Chevron U.S.A. Inc.
2410 Camino Ramon, San Ramon, California • Phone (510) 842-9500
Mail Address: P.O. Box 5004, San Ramon, CA 94583-0804

Marketing Department

92 JAN 13 AM 11:13

January 13, 1992

P.E.

Mr. Edgar Howell
Alameda County Health Care Services
Department of Environmental Health
80 Swan Way, Room 200
Oakland, CA 94621

Re: Former Chevron Service Station #9-1153
3126 Fernside Blvd., Alameda

Dear Mr. Howell:

Enclosed we are forwarding a work plan prepared by our consultant Pacific Environmental Group, Inc. outlining additional work steps we propose to take at the above referenced site. This work plan proposes to install additional off-site ground water monitor wells to delineate the extent of the hydrocarbon plume. Once appropriate data has been collected from these wells, all data will be evaluated to assess appropriate next actions with respect to additional corrective action efforts.

We would appreciate your review and formal concurrence prior to implementing this work plan.

If you have any questions or comments, please do not hesitate to contact me at (510) 842-9581.

Very truly yours,
CHEVRON U.S.A. INC.

Nancy Vukelich
Environmental Engineer

Enclosures

cc: Mr. Eddy So, RWQCB-Bay Area
Ms. B.C. Owen
Mr. Jerry Mitchell, PEG-Pleasant Hill Office
File (9-1153W1)

Mr. Larry Bolten
State Farm Insurance
2509 Santa Clara Avenue
Alameda, CA 94501

PACIFIC
ENVIRONMENTAL
GROUP INC.

92 T.L.H.

January 8, 1992
Project 325-18.01

Ms. Nancy Vukelich
Chevron USA, Inc.
2410 Camino Ramon
San Ramon, California 94583-0804

Re: Former Chevron Service Station 9-1153
3126 Fernside Boulevard at Gibbons Drive
Alameda, California

Dear Ms. Vukelich:

This letter presents a Work Plan prepared by Pacific Environmental Group, Inc. (PACIFIC) for Chevron USA, Inc. (Chevron) for additional off-site assessment work at the former Chevron service station referenced above (Figures 1 and 2). The objective of this program is to delineate the extent of the hydrocarbon plume. Once this is completed an evaluation of all the data collected to date will be performed to assess the appropriate next action with respect to soils remediation and possible capture of any hydrocarbons that may have migrated off site. A site description including a summary of previous investigations and a proposed scope of work are included in this Work Plan.

BACKGROUND

Site Description

The site is currently occupied by a single-family residence. The site was formerly occupied by a Chevron service station which was deactivated and demolished in 1986. The site lies within a predominantly residential area. Figure 2 presents the former service station layout including the former station building, product islands and underground storage tanks.

The site previously contained three underground fuel storage tanks located in the central portion of the property and one underground waste-oil tank located in the northernmost portion of the property. The tanks had apparently been maintained for 30 years prior to their removal on June 4, 1986.

1601 Civic Center Drive, Suite 202, Santa Clara, California 95050 (408) 984-6536 FAX: (408) 243-3911
620 Contra Costa Boulevard, Suite 209, Pleasant Hill, California 94523 (415) 825-0855 FAX: (415) 825-0882

In a previous site groundwater investigation performed on August 18, 1986, by Emcon Associates, Inc. (Emcon), three on-site groundwater monitoring wells (C-1 through C-3) were installed. The depth to groundwater was approximately 4 to 5 feet below the ground surface with a southeasterly flow direction. Gasoline, benzene and toluene were detected in the initial groundwater samples from all three on-site wells. The maximum hydrocarbon concentration detected during the initial sampling event was 15,000 parts per billion (ppb) gasoline in Well C-1.

In June 1989, EA Engineering, Science and Technology (EA) sampled soil vapor, shallow soils and groundwater on-and off-site. The maximum petroleum hydrocarbon concentrations in the soil vapor, soil and groundwater were found to be located in the areas around and downgradient of the former storage tanks and pump islands. Low levels of hydrocarbons were detected in off-site soil samples. The existing wells have been sampled a total of six times since the initial sampling event. The highest hydrocarbon concentrations have consistently been detected in Well C-1. Well C-2 was apparently destroyed or abandoned during construction activities prior to May 1989. A summary of historical groundwater analytical data is presented in Table 1.

Hydrogeologic Setting

The site is located on the eastern edge of Alameda which is separated from the eastern San Francisco Bay Area by a tidal inlet and estuary that opens northward to the San Francisco Bay and southward to the San Leandro Bay. Alameda is underlain primarily by dune sands of the Merritt Sand Formation which locally may extend to a depth of 65 feet. The Merritt Formation is underlain by the Alameda Formation which consists of marine and continental deposits of gravel, sand, silt and clay. Based on borings drilled at the site previously by Emcon, the subsurface lithology directly underlying the site consists predominantly of poorly sorted fine- to medium-grained sand with minor interbeds of clay occurring in the shallow subsurface. The surface elevation at the site is approximately 4.5 to 5.2 feet above mean sea level (MSL). The site slopes gently to the east toward the tidal inlet which is located less than 500 feet northeast of the site. Static groundwater occurs at a depth of approximately 4 to 5 feet.

PROPOSED SCOPE OF WORK

To evaluate the off-site extent of hydrocarbons in the soil and groundwater, PACIFIC proposes to install three off-site monitoring wells. The monitoring wells will be constructed of 2-inch diameter, Schedule 40 PVC casing, and will be constructed in accordance with California Department of Water Resources

guidelines for monitoring well installation. Exploratory boring and monitoring well installation procedures are included in Attachment A.

One off-site groundwater monitoring well is to be placed approximately 50 feet downgradient (southeast) from the former storage tanks and a second monitoring well is to be located approximately 80 feet downgradient from the pump islands and Well C-1. The third well will be placed crossgradient on the southern portion of Gibbons Drive. The proposed well locations are shown on Figure 2.

After installation, the groundwater monitoring wells will be developed and sampled. Before sampling, water levels will be measured in each well and the wells will be checked for separate-phase hydrocarbons. Sampling procedures are discussed in Attachment A.

Laboratory Analysis

All groundwater samples and soil samples collected immediately above groundwater will be analyzed by a state-certified laboratory for low-boiling hydrocarbons (calculated as gasoline) including benzene, toluene, ethylbenzene and xylenes (BTEX compounds). Laboratory analyses are discussed in Attachment A.

Report

Upon completion of the above-described field work, a report will be prepared and submitted to Chevron USA. The report will include boring logs, well completion details, soil and groundwater analytical results, a groundwater contour map, and a summary of findings.

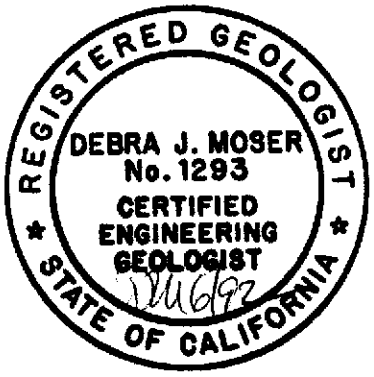
If you have any questions or comments regarding the contents of this Work Plan, please do not hesitate to call.

Sincerely,

Pacific Environmental Group, Inc.

Jerry W. Mitchell
Project Geologist

Debra J. Moser
Senior Geologist
CEG 1293



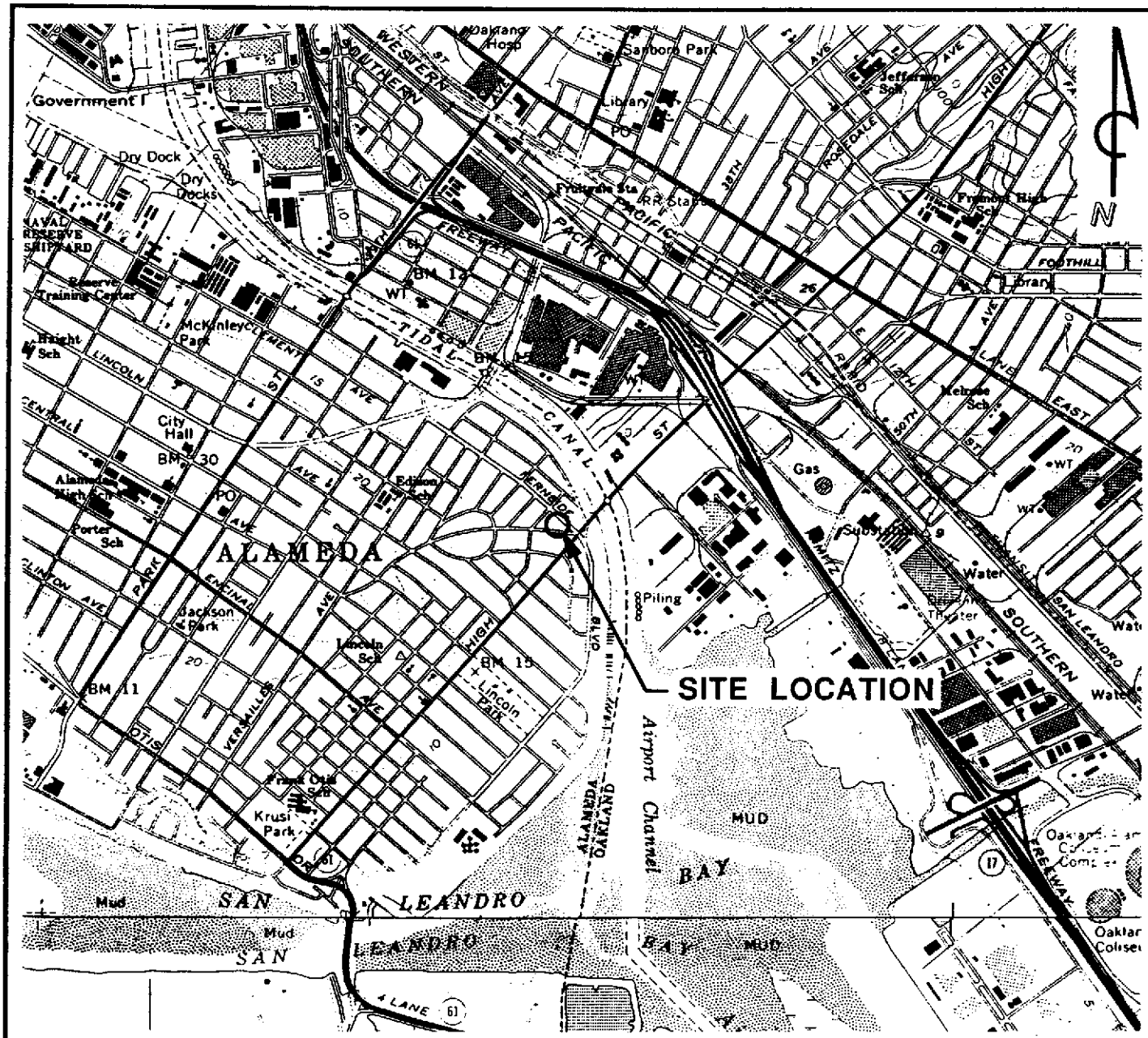
Attachments: Table 1: Summary of Historical Groundwater Analytical Data
Figure 1: Site Location Map
Figure 2: Proposed Well Location Map

Table 1
Summary of Historical Groundwater Analytical Data

Former Chevron USA Service Station 9-1153
Alameda, California

Well No.	Sample Date	Benzene (ppb)	Toluene (ppb)	Ethylbenzene (ppb)	Xylenes (ppb)	Total Petroleum Hydrocarbons (ppb)
C-1	09/04/86	760	820	1,500	c	15,000
	07/22/87	250	7	40	c	1,100
	05/03/89	3,800	190	229	c	6,900
	12/04/89	8,000	490	470	c	17,000
	02/04/90	12,000	990	1,050	c	19,000
	03/07/90[a]	4,260	261	430	c	NA
	09/06/91	10,000	100	240	560	21,000
C-2	09/04/86	49	18	84	c	1,100
	07/22/87	1.8	<1.0	<4.0	c	<50
	05/03/89[b]	---	---	---	c	---
	12/04/89[b]	---	---	---	c	---
C-3	09/04/86	3.2	5.4	5.8	c	50
	07/22/87	<0.5	<1.0	<4.0	c	50
	05/03/89	<0.5	<1.0	<2.0	c	<50
	12/04/89	<0.5	<1.0	<0.5	c	<250
	02/14/90	<0.5	<0.5	<0.5	c	<50
	03/07/90	<5	<5	<5	c	<50
	09/06/91	<0.5	<0.5	<0.5	<0.5	<50
5*	06/04/86	---	---	---	c	130

* = Surface water sample collected during tank pull
a = Analytical method was EPA 624; no concentrations of volatile organics greater than method detection limits were measured
b = Well destroyed or abandoned
ppb = parts per billion
c = Ethylbenzene and xylenes were reported together



QUADRANGLE LOCATION

REFERENCES:

USGS 7.5 MIN. TOPOGRAPHIC MAP
TITLED: OAKLAND EAST, CALIFORNIA
DATED: 1959 REVISED: 1980
TITLED: SAN LEANDRO, CALIFORNIA
DATED: 1959 REVISED: 1980

SCALE

2000 0 2000 FEET

PACIFIC ENVIRONMENTAL GROUP, INC.

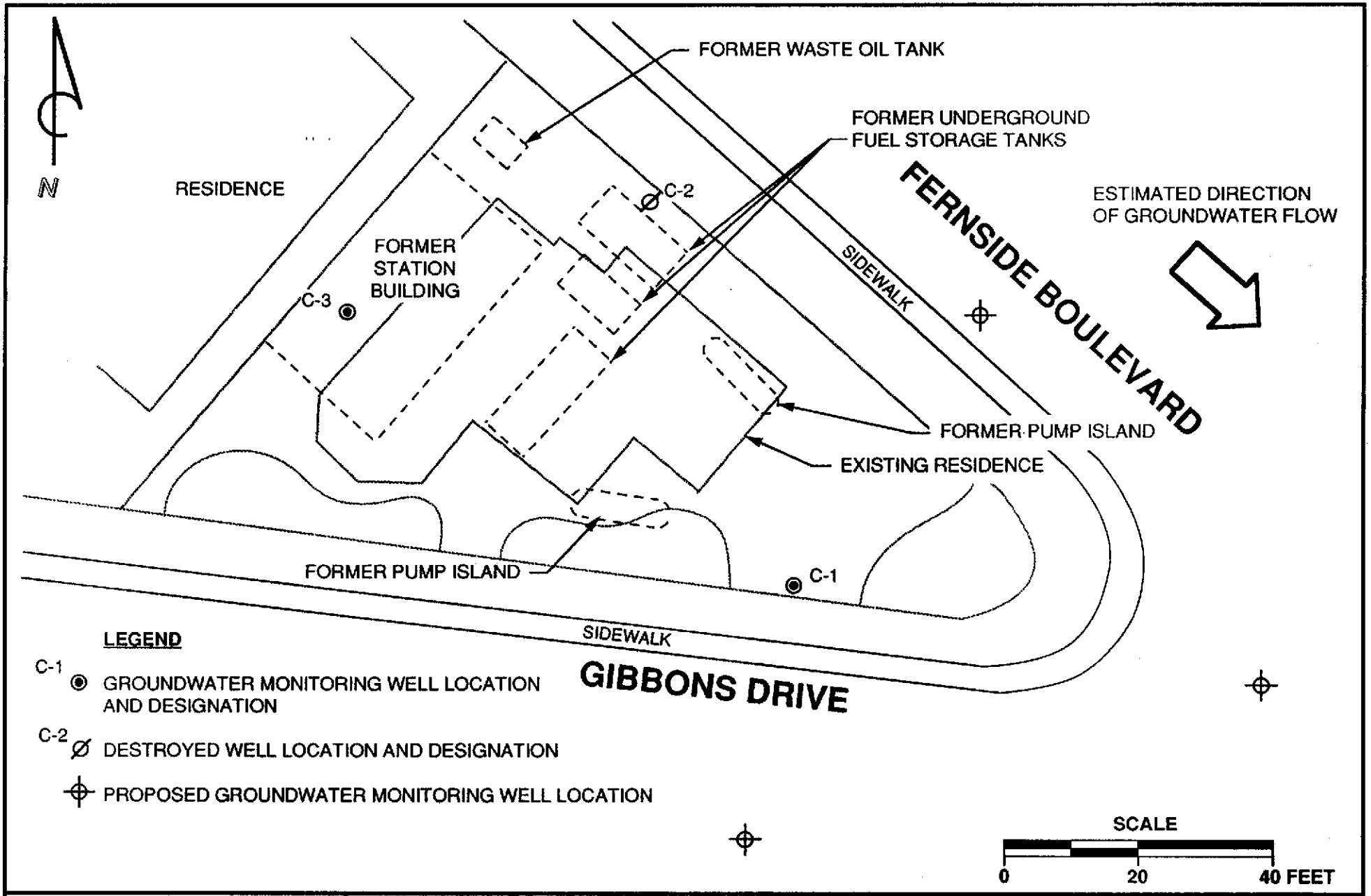
CHEVRON USA STATION 9-1153
3126 Fernside Boulevard at Gibbons Drive
Alameda, California

SITE LOCATION MAP

FIGURE: 1

PROJECT: 325-18.01

SAN JOSE BLUEPRINT CO.



PACIFIC ENVIRONMENTAL GROUP, INC.

FORMER CHEVRON USA STATION 9-1153
3126 Fernside Boulevard at Gibbons Drive
Alameda, California

PROPOSED WELL LOCATION MAP

FIGURE:
2
PROJECT:
325-18.01

01/09/92

ATTACHMENT A

INVESTIGATIVE PROCEDURES

ATTACHMENT A

INVESTIGATIVE PROCEDURES

Exploratory Borings and Monitoring Well Installation

The soil borings will be drilled with eight-inch diameter hollow-stem auger drilling equipment and will be logged by a PACIFIC geologist using the Unified Soil Classification System and standard geologic techniques. Soil samples for logging and chemical analysis will be collected at 5-foot depth intervals and at significant lithologic changes by advancing a California-modified split-spoon sampler with brass liners into undisturbed soil beyond the tip of the auger. The sampler will be driven a maximum of 18 inches using a 140-pound hammer with a 30-inch drop. Soil samples for chemical analysis will be retained in brass liners, wrapped with aluminum foil and plastic end caps, and sealed in clean glass containers. These samples will be placed on ice for transport to the laboratory accompanied by chain-of-custody documentation.

Soil samples collected during drilling will be analyzed in the field for ionizable organic compounds using the H-NU Model PI 101 (or equivalent) photoionization detector with a 10.2 eV lamp. The test procedure involves measuring approximately 30 grams from an undisturbed soil sample, placing this sub-sample in a clean glass jar, and sealing the jar with aluminum foil secured under a ring-type threaded lid. The jar is warmed for approximately 20 minutes, then the foil is pierced and the head-space within the jar is tested for total organic vapor, measured in parts per million as benzene (ppm: volume/volume). The instrument will be calibrated prior to drilling using a 100-ppm isobutylene standard (in air) and a sensitivity factor of 0.7, which relates the photoionization potential of isobutylene (7.0 ppm) to benzene. The results of the field testing will be used as an aid in selecting samples to be analyzed.

The borings to be converted to groundwater monitoring wells will penetrate a maximum of 20 feet into the water-bearing zone, taking care not to penetrate a 5-foot thick aquitard. Two-inch diameter Schedule 40 PVC casing and 0.020-inch factory-slotted screen will then be installed. Graded sand pack will be placed into the annular space across the screen interval, and will extend approximately 2 to 3 feet above the top of the screens. A bentonite and concrete seal will be placed from the top of the sand pack to the ground surface. A locking cap and protective vault box will be installed on the top of each well. The well locations will be noted, and the surface

elevation of each vault box and top of casing will be surveyed to the nearest 0.01 foot based on the mean sea level datum by a licensed surveyor. This information will be used to calculate the groundwater flow direction and gradient.

All downhole drilling equipment will be steam cleaned between borings. Steam cleaning water will be contained in 55-gallon drums and secured at the site pending disposal.

Groundwater Sampling

The wells will be developed after installation by surging and pumping until the water pumped from the well is substantially free of sediment. The wells will not be sampled until at least 24 hours after installation, and will be allowed to recover for 24 hours after development prior to sampling.

Site groundwater monitoring wells will be sampled by first measuring the water level and checking for the presence of separate-phase hydrocarbons using an electronic interface probe. If no separate-phase hydrocarbons are noted, the wells will then be purged a minimum of four casing volumes of water (or until dry) using a centrifugal pump, during which time temperature, pH, and electrical conductivity will be monitored to indicate that a representative groundwater sample has been obtained. After purging, the water levels in the wells will be allowed to partially restabilize before sampling. Groundwater samples will be collected using a Teflon bailer, placed into appropriate EPA-approved containers, labeled, logged onto chain-of-custody documents, and transported on ice to the laboratory. A trip blank and a duplicate water sample will accompany the samples to the laboratory. Well development and purged groundwater will be contained in 55-gallon drums and secured on site pending disposal.

Laboratory Analysis

Groundwater samples and selected soil samples will be analyzed for low-boiling hydrocarbons (calculated as gasoline) including benzene, toluene, ethylbenzene, and xylenes (BTEX compounds). The analyses for low-boiling hydrocarbons will be performed according to Modified EPA Method 8015 by the purge-and-trap technique, with final detection by gas chromatography using a flame-ionization detector and a photoionization detector. The analysis for BTEX compounds will be performed according to EPA Method 8020. Laboratory quality assurance documentation will accompany the laboratory results. Laboratory detection limits will be in accordance with RWQCB minimum detection limits.