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# WORK PLAN FOR MONITORING WELL INSTALLATION

at
Chevron #206127
Former Signal Oil Marine Terminal
2301-2337 Blanding Avenue
Alameda, California

Report No. 346498.02



**Prepared for:**

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**WORK PLAN FOR MONITORING WELL INSTALLATION**
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## INTRODUCTION

At the request of Chevron Products Company (Chevron), Delta Environmental Consultants, Inc./Gettler-Ryan, Inc. (Delta/GR) has prepared this Work Plan for additional subsurface assessment at the subject site. The purpose of this investigation is to evaluate if groundwater beneath the site could be impacting nearby surface water in the Alameda Canal. This work was requested by the Alameda County Health Care Services Agency (ACHCSA) in a letter dated October 15, 1999. The proposed well location is shown on Figure 2.

The proposed scope of work includes: obtaining the required well installation permit from the ACHCSA; preparing a site safety plan; installing one groundwater monitoring well; developing and sampling the new well; and preparing a report which presents the findings of the investigation.

The scope of work described in this work plan is intended to comply with the *Leaking Underground Fuel Tanks (LUFT) Manual* issued by the State of California Water Resources Control Board, the *Tri-Regional Board Staff Recommendations for Preliminary Investigation and Evaluation of Underground Tank Sites* by the California Regional Water Quality Control Board (CRWQCB), and ACHCSA guidelines.

## SITE DESCRIPTION

The site, totaling approximately 3.5 acres, is located on the City of Alameda, Alameda County, California. The site is bounded to the north by the Alameda Canal, to the south by Blanding Avenue, to the east by Park Street and to the west by an industrial property. A Signal Oil and Gas Company Gasoline Distributing Station operated at the site from at least 1930 until about 1961. Since 1987, the site has been used as an office center and boat landing. Existing improvements include office buildings, a paved parking lot, walking paths, landscaping and a concrete seawall and boat slips along the Alameda Canal. Locations of pertinent site features are shown on Figure 2.

## PROPOSED SCOPE OF WORK

Evaluate if groundwater beneath the site could be impacting nearby surface water in the Alameda Canal, Delta/GR proposes to install one groundwater monitoring well as requested by ACHCSA

(Figure 2). Field Methods and Procedures are included in Appendix A. In order to complete the installation of the proposed groundwater monitoring well, Delta/GR proposes the following five tasks:

**Task 1. Pre-Field Activities**

Delta/GR will generate a site-specific safety plan and obtain the necessary well installation permit from the ACHCSA. Underground Service Alert (USA) will be notified a minimum of 48 hours prior to drilling.

**Task 2. Well Installation**

Delta/GR will install one groundwater monitoring well at the location shown on Figure 2. A California licensed well driller will install the well. A Delta/GR geologist will monitor the drilling activities and prepare a boring log. The well will be drilled using 8-inch-diameter hollow-stem augers. The well will be constructed of 2-inch-diameter Schedule 40 polyvinyl chloride (PVC) well casing and 0.02-inch machine-slotted well screen. The well will be installed in a 19-foot deep boring with a screened interval from 4 to 19 feet below ground surface (bgs). Proposed well construction details are presented in Figure 3.

Soil samples for description and possible chemical analysis will be obtained from the boring at five-foot intervals, as a minimum. Soil samples will be collected with a split-spoon sampler fitted with clean brass sample rings. The actual number of samples submitted for chemical analysis will depend on site conditions and field screening data. As a minimum, it is expected that one unsaturated soil sample will be submitted for chemical analysis as described in Task 5.

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

Drill cuttings will be stockpiled at the site pending receipt of chemical analytical data. The drill cuttings will be stockpiled on and covered with plastic sheeting pending disposal. Four soil samples of the drill cuttings will be collected for disposal characterization. The samples will be submitted to the laboratory for compositing into one sample and then analyzed as described in Task 5. Steam cleaning rinsate wastewater will be transported by IWM to McKittrick Waste Management for disposal.

**Task 3. Well Development and Sampling**

Delta/GR will develop the newly installed groundwater monitoring well after it has been allowed to stand a minimum of 72 hours following installation. Groundwater removed from well during development and sampling will be transported by IWM to McKittrick Waste Management for disposal. Immediately following development, groundwater samples will be collected from the well.

**Task 4. Laboratory Analyses**

Selected soil and groundwater samples will be submitted for chemical analyses by Sequoia Analytical, a California state-certified Hazardous Material Testing Laboratory (ELAP #1210, #1271, and #1624). Samples will be analyzed for Total Petroleum Hydrocarbons as gasoline and diesel (TPHg and TPHd) by Environmental Protection Agency (EPA) Method 8015, benzene, toluene, ethylbenzene, and total xylenes (BTEX) and methyl tert-butyl ether (MTBE) by EPA Method 8020. The stockpile soil sample will be analyzed for TPHg, BTEX, and total lead by EPA Method 6010.

**Task 5. Report Preparation**

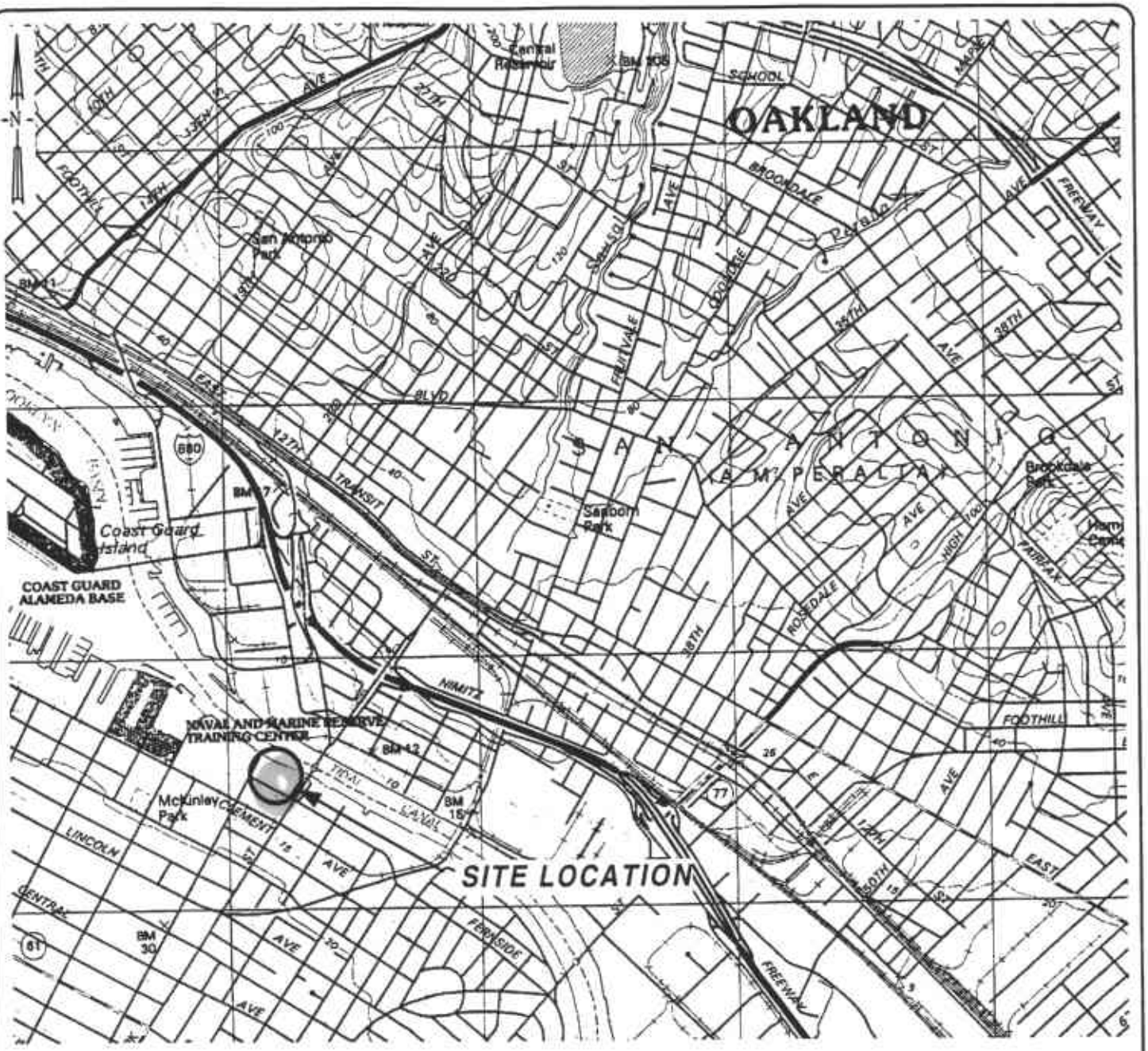
Following receipt and analysis of all data, a report will be prepared summarizing the procedures and findings associated with this investigation. This report will be submitted to Chevron for their use and distribution.

**PROJECT STAFF**

Mr. Stephen J. Carter, a Registered Geologist in the State of California (R.G. No. 5577) will provide technical oversight and review of the work. Mr. Greg A. Gurss, Senior Project Manager, will supervise implementation of field and office operations. Delta/GR employs a staff of geologists, engineers, and technicians who will assist with the project.

**SCHEDULE**

Implementation of the proposed scope of work will commence upon receipt of regulatory approval.




QUADRANGLE LOCATION

**Reference:**
USGS 7.5 MIN. TOPOGRAPHIC MAP
TITLED: OAKLAND EAST, CALIFORNIA
REVISED: 1997

RRM
engineering contracting firm

SCALE: 0 FEET 2000

DRAWN BY:

DATE: April 23, 1999

# SITE LOCATION MAP

**FORMER SIGNAL OIL MARINE TERMINAL**
2301-2332 Blanding Avenue
Alameda, California

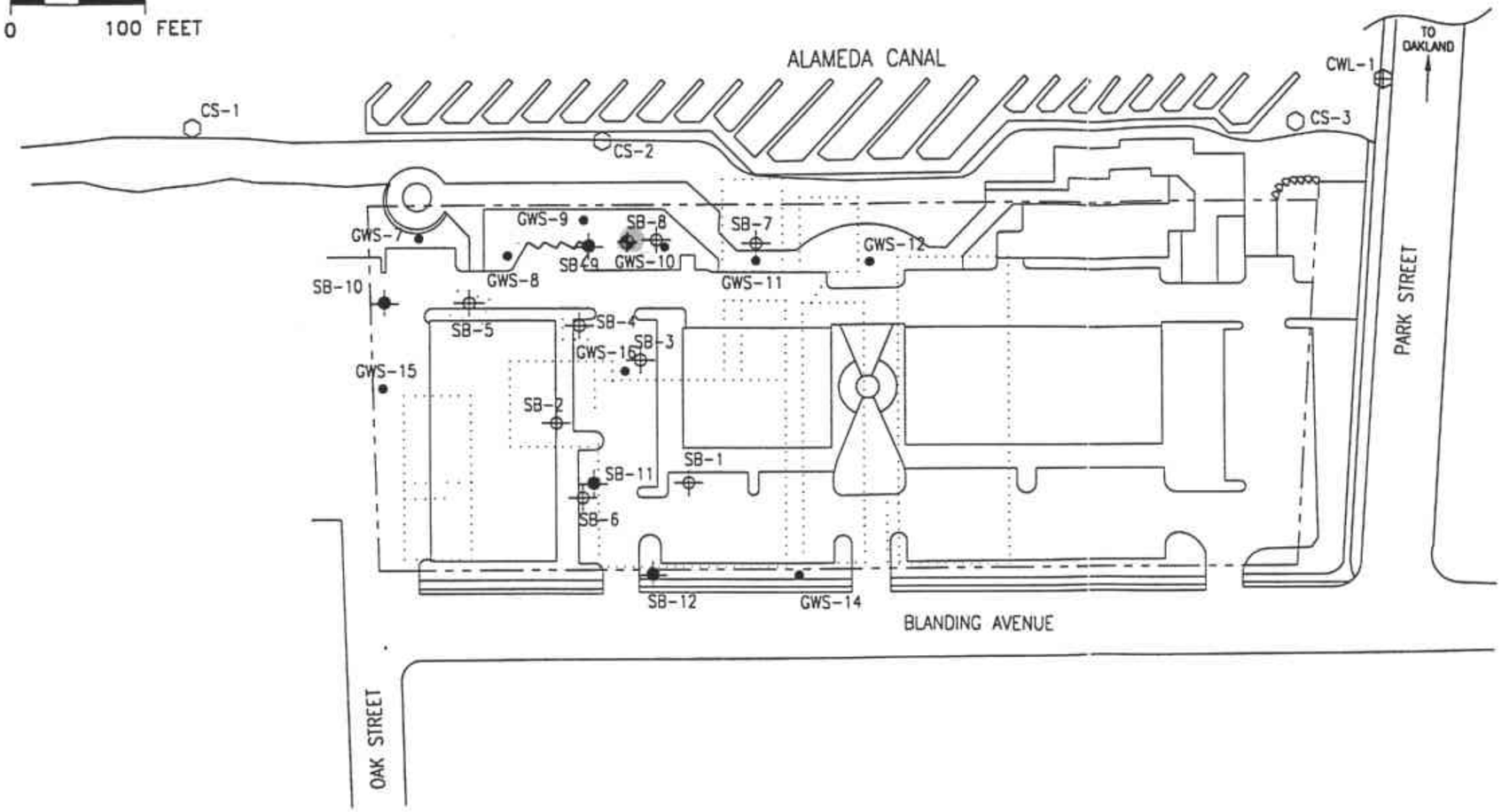
FIGURE 1

PROJECT AA46

N

SCALE

0 100 FEET




EXPLANATION

- SOIL BORING (RRM, OCT. 1998)
- SOIL BORING (Pre-OCT. 1998)
- SHALLOW GROUNDWATER SURVEY POINT (GEOMATRIX, APRIL 1995)
- CANAL GRAB SURFACE WATER SAMPLE (RRM, OCT. 1998)
- CANAL WATER LEVEL GAUGING STATION FROM PARK STREET BRIDGE (RRM, OCT. 1998)
- SITE FEATURES NOTED ON A 1932 SANBORN FIRE INSURANCE MAP
- Proposed Groundwater Monitoring Well

Ref. AA46/Stamp100.dwg
Basemap from Geomatrix

PREPARED BY
RRM
engineering contracting firm

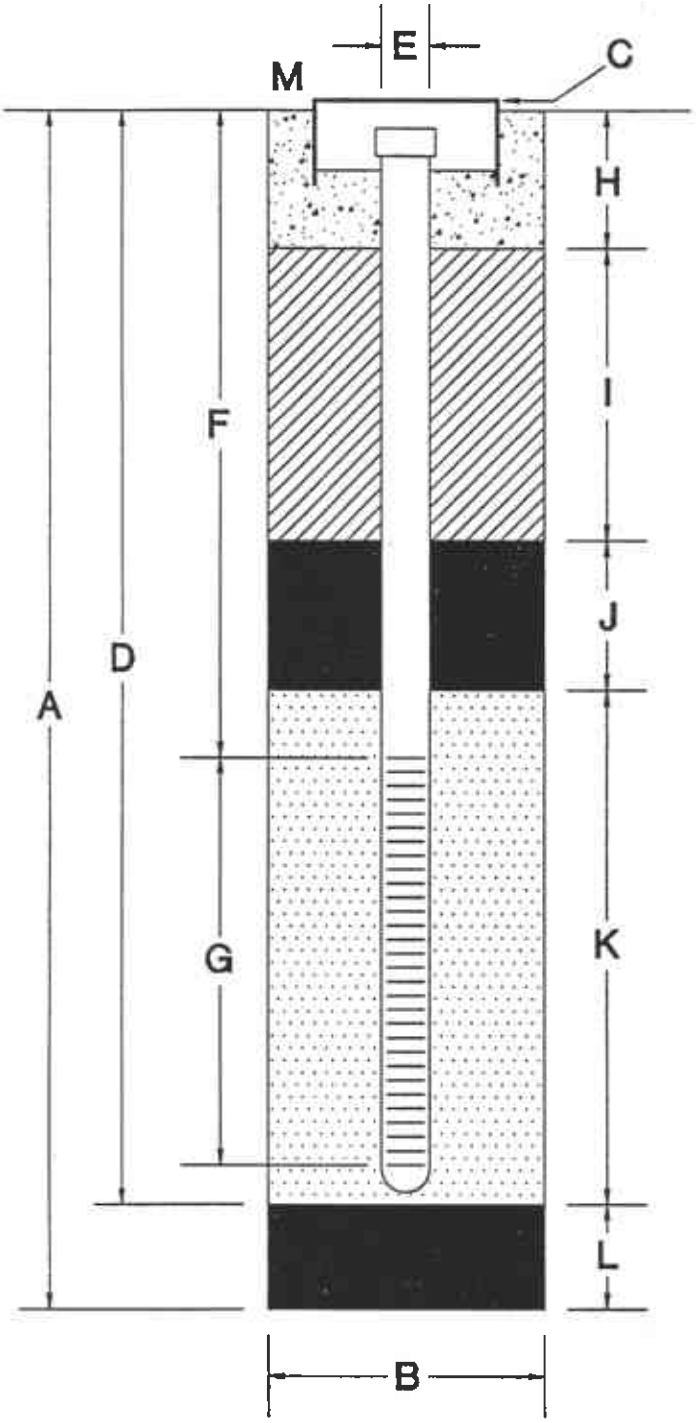
FORMER SIGNAL OIL MARINE TERMINAL
2301-2332 Blanding Avenue
Alameda, California

SOIL BORING LOCATION MAP

FIGURE: 2

PROJECT: AA46

# WELL CONSTRUCTION DETAIL




**A** Total Depth of Boring – 19 ft.

**B** Diameter of Boring – 8 in.
Drilling Method – Hollow-Stem Auger

**C** Top of Box Elevation – ft.

**D** Casing Length – 19 ft.
Material – Schedule 40 PVC

**E** Casing Diameter – 2 in.

**F** Depth to Top Perforations – 4 ft.

**G** Perforated Length – 15 ft.
Perforated Interval from 4 to 19 ft.
Perforation Type – Machine Slotted
Perforation Size – 0.02 in.

**H** Surface Seal From 0 to 1 ft.
Seal Material – Concrete

**I** Backfill From 1 to 3 ft.
Backfill Material – Neat Cement

**J** Seal From 3 to 4 ft.
Seal Material – Bentonite

**K** Gravel Pack From 4 to 19 ft.
Pack Material – Lonestar #3

**L** Bottom Seal – None

**M** Vault box, locking well cap, and lock

Note: Depths Measured From Initial Ground Surface.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**Proposed Well Construction Detail**
Chevron #206127, Former Signal Oil Marine Terminal
2301-2337 Blanding Avenue
Alameda, California

FIGURE
**3**

| JOB NUMBER | REVIEWED BY | DATE | REVISION DATE |
|---|---|---|---|
| 346498 | | 1/00 | |

# GETTLER-RYAN INC.

# 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 contents of these plans 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

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 soil boring with a split-barrel sampling device fitted with 2-inch-diameter, clean brass tube 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 soils are 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 place 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 in part on:

a. depth relative to underground storage tanks and existing ground surface
b. depth relative to known or suspected groundwater
c. depth relative to areas of known hydrocarbon impact at the site
d. presence or absence of contaminant migration pathways
e. presence or absence of discoloration or staining
f. presence or absence of obvious gasoline hydrocarbon odors
g. 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.

## Construction of Monitoring Wells

Monitoring wells are constructed in the exploratory soil borings with Schedule 40 polyvinyl chloride (PVC) casing. All joints are thread-joined; no glues, cements, or solvents are used in well construction. The screened interval is constructed of machine-slotted PVC well screen which generally extends from the total well depth to a point above the groundwater. An appropriately-sized sorted sand is placed in the annular space adjacent to the entire screened interval. A bentonite transition seal is placed in the annular space above the sand, and the remaining annular space is sealed with neat cement or cement grout.

Wellheads are protected with water-resistant traffic-rated vault boxes placed flush with the ground surface. The top of the well casing is sealed with a locking waterproof cap. A lock is placed on the well cap to prevent vandalism and unintentional introduction of materials into the well.

## Measurement of Water Levels

The top of the newly-installed well casing is surveyed by a California-licensed Land Surveyor to mean sea level (MSL). Depth-to-groundwater in the well is measured from the top of the well casing with an electronic water-level indicator. Depth-to-groundwater is measured to the nearest 0.01-foot, and referenced to MSL.

## Well Development and Sampling

The purpose of well development is to improve hydraulic communication between the well and the surrounding aquifer. Prior to development, each well is monitored for the presence of floating product and the depth-to-water is recorded. Wells are then developed by alternately surging the well with a vented surge block, then purging the well with a pump or bailer to remove accumulated sediments and draw groundwater into the well. Development continues until the groundwater parameters (temperature, pH, and conductivity) have stabilized.

## Storing and Sampling of Drill Cuttings

Drill cuttings are stockpiled on and covered with plastic sheeting and samples are collected and analyzed for disposal classification on the basis of one composite sample per 100 cubic yards of soil. Stockpile samples are composed of four discrete soil samples, each collected from an arbitrary location on the stockpile. The four discrete samples are then composited in the laboratory prior to analysis.

Each discrete stockpile sample is collected by removing the upper 3 to 6 inches of soil, and them driving the stainless steel or brass sample tube into the stockpiled material with a hand, mallet, or drive sampler. The sample tubes are then 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. Stockpiled soils are covered with plastic sheeting after completion of sampling.