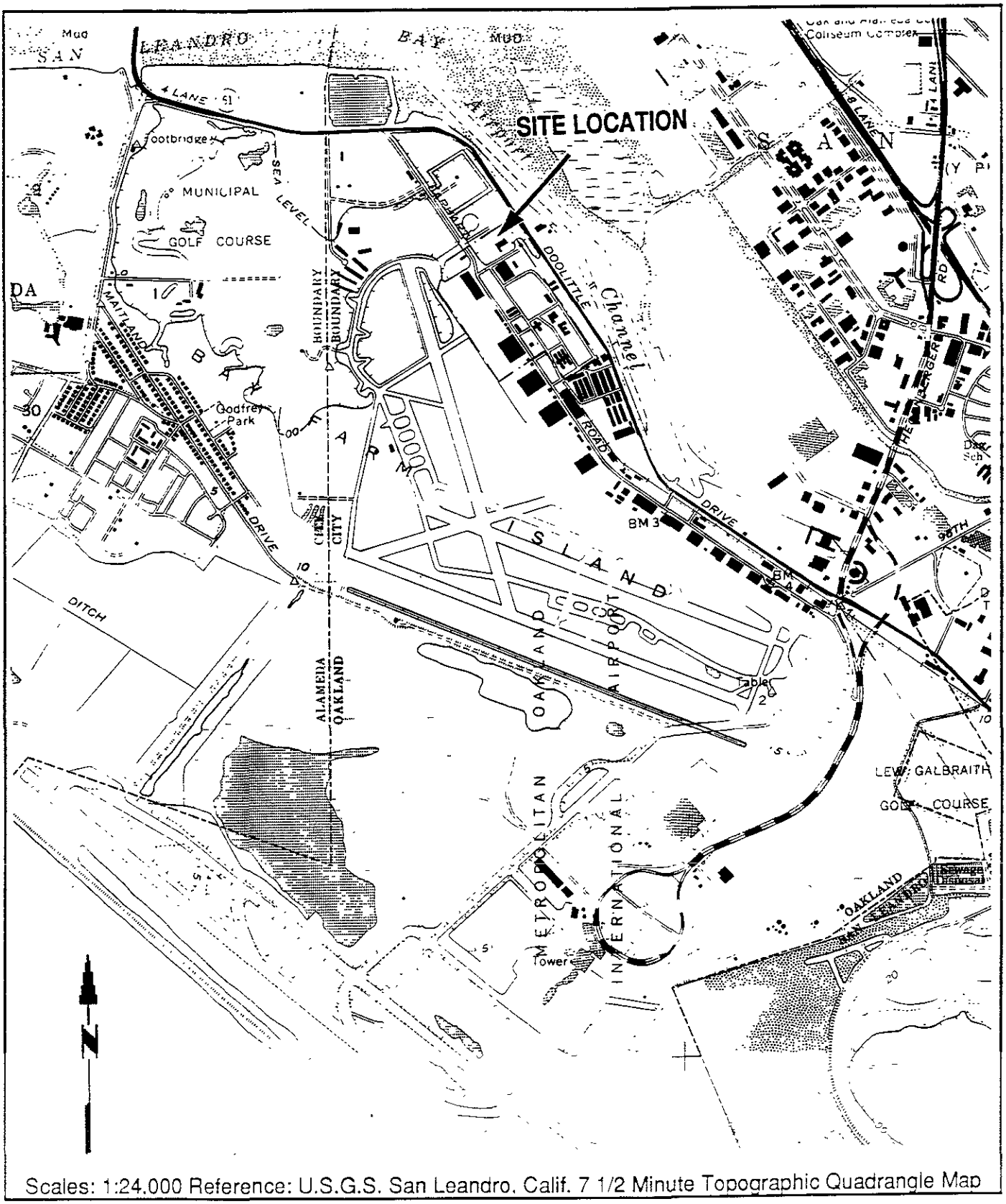
Sincerely,

Sarah J. Battelle, R.G. #4869
Project Manager

Attachments: Figure 1 – Site Location
Figure 2 – Site Plan
Figure 3 – Proposed Exploration Locations

cc: Charley Chamness, FAA — Los Angeles
CRWQCB — San Francisco Bay Region

ATTACHMENTS



Scales: 1:24.000 Reference: U.S.G.S. San Leandro, Calif. 7 1/2 Minute Topographic Quadrangle Map

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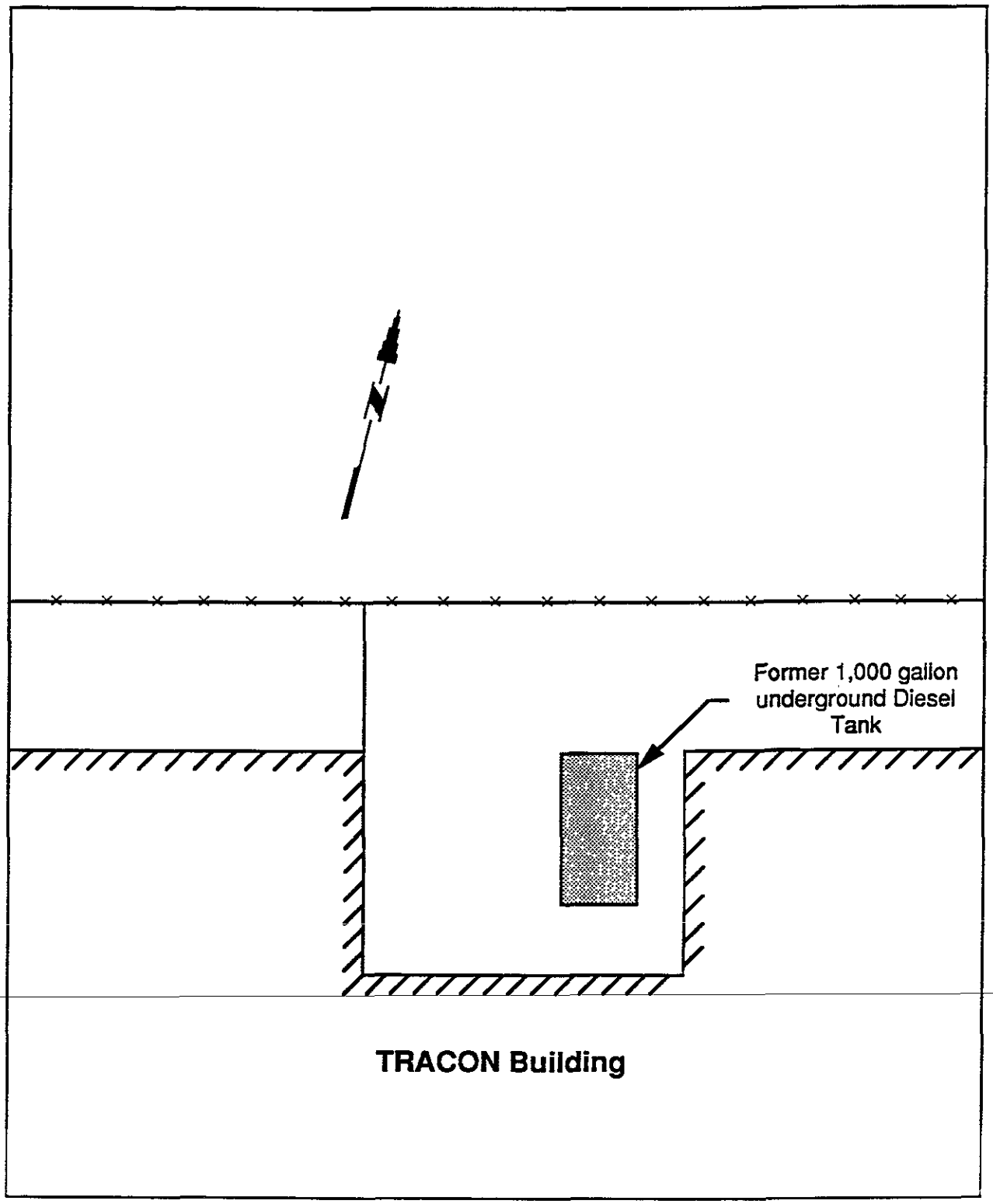
Site Location
Federal Aviation Administration
Oakland International Airport TRACON Facility
Site Investigation Proposal

PROJECT NO. 9788

FIGURE 1



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Site Plan
Federal Aviation Administration
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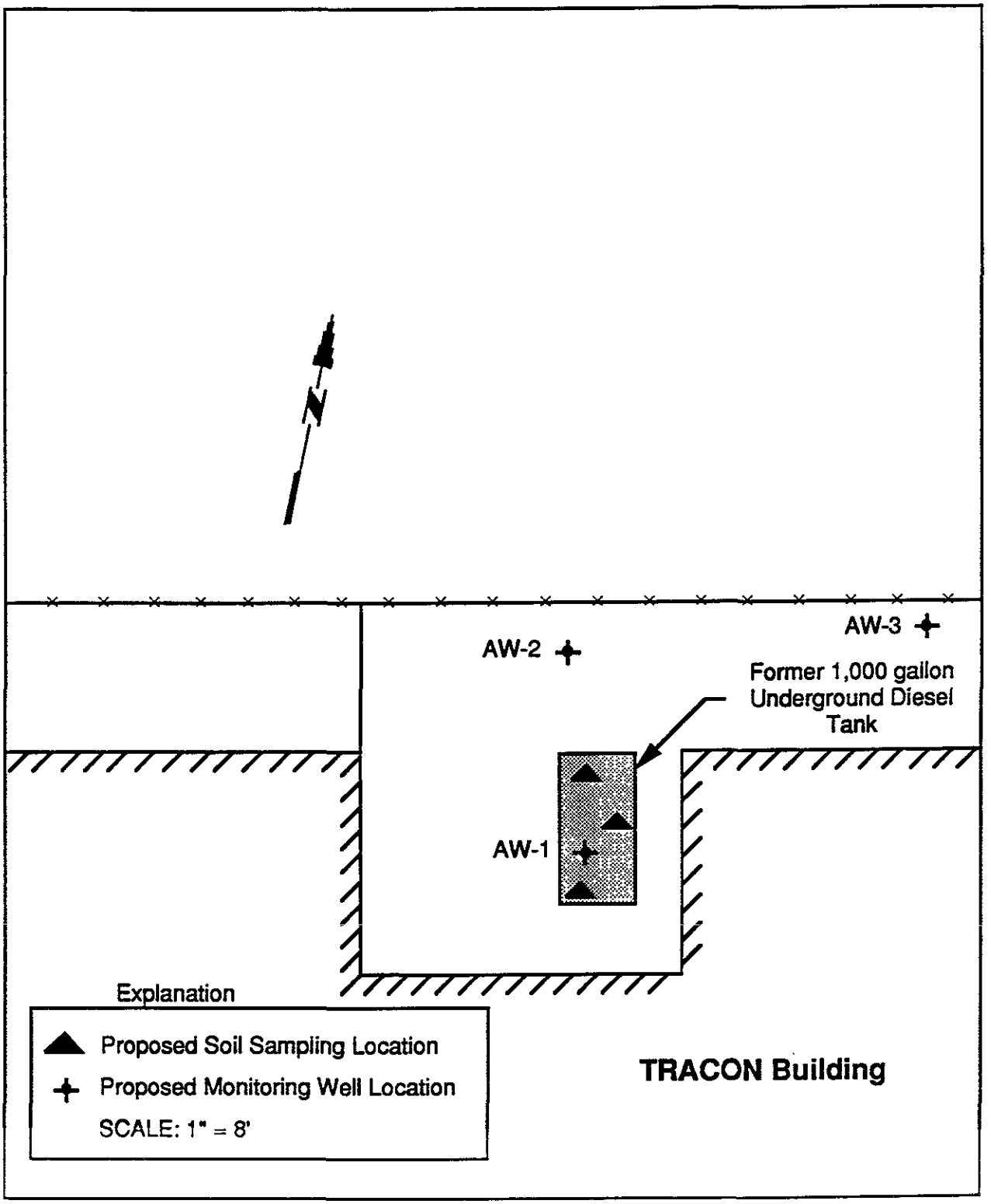
FIGURE 2



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Proposed Exploration Locations
Federal Aviation Administration
Oakland TRACON Facility
Site Investigation Proposal

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FIGURE 3

Oak. Prop. #3/McDraw FAA