GETTLER-RYAN INC.

TRANSMITTAL

TO: Ms. Eva Chu
Alameda County Health Care Serv. Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-65776

DATE: November 24, 1999
PROJECT # 346383.05

SUBJECT: Work Plan for Monitoring Well Installation at Chevron Service Station #9-4800.
1700 Castro St
Oakland

FROM:
Barbara Sieminski
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cc: **Mr. Brett Hunter, Chevron Products Company**
GR File

COMMENTS: Attached is a copy of the Work Plan for your use. Please call if you have questions.

GETTLER-RYAN INC.

WORK PLAN FOR MONITORING WELL INSTALLATION

at

Chevron Service Station #9-4800
1700 Castro Street
Oakland, California

Report No. 346383.05-1

Prepared for:

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November 19, 1999

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WORK PLAN FOR MONITORING WELL INSTALLATION

at

Chevron Service Station #9-4800
1700 Castro Street
Oakland, California

Report No. 346383.05-1

INTRODUCTION

At the request of Chevron Products Company (Chevron), Gettler-Ryan Inc. (GR), has prepared this Work Plan for the installation of one off-site groundwater monitoring well to delineate the extent of the methyl tertiary butyl ether (MTBE) plume downgradient of the subject site. The proposed work includes: preparing the site safety plan; obtaining the required encroachment and well installation permits; installing one off-site groundwater monitoring well; surveying the wellhead elevation; developing and sampling the newly installed well; collecting and submitting selected soil and groundwater samples for laboratory analysis; arranging for Chevron's contractor to dispose of the waste materials; and preparing a report presenting the observations associated with the well installation. This work was requested by the Alameda County Health Care Services Agency (ACHCSA) in their letter dated September 20, 1999.

The scope of work proposed in this Work Plan is intended to comply with the State of California Water Resources Control Board's *Leaking Underground Fuel Tanks (LUFT) Manual* and *California Underground Storage Tank Regulations, 1994*, the Regional Water Quality Control Board's (RWQCB) *Tri-Regional Board Staff Recommendations for Preliminary Investigation and Evaluation of Underground Tank Sites*, and the ACHCSA guidelines.

SITE DESCRIPTION

General

The subject site is an active Chevron Service Station located on the parcel bordered by Castro Street to the northwest, 18th Street to the northeast and 17th Street to the southwest in Oakland, California (Figure 1). Aboveground facilities consists of a station building and five dispenser islands. Four underground storage tanks (USTs) share a common pit located near the northern corner of the site. Site features are shown on Figure 2.

Geology and Hydrogeology

The subject site is located on the western margin of the East Bay Plain, approximately 1 mile north and 2½ east of San Francisco Bay. The site is a relatively flat, asphalt and concrete covered lot at an elevation of approximately 30 feet above mean sea level. As mapped by Helley and others (1979), soil in the site vicinity consists of Pleistocene beach and dune sand deposits (Merrit Sand) consisting of loose well sorted

fine to medium sand. Based on the boring logs from previous environmental investigations, soil materials beneath the site consists of clayey to silty sand to approximately 12.5 feet bgs, overlying fine to medium sand to 29 feet bgs. The sand layer is underlain by a clay layer which extends to the total depth explored of 31.5 feet bgs. Groundwater was encountered in the borings at depths of approximately 24 to 26 feet bgs. Based on the historical groundwater monitoring data, shallow groundwater beneath the site flows to the west at an approximate gradient of 0.006. The nearest surface water is Lake Merrit located approximately ⅔ mile southeast of the site.

Previous Work

Five dispenser islands were upgraded in February 1997. On February 18, 1997, one soil sample was collected beneath each of the five dispenser islands at the depth of 4 feet below ground surface (bgs). These samples (CT-1 through CT-5) were analyzed for Total Petroleum Hydrocarbons as gasoline (TPHg), for Benzene, Toluene, Ethylbenzene, and total Xylenes (BTEX), and for Total Petroleum Hydrocarbons as diesel (TPHd). TPHg (5.9 to 550 parts per million [ppm]) were detected in four samples, TPHd (1.9 to 220 ppm) were detected in four samples, and benzene (0.016 to 15 ppm) were detected in four samples. Highest concentrations of hydrocarbons were detected in samples collected beneath the central and southern dispenser islands.

On February 21 and 22, 1997, GR hand-augered 12 soil borings (CB-1 through CB-12) to the maximum depth of 10 feet bgs to assess the extent of the hydrocarbon impact beneath the site. Groundwater was not encountered in the borings. TPHg were detected in five samples (1.9 to 890 ppm), TPHd were detected in six samples (1.0 to 640 ppm), and benzene was detected in 12 samples (0.011 to 3.0 ppm).

Three groundwater monitoring wells (MW-1 through MW-3) were installed at the site by GR in 1997 and additional three wells ((MW-4 through MW-6) were installed by GR in 1999. Groundwater monitoring and sampling of the site wells has begun in June 1997. Historical sampling data indicate that wells MW-1 through MW-4 have contained TPHg (up to 27,000 parts per billion [ppb]), benzene (up to 2,200 ppb), MTBE (up to 13,000 ppb), and unidentified hydrocarbons in the diesel range reported as TPHd (up to 7,150 ppb). The highest hydrocarbon concentrations have been present in well MW-2 located in the immediate vicinity of the gasoline UST pit. Hydrocarbons have not been detected in wells MW-5 and MW-6, with the exception of diesel-range hydrocarbons (53.8 ppb) detected in well MW-5 in June 1999, and MTBE (5.6 ppb) detected in well MW-6 in April 1999.

PROPOSED SCOPE OF WORK

GR proposes to install one off-site groundwater monitoring well (MW-7) to assess soil and groundwater conditions downgradient of the subject site. GR Field Methods and Procedures are included in Appendix A. To implement this scope of work, GR proposes the following six specific tasks:

Task 1. Pre-Field Activities

Prepare the site-specific safety plan, and obtain the encroachment permit from the City of Oakland and the well installation permit from the Alameda County Public Works Agency. Notify Underground Service Alert (USA) a minimum of 48 hours prior to drilling.

Task 2. Well Installation

Install groundwater monitoring well MW-7 in the location shown on Figure 2. Drilling and well construction activities will be performed by Bay Area Exploration Inc. (C57 #522125). A GR geologist will observe drilling activities, collect soil samples for chemical and physical analyses, describe the encountered soil, and prepare a log of the boring. The well boring will be advanced using 8-inch-diameter hollow-stem augers and truck-mounted drill rig.

Groundwater monitoring well MW-7 will be constructed with 2-inch-diameter Schedule 40 polyvinyl chloride (PVC) well casing and 0.01-inch machine slotted PVC well screen. The screened interval will extend from approximately 10 feet bgs to 30 feet bgs. Proposed Well Construction Details are shown on Figure 3.

Soil from each sampled interval will be screened in the field for the presence of volatile organic compounds using a photoionization detector (PID). These data will be collected for reconnaissance purposes only, and will not be used as verification of the presence or absence of petroleum hydrocarbons. Screening data will be recorded on the boring log.

Soil samples for description and possible chemical and physical analysis will be obtained from the borings at five-foot intervals, as a minimum. Although the actual number of samples submitted for analysis will depend on site conditions and field screening data, we anticipate a minimum of one unsaturated soil sample from the boring will be submitted for analysis as described in Task 5.

Drill cuttings will be stockpiled at the site pending disposal. Stockpiled cuttings will be placed on and covered with plastic sheeting. Four soil samples from the drill cuttings will be collected for disposal characterization as described in Appendix A. These samples will be submitted to the laboratory for compositing into one sample, then analyzed as described in Task 5. Drill cuttings will be disposed of by Integrated Wastestream Management Inc. (IWM).

Task 3. Wellhead Survey

Following installation, the top of casing for well MW-7 will be surveyed to mean sea level by a California-licensed surveyor. Horizontal coordinates of the well location will be obtained at the same time.

Task 4. Well Development and Sampling

Newly installed groundwater monitoring well MW-7 will be developed after being allowed to stand a minimum of 72 hours following installation. Well MW-7 will be sampled after development and subsequently monitored and sampled on a quarterly basis by Blaine Tech Services, Inc. Rinsate water and groundwater purged from the well during development and sampling will be transported by IWM to McKittrick Waste Management. The groundwater samples will be analyzed as described in Task 5.

Task 5. Laboratory Analyses

All samples will be submitted to a California-certified Hazardous Materials Testing Laboratory. Soil and groundwater samples will be analyzed for TPHg, TPHd, BTEX, and MTBE by EPA Methods 8015/8020. In addition, the groundwater sample from the well will be analyzed for oxygenate compounds: MTBE, ethanol, tertiary butanol, di-isopropyl ether (DIPE), ethyl tertiary butyl ether (ETBE) , and tertiary amyl methyl ether (TAME) by EPA Method 8260. Disposal characterization samples from the soil stockpile will be analyzed for TPHg, TPHd and BTEX.

Task 6. Report Preparation

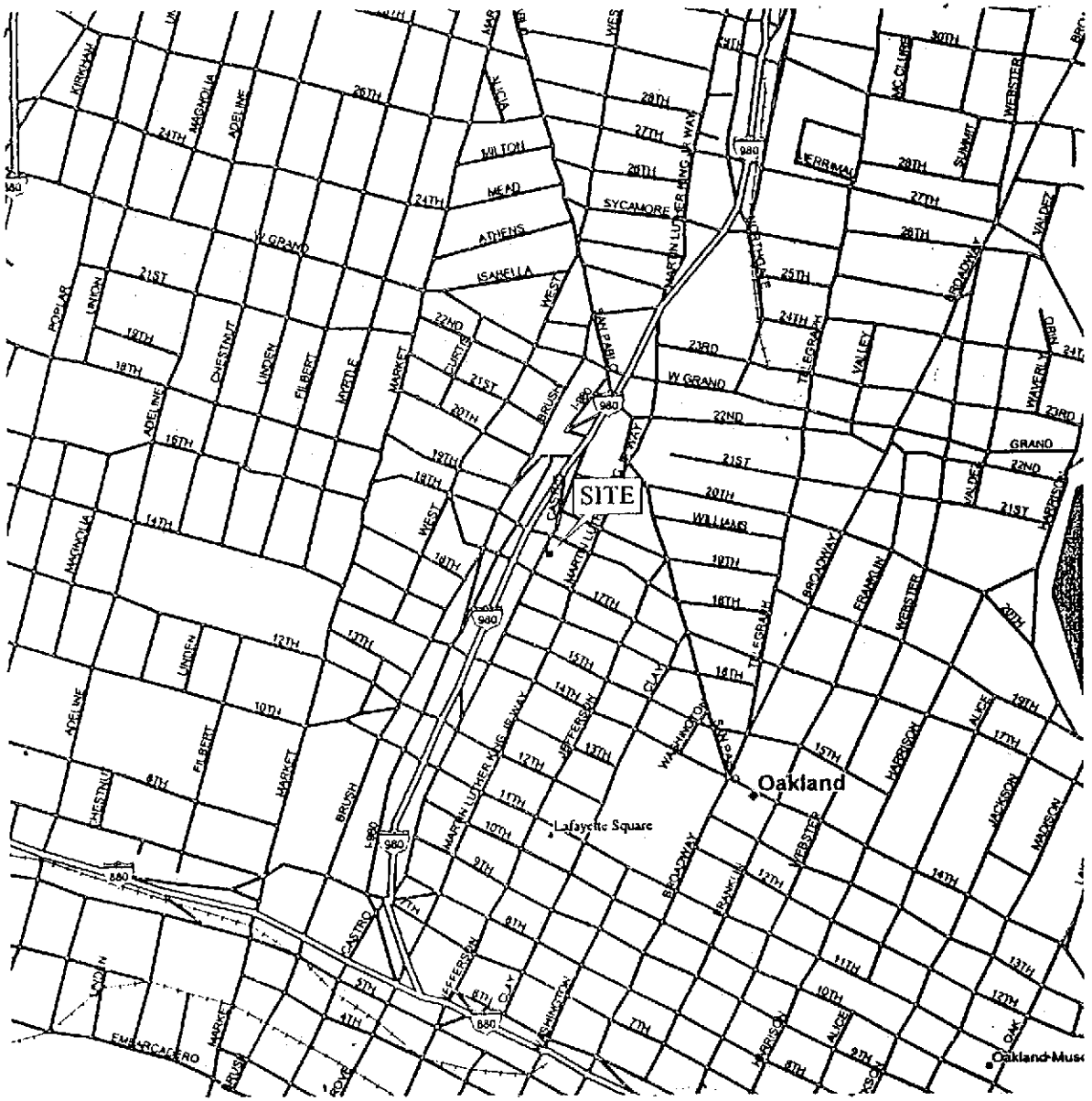
Following receipt and analysis of all data, a report will be prepared which summarizes the procedures and the results associated with this well installation. This report will be submitted to Chevron for their use and distribution.

PROJECT STAFF

Ms. Barbara Sieminski, a Registered Geologist in the State of California (R.G. No. 6676), will provide technical oversight and review of the work. Mr. Greg Gurss, Project Manager, will supervise and direct field and office operations. GR employs a staff of geologist, engineers, and technicians who will assist with the project.

SCHEDULE

Implementation of the proposed scope of work will commence upon receipt of regulatory approval and a well installation permit.



Source: Street Atlas USA, Delorme (1995).

FIGURE 1

Gettler - Ryan Inc.

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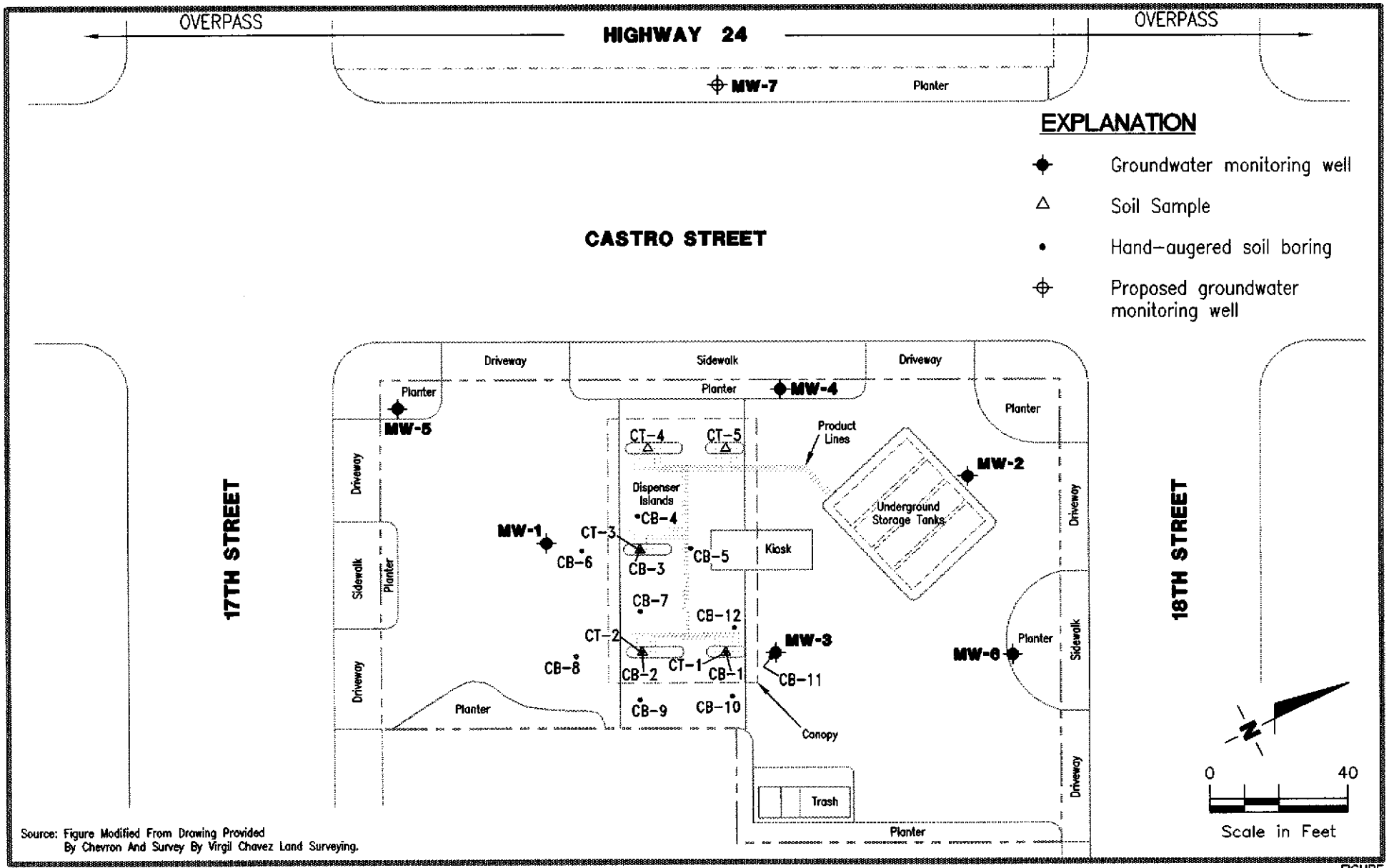
VICINITY MAP
Chevron Service Station No. 9-4800
1700 Castro Street
Oakland, California

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
6383		2/97	



Source: Figure Modified From Drawing Provided By Chevron And Survey By Virgil Chavez Land Surveying.

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SITE PLAN
Chevron Service Station No. 9-4800
1700 Castro Street
Oakland, California

FIGURE
2

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
346383.05		11/99	

GETTLER - RYAN
FIELD METHODS AND PROCEDURES

Site Safety Plan

Field work performed by Gettler-Ryan, Inc. (GR) is conducted in accordance with GR's Health and Safety Plan and the Site Safety Plan. GR personnel and subcontractors who perform work at the site are briefed on the of these plans contents prior to initiating site work. The GR geologist or engineer at the site when the work is performed acts as the Site Safety Officer. GR utilizes a photoionization detector (PID) to monitor ambient conditions as part of the Health and Safety Plan.

Collection of Soil Samples

Exploratory soil borings are drilled by a California-licensed well driller. A GR geologist is present to observe the drilling, collect soil samples for description, physical testing, and chemical analysis, and prepare a log of the exploratory soil boring. Soil samples are collected from the exploratory soil boring with a split-barrel sampler or other appropriate sampling device fitted with clean brass or stainless steel liners. The sampling device is driven approximately 18 inches with a 140-pound hammer falling 30 inches. The number of blows required to advance the sampler each successive 6 inches is recorded on the boring log. The encountered soil is described using the Unified Soil Classification System (ASTM 2488-84) and the Munsell Soil Color Chart.

After removal from the sampling device, soil samples for chemical analysis are covered on both ends with teflon sheeting or aluminum foil, capped, labeled, and placed in a cooler with blue ice for preservation. A chain-of-custody form is initiated in the field and accompanies the selected soil samples to the analytical laboratory. Samples are selected for chemical analysis based on:

a. depth relative to underground storage tanks and existing ground surface
b. depth relative to known or suspected groundwater
c. presence or absence of contaminant migration pathways
d. presence or absence of discoloration or staining
e. presence or absence of obvious gasoline hydrocarbon odors
f. presence or absence of organic vapors detected by headspace analysis

Field Screening of Soil Samples

A PID is used to perform head-space analysis in the field for the presence of organic vapors from the soil sample. This test procedure involves removing some soil from one of the sample tubes not retained for chemical analysis and immediately covering the end of the tube with a plastic cap. The PID probe is inserted into the headspace inside the tube through a hole in the plastic cap. Head-space screening results are recorded on the boring log. Head-space screening procedures are performed and results recorded as reconnaissance data. GR does not consider field screening techniques to be verification of the presence or absence of hydrocarbons.

Stockpile Sampling

Stockpile samples consist of four individual sample liners collected from each 100 cubic yards (yd^3) of stockpiled soil material. Four arbitrary points on the stockpiled material are chosen, and discrete soil sample is collected at each of these points. Each discrete stockpile sample is collected by removing the upper 3 to 6 inches of soil, and then driving the stainless steel or brass tube into the stockpiled material with a wooden mallet or hand driven soil sampling device. The sample tubes are then covered on both ends with teflon sheeting or aluminum foil, capped, labeled, placed in the

Groundwater Monitoring and Sampling

Decontamination Procedures

All physical parameter measuring and sampling equipment are decontaminated prior to sample collection using Alconox or equivalent detergent followed by steam cleaning with deionized water. During field sampling, equipment placed in a well are decontaminated before purging or sampling the next well by cleaning with Alconox or equivalent detergent followed by steam cleaning with deionized water.

Water-Level Measurements

Prior to sampling each well, the static water level is measured using an electric sounder and/or calibrated portable oil-water interface probe. Both static water-level and separate-phase product thickness are measured to the nearest ± 0.01 foot. The presence of separate-phase product is confirmed using a clean, acrylic or polyvinylchloride (PVC) bailer, measured to the nearest ± 0.01 foot with a decimal scale tape. The monofilament line used to lower the bailer is replaced between borings with new line to preclude the possibility of cross-contamination. Field observations (e.g. product color, turbidity, water color, odors, etc.) are noted. Water-levels are measured in wells with known or suspected lowest dissolved chemical concentrations to the highest dissolved concentrations.

Sample Collection and Labeling

A temporary PVC screen is installed in the boring to facilitate a grab groundwater sample collection. Samples of groundwater are collected from the surface of the water in each well or boring using the teflon bailer or a pump. The water samples are then gently poured into laboratory-cleaned containers and sealed with teflon-lined caps, and inspected for air bubbles to check for headspace. The samples are then labeled by an adhesive label, noted in permanent ink, and promptly placed in an ice storage. A Chain-of-Custody Record is initiated and updated throughout handling of the samples, and accompanies the samples to the laboratory certified by the State of California for analyses requested.