REMEDIATION RISK MANAGEMENT, Inc.

An Environmental Contracting Firm

May 6, 1996
Project M96

Mr. Kiran Khatri
A&H Gas & Mini Mart
20450 Hesperian Boulevard
Hayward, California 94541

Re: Workplan
A&H Gas Mini Mart (Former Airport Alliance)
20450 Hesperian Boulevard
Hayward, California

Dear Mr. Khatri:

This letter, prepared by Remediation Risk Management, Inc. (RRM), presents a workplan in accordance with the Alameda County Health Care Services (ACHCS) letter dated April 23, 1996. In this letter, the ACHCS has required that an additional investigation be conducted to define the extent of petroleum hydrocarbon impacted soil and groundwater that has been identified beneath the site. In addition, the ACHCS letter requested that the workplan include a proposal to remediate the existing separate-phase hydrocarbon (SPH) and include a strategy to control further migration of dissolved hydrocarbons. The proposed scope of work of this investigation includes: (1) the installation of 2 groundwater monitoring wells (MW-3 and MW-4), (2) separate-phase hydrocarbon (SPH) removal, (3) a plume dynamics evaluation, and (4) reporting.

This workplan includes a discussion of site background, previous investigations, proposed scope of work, schedule, and field and analytical procedures (Attachment A).

SITE BACKGROUND

The site is currently a gasoline service station owned by Mr. Kiran and Kavita Khatri. The Khatri's purchased the property in 1987. The service station at the site was constructed in the 1960s. Based on these approximate dates, the service station was constructed and operated for approximately 27 years prior to purchase of the property by the Khatris.

337 936 double tanks once a month

P.O. Box 1362, Aptos, California 95001 ■ Phone: 408.662.9411 Fax: 408.684.2454

The subject site is located at 20450 Hesperian Boulevard in Hayward, Alameda County, California. The site is located in the jurisdiction of the ACHCS (Ms. Madhulla Logan). Properties directly west of the site, across Hesperian Boulevard, are under the jurisdiction of the City of Hayward and specifically the Hayward Fire Department (Mr. Hugh Murphy). Due to the potential that hydrocarbons are migrating from the site across Hesperian Boulevard into the City of Hayward jurisdiction, the Hayward Fire Department has recently been playing an active role in the regulation of the site.

The nearest surface waters to the site are Sulpher Creek and the San Francisco Bay. Sulpher Creek is located approximately 1,200 feet south of the site. The San Francisco Bay is located approximately 1.2 miles west of the site.

Historic land use in the vicinity of the site consisted primarily of farm land and small homes until the 1950's when Hesperian Boulevard began to develop. Prior to this date; however, the Hayward Airfield existed in the same area as it does today. The Hayward Airport is located approximately 2,000 feet southwest of the site. By the late 1970's, land use in the vicinity of the site almost completely changed to commercial uses. Various gasoline service stations were built at the intersection where the site is located. These service stations included Wickland Oil (at the site), Shell, Unocal, and Texaco/Exxon. An Arco station was constructed approximately 150 feet north of the site. Of these stations, the Unocal, Texaco/Exxon and Shell Stations were abandoned and redeveloped as other commercial properties.

PREVIOUS INVESTIGATIONS

Previous investigations at the site have been performed by Certified Environmental Consulting Inc. (CEC), and Mr. Zane Miller. The work performed by Mr. Miller which included the installation of 3 groundwater monitoring wells was not well documented and is not included in this workplan. The work performed by CEC included a Phase I Environmental Assessment, the installation of 11 soil borings (B-1 through B-11) and the installation of 2 groundwater monitoring wells (MW-1 and MW-2). Site location maps showing the location of these borings and wells, tables summarizing the results of soil and groundwater analytical data, and boring logs are presented as Attachment B (Previous Investigation Data). This data was copied from the various documentation reports that have been previously prepared for the site.

A discussion of these investigations are summarized below:

- Soils beneath the site consist primarily of silty clay underlain by silty sand. The silty clay was encountered to depths ranging from 15 to 20 feet, below

groundsurface (bgs). The underlying silty sand was encountered to depths of approximately 34 feet, the total depth explored.

- Groundwater beneath the site has been measured in wells at depths ranging from 5 to 20 feet, bgs. Groundwater flow at the site is not well documented but has been estimated to be toward the northwest at a gradient of approximately 0.006 ft/ft. Figure 1 depicts the groundwater elevation contours for the various leaking underground storage tank sites in the vicinity of the site for data collected on February 14, 1996. This data supports that the general direction of groundwater flow is toward the northwest, however, local gradients diverge from this direction. Local deviation to flow, based on the February 14, 1996 data occurs in the area between the former Texaco/Exxon Station and the site and the Arco station and the site. The direction of groundwater flow in these areas is towards the site.
- Hydrocarbon affected soils appear to be adequately defined with the exception of soils located downgradient of the northwest corner of the site. Petroleum hydrocarbons in soils are of relatively low concentration and are limited to soils within the capillary fringe. These soils occur at a depth of approximately 10 to 15 feet, bgs. The highest petroleum hydrocarbon concentrations on-site occur along the northwest property boundary. Soil Borings B-1 and B-7 were installed in this area. Soils collected from these borings contained total petroleum hydrocarbons calculated as gasoline (TPH-g), benzene, and total petroleum hydrocarbons calculated as diesel (TPH-d) at concentrations of 780 parts per million (ppm), 6.8 ppm, and 350 ppm, respectively.
- SPH has been measured in Well MW4-J installed by Texaco just off the site to the west. Dissolved hydrocarbons have been detected in groundwater samples collected from site wells and site borings. The eastern and southern extent of the petroleum hydrocarbons in groundwater appear to be adequately defined. The extent of petroleum hydrocarbons to the north and west need additional definition. Figure 2 depicts the SPH thickness and dissolved hydrocarbon concentrations for data collected on November 11, 1994.

PROPOSED SCOPE OF WORK

The proposed scope of work of this investigation includes: (1) the installation of 2 groundwater monitoring wells (MW-3 and MW-4), (2) separate-phase hydrocarbon (SPH) removal, (3) a plume dynamics evaluation, and (4) reporting. The specific scope of work is described below.

Groundwater Monitoring Well Installation: Groundwater monitoring well installation will consist of: (1) obtaining the appropriate encroachment and well permits from the city, private property, and the ACHCS, (2) the preparation of a site safety plan, (3) the installation of Wells MW-3 and MW-4, (4) soil sampling, (5) well elevation surveying, well development and groundwater sampling, and (6) soil and groundwater disposal. The location of the wells are shown of Figure 1. The specific purpose of these wells will be to further characterize the downgradient and lateral extent of petroleum hydrocarbon impact in soils and groundwater. Further, this data will be used to evaluate whether the SPH plume located across Hesperian Boulevard is connected to the SPH located on-site. This data will be used to evaluate the plume dynamics as discussed below.

SPH Removal: As an interim remedial measure, the removal of SPH via manual bailing is currently proposed at the site. This interim remedial action will be performed to initialize the removal and control of further migration of SPH from the site. The removal of the SPH will be initiated in Well MW-4J pending authorization by Texaco. The SPH bailing will be conducted initially on a monthly basis for three events. After this time, the bailing schedule and the effectiveness of the installation of a passive skimmer will be evaluated.

Plume Dynamics Evaluation: This task consists of evaluating plume stability and plume degradation and includes assessing the occurrence of site specific natural biodegradation and chemical concentration trend analyses. In addition this task includes completing a Risk Based Corrective Action (RBCA) Tier 1 Analyses in accordance to the American Society of Testing and Materials (ASTM) standard.

Reporting: A report of findings documenting the results of this investigation will be submitted to the regulatory agencies upon completion of the work. This report will include a discussion of the findings of the investigation, summary tables, site maps including geologic cross-sections, field and analytical procedures, certified analytical reports and chain-of-custody documentation, and a feasibility study evaluating three remedial alternatives.

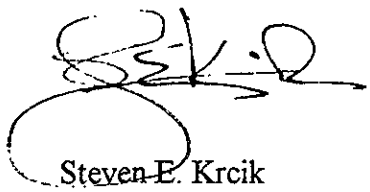
SCHEDULE

RRM is prepared to initiate the proposed workplan within 30 days after approval of the workplan by the ACHCS. Pending encroachment acquisition , field work can be completed within two weeks. A report documenting the findings of the investigation can be submitted approximately six weeks after completion of the field work. It should be noted that the time required to complete this report includes the time required to complete the feasibility study.

If you have any questions regarding the contents of this workplan, please do not hesitate to call.

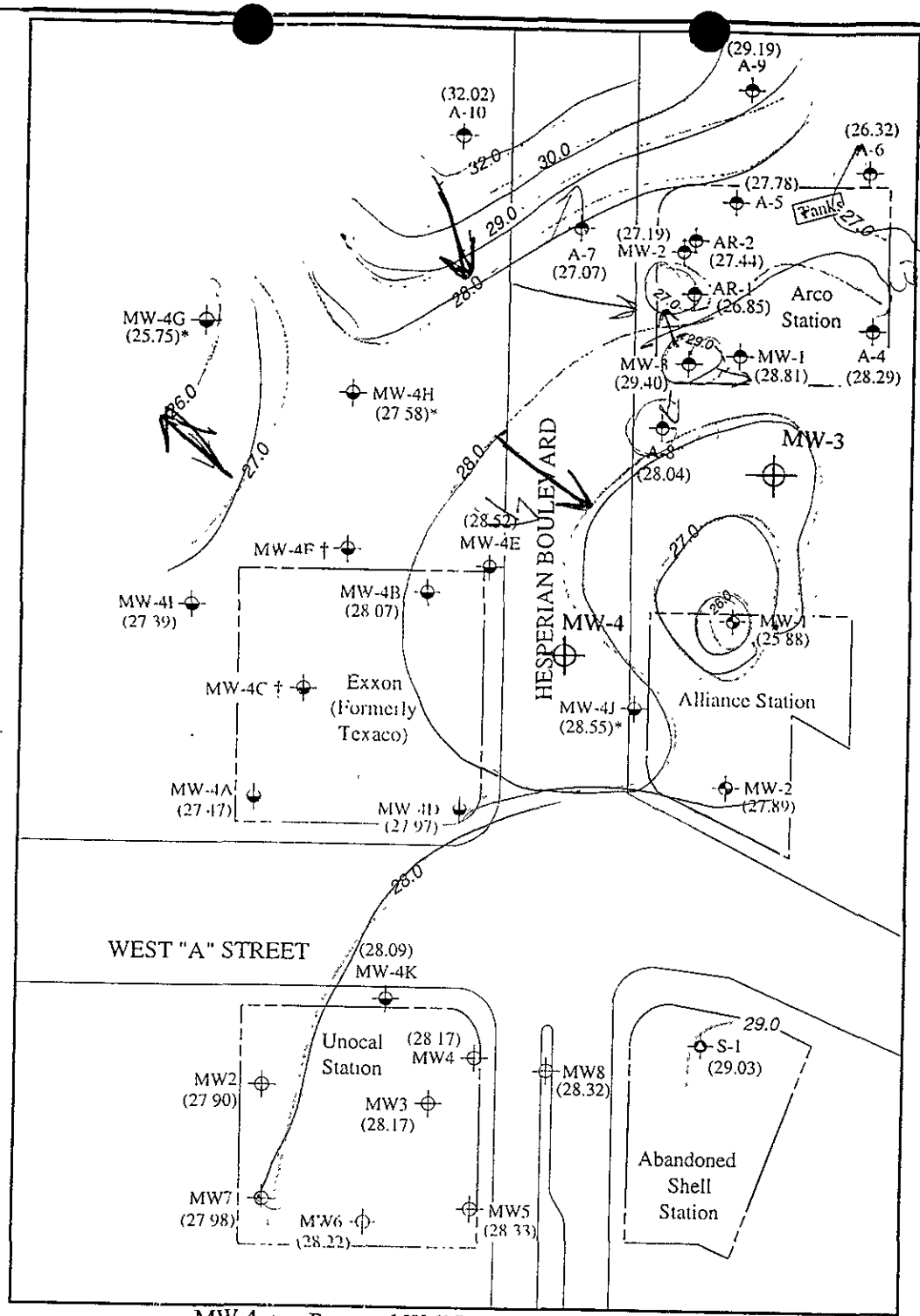
Sincerely,

Remediation Risk Management, Inc.



Steven E. Krcik
Senior Geologist
RG 4976

Attachments: Figure 1 - Site Map - Groundwater Elevation Contour Map
Figure 2 - Site Map - SPH and Dissolved Hydrocarbon Concentration Map
Attachment A - Field and Analytical Procedures
Attachment B - Previous Investigation Data



MW-4 Proposed Well Location and Designation
By Remediation Risk Management, Inc. (5/7/96)

LEGEND

- Monitoring well (Unocal)
- Monitoring well (Exxon)
- Monitoring well (Shell)
- Monitoring well (Alliance)
- Monitoring well (Arco)

( ) Ground water elevation in feet above Mean Sea Level

Contours of ground water elevation

† Not monitored

* Ground water elevation corrected due to the presence of free product.

0 100 200

Approx. scale feet

POTENTIOMETRIC SURFACE MAP FOR THE FEBRUARY 14, 1996 JOINT MONITORING EVENT

mpds SERVICES, INCORPORATED	A&H Gas & Mini Mart 20450 Hesperain Boulevard Hayward, California	FIGURE 1

Drawing modified by Remediation Risk Management, Inc. to show proposed well locations and designations (5/7/96).

ATTACHMENT A

FIELD AND ANALYTICAL PROCEDURES

ATTACHMENT A
FIELD AND ANALYTICAL PROCEDURES

Groundwater Monitoring Well Installation Procedures

Groundwater monitoring wells will be permitted and installed in accordance with state and local guidelines using a subcontracted state licensed driller. The borings will be drilled using 8-inch diameter hollow-stem augers. A Remediation Risk Management Inc. (RRM) geologist will log the borings from soil samples and auger cuttings. Descriptive information denoted on the logs will include soil, groundwater, contaminant, and well installation data. Drilling and sampling equipment will be steam-cleaned or cleaned with tri-sodium phosphate prior to and between uses. Selected soil borings will be converted to 2-inch diameter groundwater monitoring wells. Soil borings not converted to wells will be backfilled with cement grout.

Soil samples for chemical analysis and logging purposes will be collected at 5-foot depth intervals or change in materials. Soil samples for chemical analyses will be collected from splitspoon samplers equipped with 4-inch brass liners. The brass liners will be capped with plastic end caps and placed in plastic bags. The brass liners will then be stored in iced coolers and transported to a state certified laboratory, with chain-of-custody documentation.

Groundwater monitoring wells will be constructed to monitor discrete water bearing strata. Well construction information will be denoted on the boring logs in the field. Well construction materials will consist of a cement grout or bentonite bottom seal (if necessary), 2-inch diameter flush-threaded Schedule 40 PVC casing and 0.020-inch factory-slotted screen, RMC 2 x 12 graded sand pack, a bentonite and cement grout surface seal, and a locking cap and protective vault box.

Specific well construction dimensions include: a maximum well screen of 20 feet, sand pack extending approximately 1 to 3 feet above the well screen, and a 5-foot minimum surface seal. After well completion, well elevations will be surveyed to the nearest 0.01 foot relative to mean sea level datum by a licensed surveyor.

Field Hydrocarbon Screening Procedures

Field hydrocarbon screening procedures will consist of measuring organic vapor concentrations using a photo-ionization detector (PID). The procedure consists of getting approximately 30 grams of soil at a constant temperature in a clean glass jar sealed with aluminum foil and a threaded ring lid. The jar is then pierced and the headspace within the jar is tested for organic vapor, measured in parts per million (ppm). The instrument is pre-calibrated using a 100 ppm isobutylene standard (in air) and a sensitivity factor of 55. The sensitivity factor relates the photo-ionization sensitivity of benzene to that of isobutylene at 100 ppm.

Well Development/Groundwater Sampling Procedures

Well development will be performed utilizing surge block/swab and groundwater extraction techniques. Well development will be performed until the majority of suspended fines are removed or until approximately ten casing volumes are removed. Well development documentation consists of recording data including: time, groundwater and well depth, turbidity, gallons removed, and well stabilization parameters (pH, conductivity, temperature). Development and purge waters will be disposed of at a state-licensed facility.

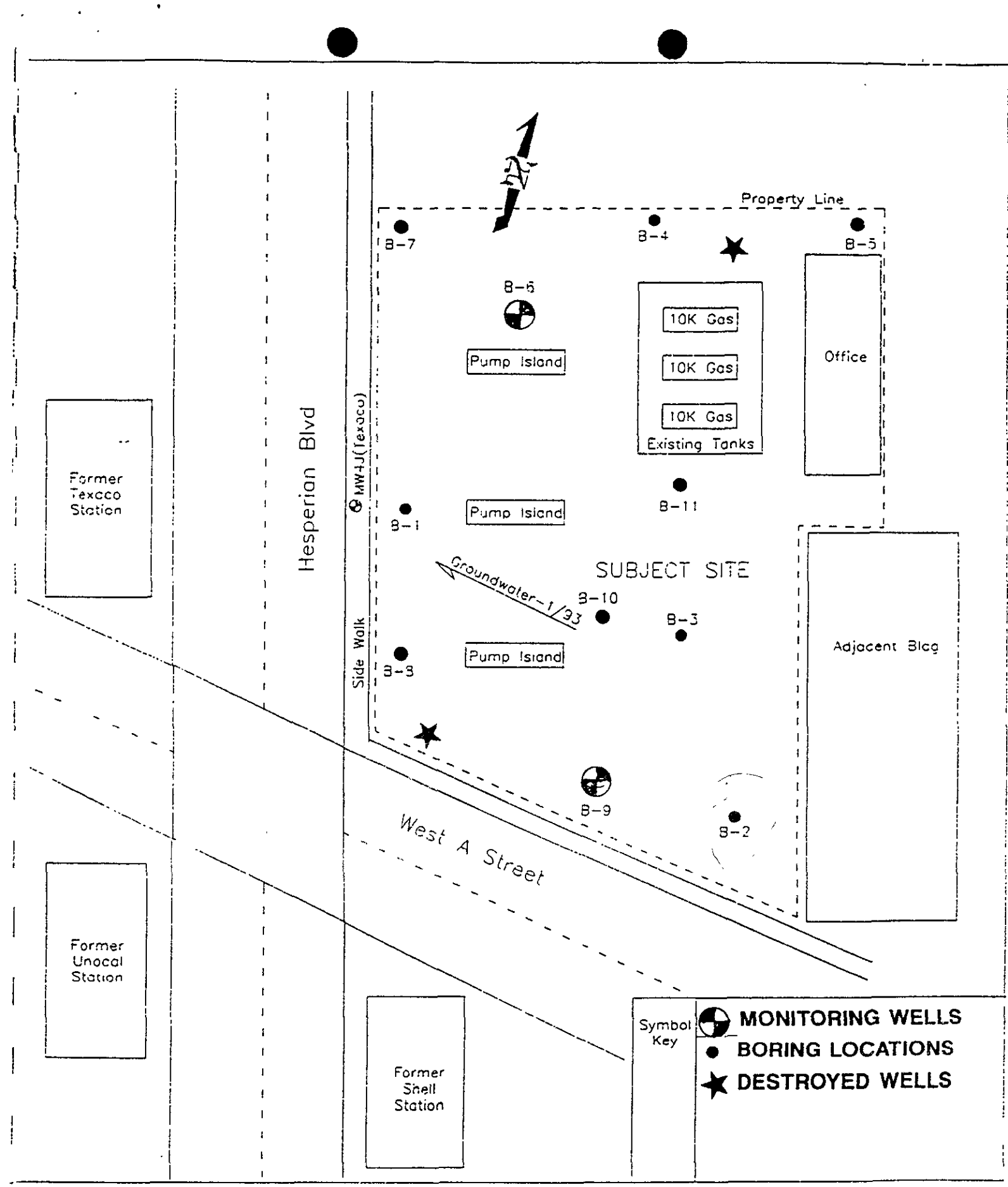
Groundwater sampling procedures consists of initially measuring and documenting the water level in each well and checking each well for the presence of separate-phase hydrocarbon (SPH) using a oil/water interface probe or a clear Teflon bailer. The wells that do not contain SPH will then be purged a minimum of four casing volumes or until dry. During purging, well stabilization parameters (temperature, pH, and electrical conductivity) will be monitored. After 80% recovery of the water levels, groundwater samples will be collected with Teflon bailers and placed into appropriate EPA-approved containers. Sampling equipment will be cleaned with tri-sodium phosphate between uses. The samples will be labeled, logged onto chain-of-custody documents, and transported on ice to the laboratory using appropriate chain-of-custody documentation.

Laboratory Analytical Procedures

Selected soil samples and groundwater samples will be analyzed in the laboratory for the presence of total petroleum hydrocarbons calculated as gasoline (TPH-g) and diesel (TPH-g), and benzene, toluene, ethylbenzene, and xylenes (BTEX compounds). Analysis for TPH-g will be performed according to EPA Method 8015. TPH-d will be performed by EPA method 8015. BTEX compounds will be performed by EPA method 8020. Analyses will be performed by a California State-certified laboratory.

ATTACHMENT B

PREVIOUS INVESTIGATION DATA



CERTIFIED ENVIRONMENTAL CONSULTING
836 STONE ROAD SUITE J, BENICIA, CA 94510
(707) 745-0171 / (800) 229-0171 / (707) 745-0153 Fax

FIGURE 2
20450 HESPERIAN BLVD.
HAYWARD, CALIFORNIA
PROJECT NO. 94-510-1440-2

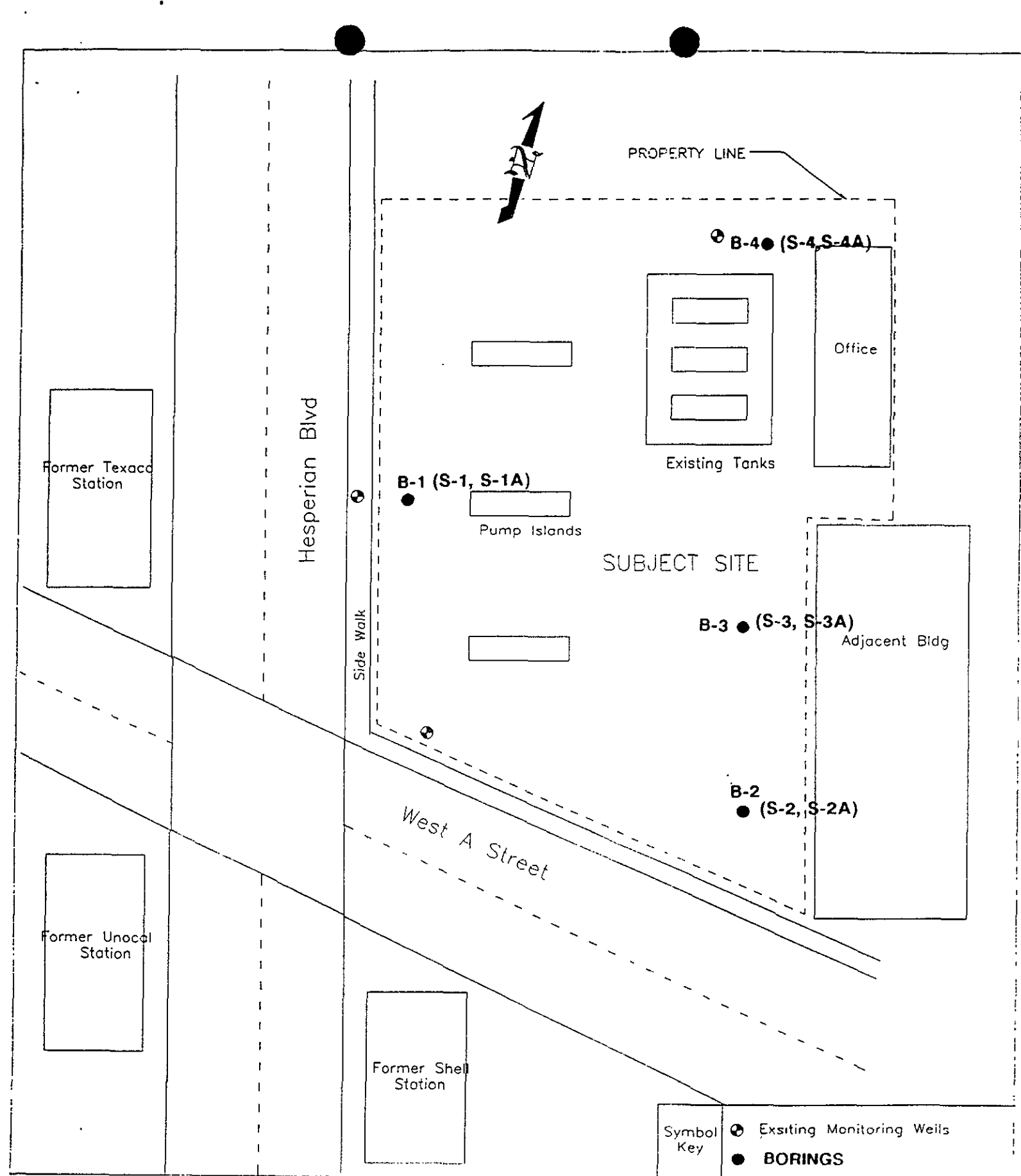


FIGURE 3

SAMPLE LOCATION MAP

20450 Hesperian Blvd
Hayward, CA
Project No. 94-510-1440

CERTIFIED ENVIRONMENTAL CONSULTING
536 STONE ROAD SUITE J BENICIA CA, 94510
(707) 745-0171 / (800) 228-0171 / (707) 745-0163 FAX

TABLE 1

SOILS RESULTS
FOR
ALLIANCE GAS STATION
20450 HESPERIAN BOULEVARD
HAYWARD, CALIFORNIA

Sample No.	Sample Date	Depth	TPH-G PPM	TPH-D PPM	Benzene PPM	Toluene PPM	Ethylbenzene PPM	Xylene PPM
B-1	1-24-94	6-6.5	ND	ND	0.14	0.008	ND	0.006
B-1	1-24-94	11-11.5	520	350	6.8	3.8	7.2	15
B-2	1-24-94	6-6.5	ND	ND	ND	ND	ND	ND
B-2	1-24-94	11-11.5	ND	ND	0.007	0.007	ND	0.013
B-2	1-24-94	16-16.5	ND	ND	ND	ND	ND	ND
B-2	1-24-94	21-21.5	ND	ND	ND	ND	ND	ND
B-3	2-24-94	6-6.5	ND	0.014	ND	ND	ND	ND
B-3	1-24-94	11-11.5	ND	ND	0.13	0.005	0.013	0.011
B-4	1-24-94	3-3.5	ND	ND	ND	ND	ND	ND
B-4	1-24-94	11-11.5	4.8	ND	0.16	0.023	0.078	0.033
B-5	6-24-94	5-5.5	ND	ND	ND	ND	ND	ND
B-5	6-24-94	10-10.5	ND	ND	ND	ND	ND	ND
B-5	6-24-94	15-15.5	ND	ND	ND	ND	ND	ND
B-6	6-28-94	5-5.5	ND	ND	0.18	.008	.008	.019
B-6	6-28-94	10-10.5	780	90	4.3	13	4.4	23
B-7	6-24-94	5-5.5	ND	ND	0.79	ND	ND	ND
B-7	6-24-94	10-10.5	/560/	97	13	37	11	61
B-7	6-24-94	15-15.5	/110/	51	1.3	2.1	2.6	14
B-8	7-7-94	5-5.5	/1.5/	ND	0.099	.023	ND	0.044
B-8	7-7-94	15-15.5	/4.9/	ND	0.13	0.040	0.19	0.65
B-9	6-28-94	7.5-8	ND	ND	ND	ND	ND	ND
B-10	7-7-94	5-5.5	ND	ND	ND	ND	ND	ND
B-11	7-7-94	5-5.5	ND	ND	.077	ND	.009	.012
B-11	7-7-94	10-10.5	5.0	ND	.20	.023	.074	.091
B-11	7-7-94	15-15.5	13.0	12	.017	0.040	.15	.14

TABLE 2

GROUNDWATER RESULTS
FOR
ALLIANCE GAS STATION
20450 HESPERIAN BOULEVARD
HAYWARD, CALIFORNIA

Sample No.	Sample Date	Depth	TPH-G PPB	TPH-D PPB	Benzene PPB	Toluene PPB	Ethylbenzene PPB	Xylene PPB
B-5-W	6-24-94		ND	ND	1.5	ND	ND	ND
B-8-W	7-7-94		48,000	6,700	340	1,000	1,900	8,300
B-11-W	7-7-94		180	200	5.4	.68	3.5	3.8
MW-1 (B-6)	7-5-94		11,000	3,000	140	560	350	1,800
MW-2 (B-9)	7-5-94		ND	ND	1.1	1.6	ND	2.2
WS-1	1-24-94	17.36	31,000	2,700	8,200	1,200	1,200	2,100
WS-2	1-24-94	14.70	ND	ND	ND	ND	ND	ND
WS-3	1-24-94	14.54	400	ND	91	1.8	4.0	2.2
WS-4	1-24-94	12.3	990	150	6.8	3.8	7.2	15
WS-5								
WS-6								