
**WORK PLAN
FOR A
GROUNDWATER INVESTIGATION
6050 Hollis Street
Emeryville, California**

Prepared for:

**Hollis Street Project
Emeryville, California**

June 1991

Prepared by:

**BASELINE ENVIRONMENTAL CONSULTING
5900 Hollis Street, Suite D
Emeryville, California 94608
(415) 420-8686**

S9-105

BASELINE

ENVIRONMENTAL CONSULTING

28 June 91
S9-105

Mr. Dennis Byrnes
Alameda County
Hazardous Materials Department
80 Swan Way, Room 200
Oakland, CA 94621

Subject: Work Plan for Groundwater Investigation at 6050 Hollis Street, Emeryville, California

Dear Mr. Byrnes:

Enclosed please find a Work Plan for a groundwater investigation at the former location of an underground fuel tank at 6050 Hollis Street, Emeryville, California. Following your review and approval of the plan, we will commence work. If you have any questions or comments regarding the work plan, please call us at your convenience.

Sincerely,



Yane Nordhav
Principal
Reg. Geologist No. 4009

YN/my:S91b

Enclosures

cc: Francis Collins, Hollis Street Project
Howard Goldenberg, Hollis Street Project
Mr. Thomas Callaghan, S.F. RWQCB

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**WORK PLAN FOR A
GROUNDWATER INVESTIGATION
6050 Hollis Street
Emeryville, California**

INTRODUCTION

BASELINE Environmental Consulting has been retained by Mr. Francis Collins of the Hollis Street Project to install two groundwater monitoring wells at 6050 Hollis Street, Emeryville (Figure 1).

One underground gasoline tank was removed from the site in 1987. Observations made during the removal of the tank and the analytical results of soil samples collected from the excavation indicated that a release of hydrocarbons had occurred. The site is currently occupied by offices and the former tank location is a parking lot.

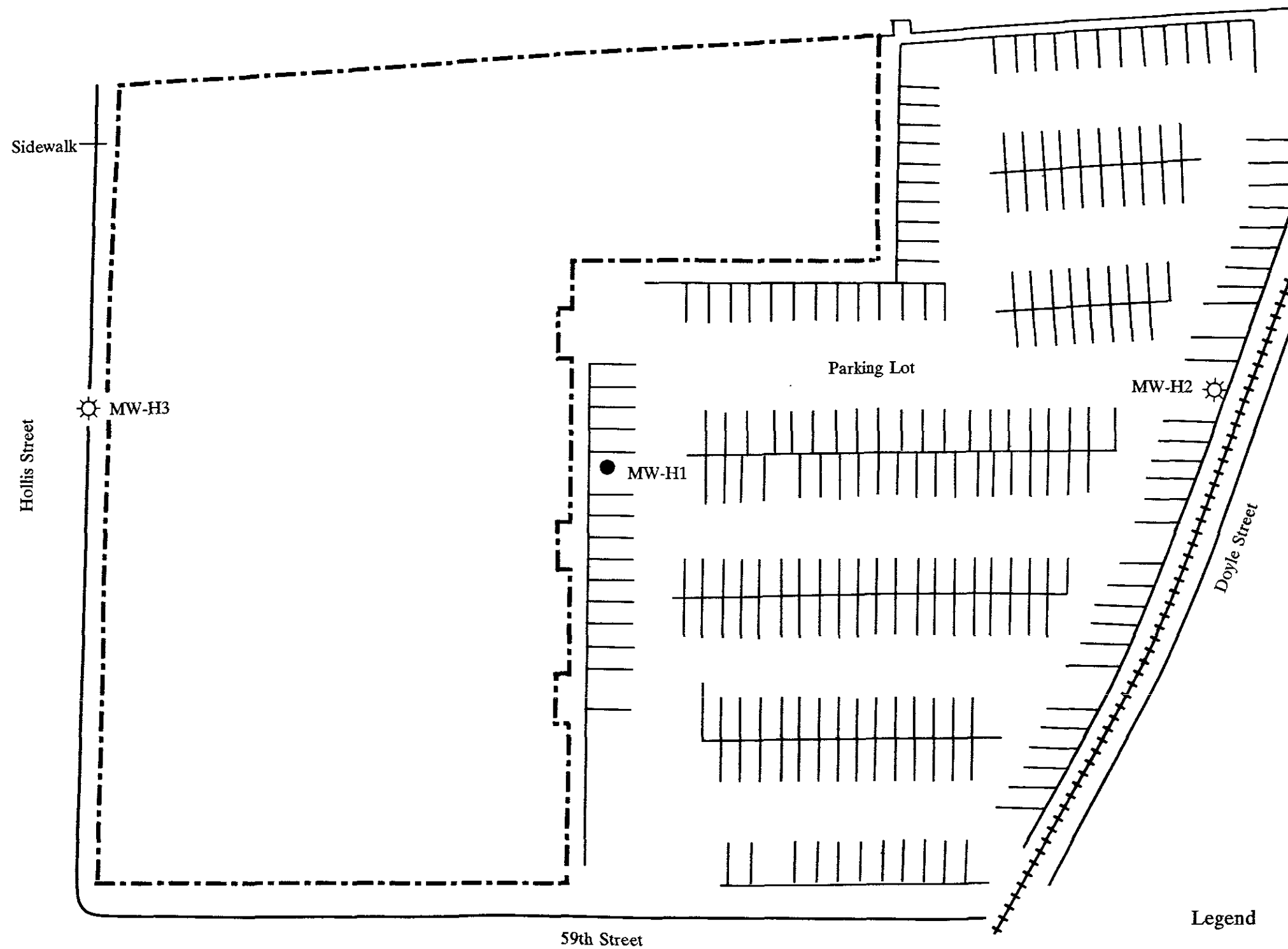
This report provides background information and recommends implementation of a preliminary groundwater investigation. The results of these activities would form the basis for conclusions regarding the groundwater quality at the site, the groundwater flow direction and lateral gradient. Data obtained from this phase of the work would also be used to design a remediation/feasibility plan. The proposed groundwater investigation is preliminary in nature and, depending on the findings, additional work may be recommended to delineate the extent of groundwater contamination.

BACKGROUND

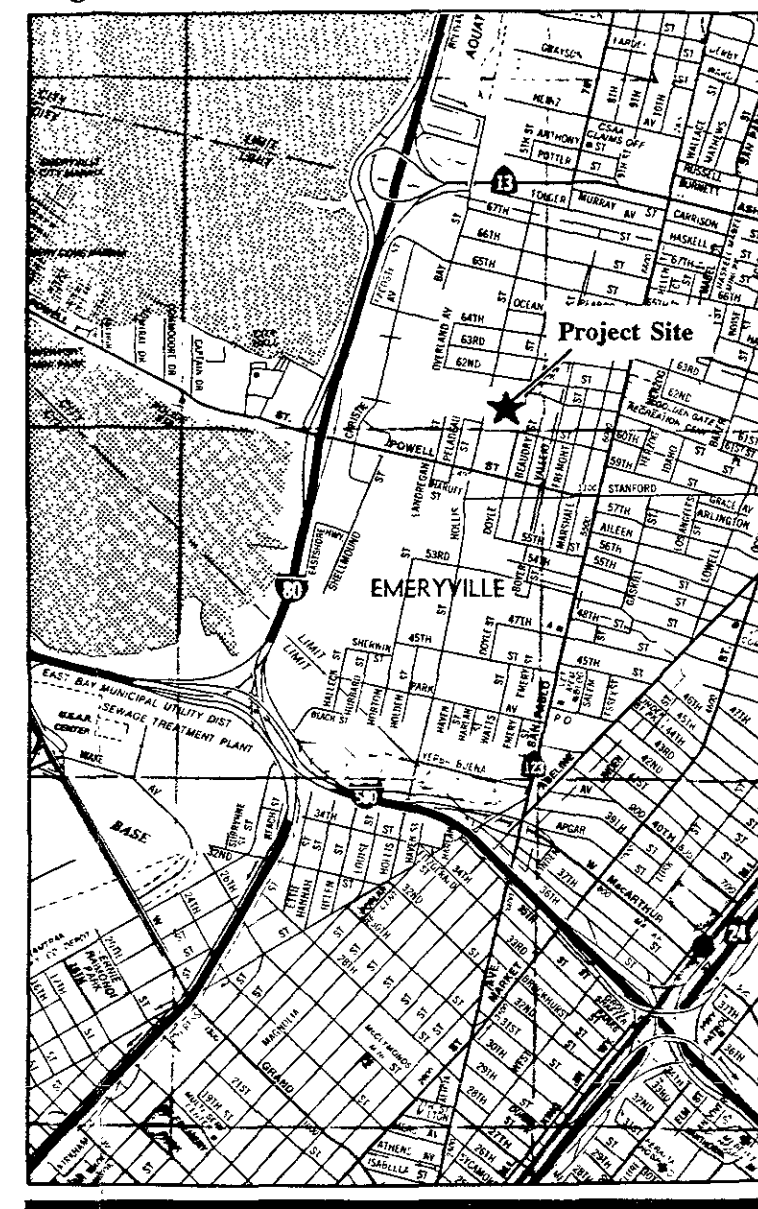
In 1987, a 500-gallon underground fuel storage tank was removed from the site (Figure 1). One soil sample was collected by Brown and Caldwell Laboratories at the northeast corner of the pit. The sample was analyzed for total petroleum hydrocarbons (TPH) and benzene, toluene, and xylenes (BTX). TPH was found at 1,700 mg/kg (no speciation) and BTX was identified above detection limits. In response to these results, the property owner excavated additional material and two soil samples were collected following excavation activities at depths of 10 to 11 feet below the ground surface; the samples were analyzed for TPH and BTX. One sample did not contain compounds above detection limits; the second sample contained benzene and xylenes above detection limits and TPH was identified at a concentration of 95 mg/kg. ✓

SITE PLAN
6050 Hollis Street
Emeryville, California

Figure 1

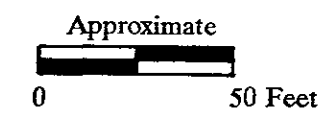


Regional Location



Legend

- MW-H1 ● Existing Monitoring Well
- MW-H2 ☼ Proposed Monitoring Well
- +----- Railroad Track



BASELINE

In response to these results, one groundwater monitoring well was installed downgradient from the former tank location (Figure 1). This well was sampled for a period of two years on a quarterly basis. During the monitoring period, gasoline and BTXE were identified intermittently (Table 1).

To further evaluate the extent of groundwater contamination, this work plan describes the methods for installation and sampling of two additional groundwater monitoring wells (Figure 1).

PROPOSED WORK PLAN

The identification of an unauthorized release from the gasoline storage tank at the site requires additional investigation of the potential impact to groundwater quality near the former tank location to conform with regulatory requirements. The following recommendations are made as part of this work plan:

1. Two monitoring wells would be installed at the approximate locations shown in Figure 2. One well would be placed in a presumed downgradient position of the former tank excavation to determine whether the shallow groundwater quality has been affected downgradient from the existing monitoring well. This well would be placed in the Hollis Street right-of-way following permitting from the City of Emeryville. The second, proposed well would be located upgradient from the former tank location to allow for determination of lateral groundwater gradient and evaluation of the groundwater quality entering the site.

The wells would be constructed with 2-inch PVC pipe casing and machine-slotted well screen. Due to the fine-grained nature of the subsurface materials anticipated at the site, a 0.010-inch slot screen and a fine sand filter pack would be installed. The wells would be installed in a nominal 8-inch boring advanced with hollow-stem augers. The sand filter and a 2-foot thick bentonite seal would be tremied into the annular space between the borehole and well through the hollow-stem augers. The remainder of the annular space would be filled with a cement-bentonite grout. The well heads would be accessible to authorized personnel through a manhole cover and a padlocked watertight well cap. A typical well construction diagram is shown in Figure 2.

TABLE 1

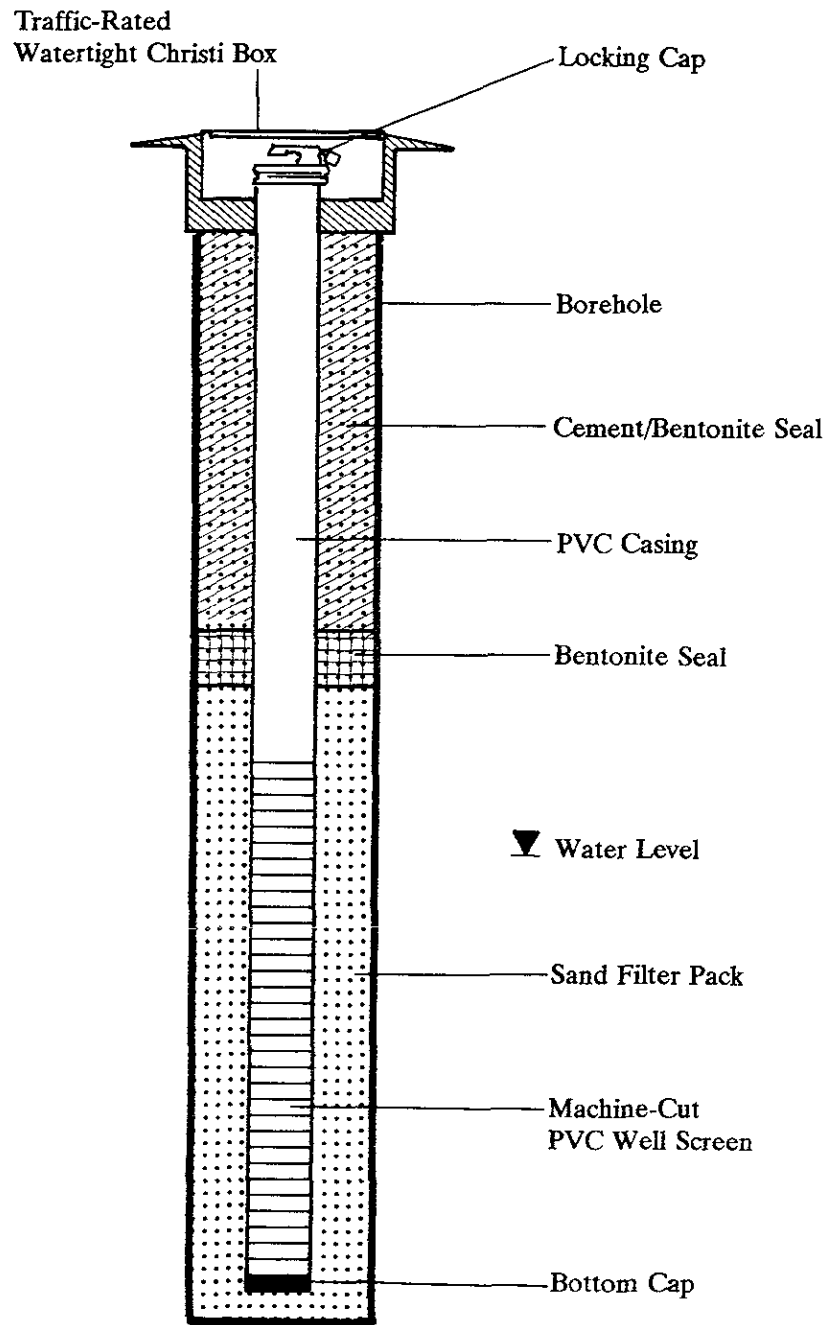
**SUMMARY OF ANALYTICAL RESULTS, MW-H1
6050 Hollis Street, Emeryville**

(mg/L)

Date	Depth to Water (feet)	Gasoline	Diesel	Kerosene	Benzene	Toluene	Xylenes	Ethylbenzene
02/08/89	4.85	<0.05	<0.5	<0.5	<0.001	<0.001	<0.001	<0.001
05/01/89	5.1	<0.05	<0.5	<0.5	<0.001	<0.001	<0.001	<0.001
09/13/89	5.8	1.3	<0.5	<0.5	0.061	<0.0005	0.002	0.005
12/04/89	5.34	0.410/0.370	<0.5/<0.5	<0.5/<0.5	0.0072/0.011	0.0032/0.0024	0.0032/0.0013	0.0028/0.0014
03/26/90	6.42	0.7	<0.5	<0.5	0.093	0.001	0.001	<0.0017
07/24/90 ¹	5.93/(NA)	0.140/<0.5	<0.5/<0.5	<0.05/<0.05	0.0006/<0.0005	<0.0005/<0.0005	<0.0009/<0.0005	<0.0005/<0.0005
11/16/90	5.8/(NA)	1.1/<0.05	0.55/<0.05	<0.050/<0.05	0.016/<0.0005	0.0009/<0.0005	0.0015/<0.0005	0.0018/<0.0005
03/15/91	4.30	0.98/1.0	<0.05/<0.05	<0.05/<0.05	0.020/0.017	0.0006/<0.0005	0.0025/0.0022	0.0022/0.0019

¹ A sample was also collected on 14 June 1990, as well as a field blank for QA/QC purposes. Since the field blank contained detectable levels of diesel, well MW-H1 was resampled on 24 July 1990 and a field blank prepared.

Notes: xx/xx = Duplicate sample.
 NA = Not applicable.
 xx/(xx) = Field blank.



During well installation, soil samples would be collected in the unsaturated soil at five-foot intervals unless significant stratigraphic changes were observed or visual and air monitoring screening indicate that hydrocarbons may be present, in which case soil samples would be collected at more frequent intervals. The soil samples would be collected with a California Modified sampler, lined with thin-walled brass tubes, driven in advance of the hollow-stem augers. The brass tubes collected from the sampler would be labeled, sealed, and stored in a cooled container. The soil samples collected from the unsaturated zone would be submitted under chain-of-custody to a certified laboratory for analysis of total petroleum hydrocarbons as gasoline (EPA Method 5030/8015) and BTXE (EPA Method 8020). Sampling methods are described in Appendix A. The drill cuttings generated during drilling would be added to the stockpile of existing excavated soil for bioremediation treatment.

2. The monitoring wells would be developed no less than 48 hours following well installation by pumping water from the well until clear water is produced. After a minimum of 24 hours following well development, water would be purged from the wells until pH, electrical conductivity and temperature had stabilized. Groundwater samples would then be collected from all three wells using disposable bailers. Water levels would be measured (with accuracy to 0.01 foot) with a dual interface probe before purging and after sampling. Measurable thickness of free product, if any, would be recorded. Groundwater samples would be examined for sheen, odor, and floating product. Water generated during development and purging would be stored in labeled, secured 55-gallon drums until analytical results were obtained to determine disposal options.

Four groundwater samples (including a duplicate for QA/QC purposes) would be stored in a cooled container and submitted, under chain-of-custody, to a California-certified laboratory for analysis. The samples would be analyzed for TPH as gasoline (EPA Method 5030/8015) and BTXE (EPA Method 602).

3. The monitoring wells would be surveyed to National Geodetic Vertical Datum (NGVD) mean sea level by a licensed surveyor. All water level measurements would be measured and recorded with respect to NGVD.
4. Further recommendations regarding the site would be provided in a report within one month of receipt of analytical results. The report would be submitted to the Regional Water Quality Control Board, San Francisco Bay Region, and Alameda County.

APPENDIX A

SOIL SAMPLING PROCEDURES

SAMPLING PROCEDURES

SOILS

1. In-place soil samples are collected with a stainless steel corer, fitted with a 6-inch brass liner. The corer is driven into the ground by a slide hammer. The brass liner is removed from the steel corer, capped with aluminum foil and a plastic cap, taped with masking tape, placed in a zip-lock bag, and iced prior to being brought to the laboratory for analysis. Proper chain-of-custody and sample labeling procedures are followed.

All sampling equipment is decontaminated with tri-sodium phosphate (TSP) and deionized water prior to collection of each sample.

2. In-place soil samples may also be collected during drilling activities. The samples are collected with a California Modified sampler (2-inch diameter) fitted with 6-inch brass sleeves. The sampler is driven into the ground by a 140-lb. hammer falling 30 inches. The samples are handled similarly to the procedures described above and the equipment is decontaminated in the same fashion.

3. During tank removal activities, soil samples may be collected from a backhoe bucket having extracted material from a specific depth. The soil brought to the surface in a bucket is sampled after about 6 inches of the surface is discarded. The sample is collected with a stainless steel corer fitted with a brass tube. The sample is handled in the same manner as described above, and decontamination procedures are similar.

GROUNDWATER

The well is checked for floating product with a dual interface probe. A water level measurement is made simultaneously with the probe, calibrated to the nearest 1/100th of a foot.

The well is then evacuated of five well volumes of water prior to sampling. The evacuation is performed with either a PVC 1.7-inch hand pump or a power pump with disposable tubing, the sample is collected with a disposable, bottom-valve, plastic bailer. The sample is transferred directly into glass vials, iced, and brought to the laboratory. Proper chain-of-custody and sample labeling procedures are followed.

All sampling equipment is decontaminated with TSP and deionized water prior to collection of each sample.

(In the case of sampling from dewatering, wells, manholes, or in tank excavations, no evacuation occurs, but the sample is collected immediately after a check has been made for floating product. The sample is immediately transferred from the plastic bailer to the sample vials, iced, and brought to the laboratory for analysis).