GETTLER-RYAN INC.

WORK PLAN FOR MONITORING WELL INSTALLATION

at

Former Chevron Service Station #9-0517
3900 Piedmont Avenue
Oakland, California

Report No. 6420.02-1

Prepared for:

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INTRODUCTION

At the request of Chevron Products Company (Chevron), Gettler-Ryan Inc. (GR) has prepared this Work Plan for the installation of monitoring wells to evaluate the extent of petroleum hydrocarbon impact to soil and groundwater beneath the subject site (Figure 1). The proposed scope of work includes: obtaining the necessary well installation permit from the Alameda County Public Works Agency (ACPWA); preparing a site specific health and safety plan; drilling four soil borings and installing groundwater monitoring wells in these borings; developing and sampling the newly installed groundwater monitoring wells; collecting and submitting selected soil and groundwater samples for analyses; surveying all wellhead elevations; and preparing a report which presents the findings of the investigation.

The scope of work described in this report 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 California Regional Water Quality Control Board (CRWQCB) *Tri-Regional Board Staff Recommendations for Preliminary Investigation and Evaluation of Underground Tank Sites*, and ACPWA and Alameda County Health Care Services (ACHCS) guidelines.

SITE DESCRIPTION

The site is situated on the corner of Piedmont Avenue and Montell Street in Oakland, California. The station facilities have been removed and a First Nationwide Bank building now occupies the site. Locations of the current site features are shown on Figure 2.

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PREVIOUS ENVIRONMENTAL WORK

Chevron operated a service station at this location until 1978, when the station was demolished and underground storage tanks (USTs), dispenser islands, and associated product piping were removed. Data pertaining to the station demolition and UST removal were not available for inclusion in this report.

In October 1993, Environmental Science and Engineering, Inc. (ESE) conducted a soil and groundwater investigation to evaluate petroleum hydrocarbon impact beneath the site. Eight soil borings (FNBO-1 through FNBO-8) were drilled at the site. Eleven soil samples collected from depths between six and eleven feet below ground surface (bgs) were submitted for analysis. Soil samples were analyzed for Total Recoverable Petroleum Hydrocarbons (TRPH), Total Petroleum Hydrocarbons as gasoline (TPHg), Total Petroleum Hydrocarbons as diesel (TPHd), and the gasoline constituents benzene, toluene, ethylbenzene, and total xylenes (BTEX). Five of the eleven soil samples were analyzed for volatile organic compounds (VOCs).

TRPH were detected in five of the eleven soil samples analyzed ranging in concentrations of 10 to 350 parts per million (ppm). TPHg were detected in eight of the eleven soil samples ranging in concentrations of 1.4 to 3,400 ppm. Benzene was detected in two samples at concentrations of 0.03 and 1.0 ppm. VOCs were not detected in those soil samples analyzed.

One grab groundwater sample was collected from boring FNBO-6. TRPH (2,800 ppb), TPHg (7,800 ppb), and benzene (7.7 ppb) concentrations were detected in this grab groundwater sample. Volatile organic compounds acetone (30 ppb) and carbon disulfide (33 ppb) were also detected.

SCOPE OF WORK

To evaluate the extent of petroleum hydrocarbon impact to soil and groundwater beneath the site, GR proposes to install four groundwater monitoring wells at the locations shown on Figure 2. For this work plan, GR assumes groundwater will be encountered approximately 11 feet bgs. GR's Field Methods and Procedures are included in Appendix A.

To implement this scope of work, GR proposes the following six tasks:

Task 1. Pre-field Activities

GR will prepare a site specific health and safety plan and obtain the necessary monitoring well installation permit from the ACPWA. Underground Service Alert (USA) will be notified 48 hours in advance of the scheduled work. A private line locator will be contracted to locate on-site subsurface utilities.

Task 2. Soil Borings and Well Installation

GR will install four groundwater monitoring wells at the locations shown on Figure 2. Drilling and well construction will be performed by Bay Area Exploration, Inc. (C57 #522125). A GR geologist will monitor the drilling activities and prepare a log of each boring. Well borings will be drilled with 8-inch diameter hollow-stem augers to approximately 20 feet bgs. Soil samples for description and possible chemical analysis will be obtained from each boring at five-foot intervals, as a minimum. Although the actual number of samples submitted for chemical analysis will depend on site conditions and field screening data, we anticipate a minimum of one soil sample collected from above groundwater in each boring 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). 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 logs.

Groundwater monitoring wells will be constructed with 2-inch-diameter Schedule 40 polyvinyl chloride (PVC) well casing and 0.02-inch machine-slotted well screen, as shown on the Proposed Well Construction Detail (Figure 3). The wells will be constructed with 15 feet of screen (5 to 20 feet bgs). Actual screen intervals will depend on the groundwater depth and lithologic conditions encountered during drilling.

The drill cuttings will be stockpiled on and covered with plastic sheeting pending disposal. Soil samples from the drill cuttings will be collected for disposal characterization. These samples will be composited in the laboratory and analyzed as described in Task 5.

Task 3. Well Development and Sampling

Newly installed groundwater monitoring wells will be developed after being allowed to stand a minimum of 72 hours following completion. During development, the clarity of the discharged well water and selected groundwater parameters (pH, temperature, conductivity) will be monitored. When the discharge water runs clear and the groundwater parameters have stabilized, a groundwater sample will be collected. Groundwater samples will be analyzed as described in Task 5.

Task 4. Wellhead Survey

Following installation, the elevations of each top of well casing will be surveyed to mean sea level by Virgil Chavez Land Surveying (P.L.S. No. 6323). Horizontal coordinates will also be included in the surveyor's report.

Task 5. Laboratory Analyses

Soil and groundwater samples will be submitted for chemical analysis by a California state-certified Hazardous Material Testing Laboratory. Selected soil samples will be analyzed for TPHg by Environmental Protection Agency (EPA) Method 8015 (Modified), and for gasoline constituents benzene, toluene, ethylbenzene, total xylenes (BTEX) and methyl tert-butyl ether (MTBE) by EPA Method 8020. Groundwater samples will also be analyzed for TPHg, BTEX, and MTBE. The sample of the drill cuttings will be analyzed for TPHg and BTEX.

Task 6. Report Preparation

Following receipt and analysis of all data, a report will be prepared which summarizes 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 Gurss, Project Manager, will supervise implementation of field and office operations. 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.

Source: Street Atlas USA, Delorme (1995).

FIGURE 1

Gettler - Ryan Inc.

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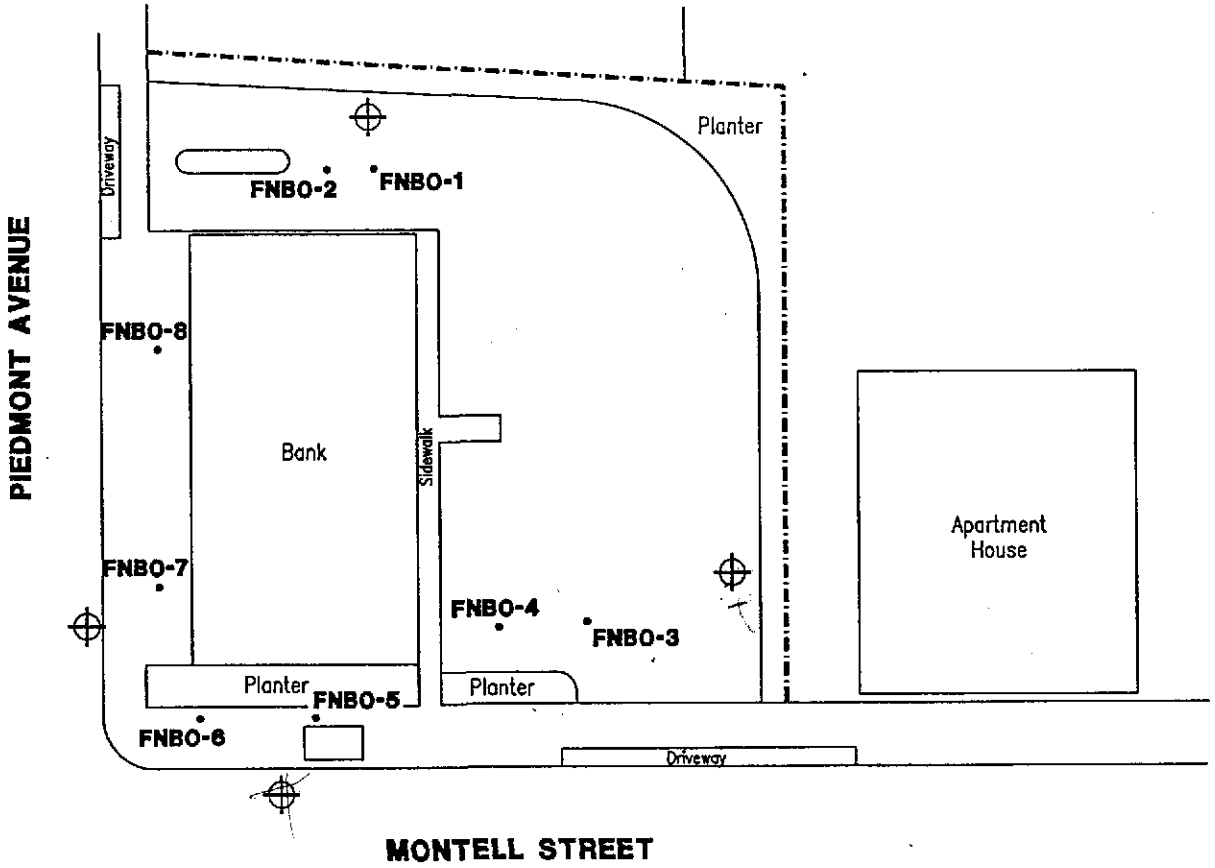
VICINITY MAP
First Nationwide Bank
3900 Piedmont Avenue
Oakland, California

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
6420		12/97	



EXPLANATION:

FNBO-8 • Soil Boring

⊕ Proposed Groundwater Monitoring Well

N

0 30

Scale in Feet

Source: Figure Modified From Drawing Provided By Cambria Environmental.

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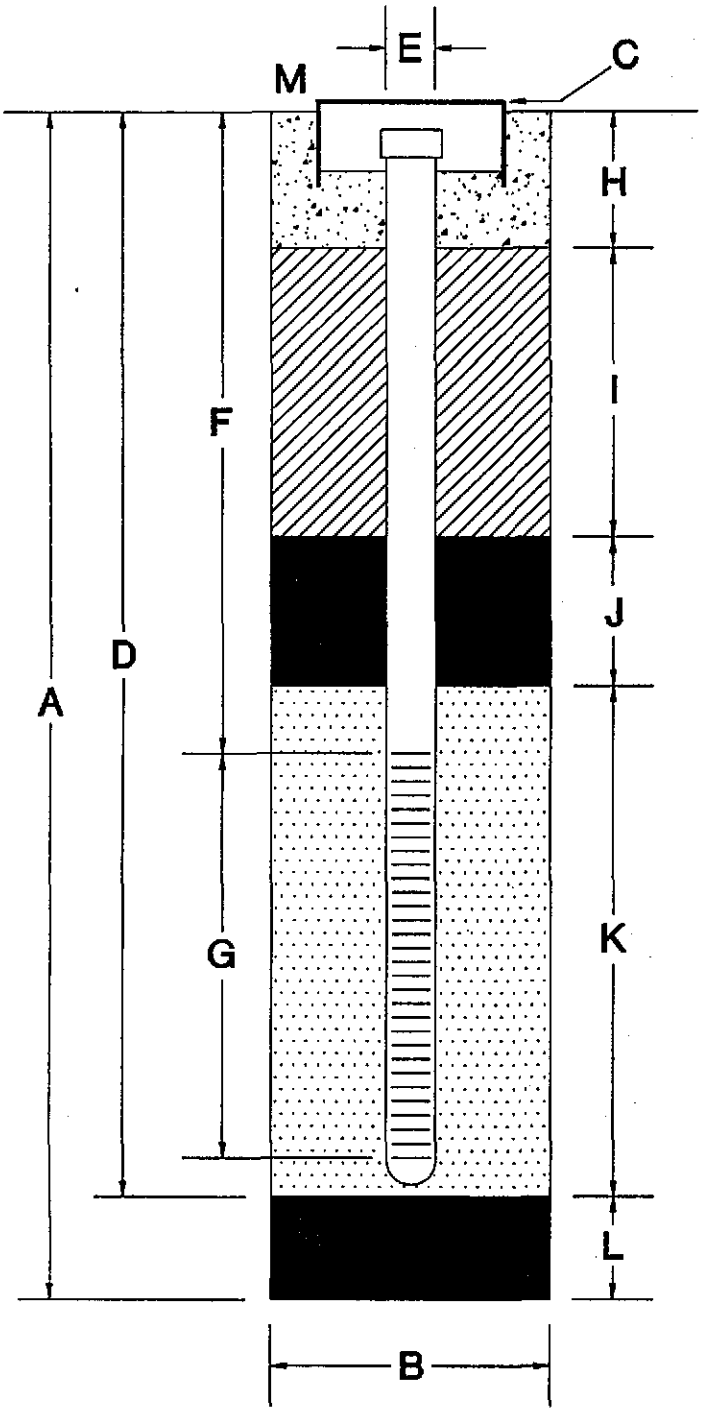
SITE PLAN
First Nationwide Bank
3900 Piedmont Avenue
Oakland, California

FIGURE
2

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
6420		12/97	

WELL CONSTRUCTION DETAIL



A Total Depth Of Boring 20 ft.

B Diameter Of Boring 8 in.
Drilling Method Hollow-stem Auger

C Top Of Box Elevation _____ ft.
☐ Referenced To Mean Sea Level
☐ Referenced To Project Datum

D Casing Length 20 ft.
Material Schedule 40 PVC

E Casing Diameter 2 in.

F Depth To Top Perforations 5 ft.

G Perforated Length 15 ft.
Perforated Interval From 5 to 20 ft.
Perforation Type Machine slotted
Perforation Size 0.02 in.

H Surface Seal From 0.0 to 0.5 ft.
Seal Material Concrete

I Backfill From 0.5 to 3.0 ft.
Backfill Material Neat Cement

J Seal From 3.0 to 4.0 ft.
Seal Material Bentonite

K Gravel Pack From 4.0 to 20 ft.
Pack Material Lonstar #3

L Bottom Seal _____ ft.
Seal Material _____

M Vault box with locking cap and lock.

PROPOSED MONITORING WELL DETAIL
Former Chevron Station #9-0517
3900 Piedmont Avenue
Oakland, California

Note: Depths Measured From Initial Ground Surface.

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FIGURE 3

JOB NUMBER	REVIEWED BY	DATE	REVISION DATE
6420		12/97	

APPENDIX A

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 (revised January 16, 1995) 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 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. A plastic cap is placed over the end of the sample tube that will not be saved for chemical analyses. The PID probe is placed through a hole in the cap, and the concentrations of organic vapors in the headspace between the plastic cap and the soil is recorded. PID screening results are recorded on the boring log 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 adjacent to the entire screened interval. A bentonite 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. After the wells have been developed, groundwater samples are collected. Well development and sampling is performed by Gettler-Ryan Inc. of Dublin, California.

Storing and Sampling of Drill Cuttings

Drill cuttings are stockpiled on plastic sheeting and samples are collected and analyzed 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.