

P & D ENVIRONMENTAL

A Division of Paul H. King, Inc.

4020 Panama Court

Oakland, CA 94611

(510) 658-6916

FAX TRANSMITTAL COVER SHEET

Date: 10/3/00 Job #: _____

To: eva chu

Company: ACDEH

From: Paul H. King
P&D ENVIRONMENTAL

Number of pages in this transmittal, including this cover sheet: 8

SUBJECT: 5330 Foothill Ave - Oakland

MESSAGE: Eva,

Per our discussion, attached is CAP
(work plan 0067.W4) for the XTRA OIL
Oakland site.

Paul

Need SOP for Vaporwells - Sampling proto,

If transmittal is incomplete, please call (510) 658-6916.
P&D Environmental fax number: (510) 658-9074.

DESTINATION FAX NUMBER: 337-9335

Sub Contractor:
Jeff Spawls
Enviro. supply

P & D ENVIRONMENTAL
A Division of Paul H. King, Inc.
4020 Panama Court
Oakland, CA 94611
(510) 658-6916

flow rate
vacuum rate
mass conc.
how long system runs

510/385-7530 cell
916/364-3459 office

September 4, 2000
Work Plan 0067.W4

Ms. Eva Chu
Alameda County Department of Environmental Health
1131 Harbor Bay Parkway
Alameda, CA 94502

SUBJECT: CORRECTIVE ACTION PLAN
Former Service Station
5330 Foothill Boulevard
Oakland, CA

8 hours
4 hrs for step up 50-70, 90 cfm in
each well

Dear Ms. Chu:

P&D Environmental, a division of Paul H. King, Inc. (P&D) is pleased to present this Corrective Action Plan (CAP) for petroleum-impacted soil at the subject site. This CAP is prepared in response to a request from the Alameda County Department of Environmental Health (ACDEH) for identification and evaluation of alternatives for cleanup of petroleum-impacted soil at the subject site. ~~caused plans to remediate the site.~~ A Site Location Map is attached to this work plan as Figure 1, and a Site Plan is attached as Figure 2.

All work will be performed under the direct supervision of a Registered Geologist or a Certified Engineering Geologist. This work plan is prepared in accordance with guidelines set forth in the document "Tri-Regional Board Staff Recommendations for Preliminary Evaluation and Investigation of Underground Tank Sites" dated August 10, 1990 and "Appendix A - Workplan for Initial Subsurface Investigation" dated August 20, 1991.

BACKGROUND

The site is presently used as a parking lot for a transmission repair shop. It is P&D's understanding that prior to the inheritance of the site by Mr. Edward T. Simas, the site was operated as a gasoline station. It is also P&D's understanding that the site was acquired by Mr. Edward T. Simas in February, 1983, for a period of six months. Based on conversations with Mr. Simas, the service station was not operating at the time that the site was inherited, and the service station was not put into service during the six months that it was owned by Mr. Simas. The property was subsequently sold to Mr. Hue Crosby. It is P&D's understanding that the tanks were subsequently removed by Mr. Crosby. Based upon conversations with Ms. Eva Chu of the ACDEH, it is P&D's understanding that the site is presently owned by Mr. Miguel Flores of Redwood City, California and Mr. Jorge Del Rio of Palo Alto, California.

Review of the ACDEH file for the site reveals only one report dated May 19, 1989, prepared by Polymatrix Associates (Polymatrix) of Hayward, California which documents previous investigation activities at the site. Review of the Polymatrix report indicates that three gasoline underground storage tanks were removed from the site in June, 1988. At the time of tank removal, soil and groundwater samples were reported to have been collected. A detailed evaluation of documentation provided by others is provided in P&D's Soil Investigation Report 0067.R1 dated September 26, 1994.

On August 10, and 12, 1994 P&D personnel oversaw the drilling of boreholes B1 through B6 at the subject site by Exploration Geoservices, Inc. of San Jose, California. All of the boreholes were drilled to a depth of 20.5 or 25.5 feet with the exception of boring B4, which was drilled to a depth of 50.5 feet. Soil samples were collected at various depths in the boreholes for laboratory analysis based upon photoionization detector readings. Groundwater was not encountered in any of the boreholes, and the laboratory analysis indicated that diesel fuel was not a contaminant at the site. Documentation of the investigation and sample

- get site plan showing extraction well locations
- description of length of pilot test, method - vacuum pressure, etc
how will zone of influence be determined
- any soil available. How long will vacuum be applied @ what cfm
what cfm vacuum pressure

results is provided in P&D's Soil Investigation Report 0067.R1 dated September 26, 1994.

On March 28 and 29, 1995 P&D personnel oversaw the drilling of three boreholes at the subject site, designated as B7 through B9. Borings B7, B8 and B9 were drilled to total depths of 50.5, 75.5 and 39.0 feet, respectively. Groundwater was not encountered in boreholes B7 or B8. However, groundwater was encountered in borehole B9 initially at a depth of 34.5 feet below grade the morning after an overnight temporary cessation of drilling activities. The water level later was measured at a depth of approximately 24.5 feet below grade approximately 6 hours after withdrawal of the augers from the borehole. The borehole had been advanced to a total depth of 39 feet before the temporary overnight cessation of drilling activities.

Detectable concentrations of organic vapors and petroleum hydrocarbon odors were recorded in borings B8 and B9. However, organic vapors and petroleum hydrocarbon odors were not detected in boring B7, and were not detected in the lower-most 15 feet of boring B8. Documentation of the investigation and sample results is provided in P&D's Soil Investigation Report 0067.R2 dated June 14, 1995.

Following a request from the ACDEH, a total of three offsite soil borings, designated as B10 through B12, were drilled to a maximum depth of 41 feet below grade on January 12 and 13, 1998. Groundwater was not encountered in any of the boreholes. In addition, a total of six soil gas samples and two duplicate soil gas samples were collected from a total of eight boreholes which were drilled at the site to a depth of three feet below grade.

The sample results showed that petroleum hydrocarbons were not detected in boreholes B11 and B12, and were detected in borehole B10 at depths of 35 and 40 feet. Petroleum hydrocarbons were detected in five of the six soil gas samples. Documentation of the investigation and sample results is provided in P&D's Subsurface Investigation Report 0067.R3 dated March 6, 1998.

SITE GEOLOGY AND HYDROGEOLOGY

Based on review of regional geologic maps from U.S. Geological Survey Professional Paper 943, "Flatland Deposits - Their Geology and Engineering Properties and Their Importance to Comprehensive Planning," by E.J. Helley and K.R. Lajoie, 1979 the subject site is underlain by Holocene coarse-grained alluvium (Qhac). The alluvium is described as unconsolidated, moderately sorted permeable sand and silt with coarse sand and gravel. The site borders on subsurface materials identified on the geologic maps as Late Pleistocene alluvium (Qpa). The alluvium is described as typically consisting of weakly consolidated slightly weathered poorly sorted irregularly interbedded clay, silt, sand and gravel and is considered to overlie bedrock on the alluvial plain marginal to San Francisco Bay.

Based on review of the regional geologic map from U.S. Geological Survey Miscellaneous Field Studies Map MF-2196, "Map of Recently Active Traces of the Hayward Fault, Alameda and Contra Costa Counties, California," by J.J. Lienkaemper, 1992 the subject site is located approximately 6,800 feet to the southwest of the active Hayward Fault.

Based upon review of the six borings from the subsurface investigation performed by P&D in 1994 (B1 through B6), the three borings from the 1995 subsurface investigation performed by P&D in 1995 (B7 through B9), and the three offsite borings from the subsurface investigation performed by P&D in 1998, the site is underlain predominantly by fine-grained materials (silty clay, clayey silt or silt) with occasional lenses of sand.

In boreholes B1 and B9, sand layers containing variable amounts of silt and clay were encountered between the depths of approximately 12 and 24 feet. These sand layers are interpreted to be connected, and are also interpreted to be continuous with the sand layer encountered in boring B2 between the depths of approximately 9 and 16 feet. In boring B7, a significant sand and gravel layer was encountered between the depths of approximately 37 and 50 feet, and in borehole B9, a significant silty sand layer was encountered between the depths of approximately 7 and 24.5 feet. In addition, in borehole B8, silt was encountered between the depths of approximately 12 and 37 feet, and a significant sand layer was encountered between the depths of approximately 38 and 50 feet.

In borehole B7, sand and gravel were encountered between the depths of approximately 37 feet and the total depth explored of 50.5 feet. Similarly, in borehole B8, silty sand and sand were encountered between the depths of approximately 38 and 50 feet. The sand layers encountered in boreholes B7 and B8 are interpreted to be interconnected, and interpreted to not be connected to the sand layers encountered in borings B1, B2 and B9.

Below a depth of approximately 28 feet in boring B4, silt was encountered to the total depth explored of 50.5 feet. In borehole B5, silt was encountered between the depths of approximately 12 and 17 feet. In borehole B8, silt was encountered between the depths of approximately 12 and 38 feet.

Based upon review of boring logs B1 through B9, geologic cross-sections were prepared. The geologic cross-sections or associated figures can be viewed in P&D's Soil Investigation Report 0067.R2 dated June 14, 1995. The locations of the geologic cross-sections are shown on Figure 2 of the 1995 report. Review of geologic cross-section A-A', (Figure 3) shows that an extensive sand body appears to be present to the west of the southern portion of the tank pit between the depths of approximately 10 and 24 feet. Review of geologic cross-sections B-B' (Figure 3) and C-C' (Figure 4) shows that this sand body is limited in extent to the west of the tank pit, and appears to pinch out to the north. Review of geologic cross-section D-D' shows that the sand body observed in cross section A-A' to the west of the tank pit is not present to the north of the tank pit.

Groundwater was encountered in borehole B9 initially at a depth of 34.5 feet below grade on March 29, 1995, the morning after an overnight temporary cessation of drilling activities. The borehole had been advanced to a total depth of 39 feet on March 28, 1995, before the temporary overnight cessation of drilling activities. Following withdrawal of the augers from the borehole, the water level later stabilized on March 29, 1995 at a depth of approximately 24.5 feet below grade.

The groundwater encountered in borehole B9 is interpreted to be representative of perched groundwater and appears to be associated with the sand body encountered in borehole B9. The absence of groundwater to the total depth explored of 75.5 feet in boring B8 indicates that the depth to regional water at the site is unknown. In addition, the groundwater flow direction at the site is unknown.

LOCATION OF PETROLEUM HYDROCARBONS

Review of geologic cross-sections showing petroleum hydrocarbon iso-concentration contours (Figures 5 and 6 of P&D's Soil Investigation Report 0067.R2 dated June 14, 1995) shows that elevated petroleum hydrocarbon concentrations are predominantly coincident with the subsurface sand bodies located to the west of the former UST pit, or in the silty clay located beneath or to the north of the former UST pit. In borings B2 and B9 (located to the west of the former UST pit) TPH-G concentrations of 1,700 and 2,600 ppm, respectively, were detected in the sand bodies encountered in these boreholes. In boreholes

B4, B5 and B6 (located beneath or to the north of the former UST pit) TPH-G concentrations of 8,600, 3,700 and 2,600 ppm, respectively, were detected in the silty clay in these boreholes.

Review of the soil gas survey results collected in silty clay at a depth of approximately three feet below grade shows that petroleum hydrocarbons were detected in five of the six boreholes.

SCOPE OF WORK

Based on the presence and concentrations of petroleum hydrocarbons in soil gas samples at a depth of three feet below the ground surface, P&D recommends that remedial action be performed to reduce petroleum hydrocarbon concentrations prior to performing a risk analysis. Based on the presence of the former UST pit immediately adjacent to Belvedere Street, the depth of elevated contamination concentrations (3,700 ppm TPH-G at a depth of greater than 20 feet in borehole B5), and the thickness of some of the subsurface sand layers (greater than 10 feet), extensive shoring would be required for excavation of petroleum hydrocarbon-impacted soil. In addition, numerous overhead utilities and limited site space for soil stockpiling make excavation of petroleum-impacted soil a difficult remedial solution.

P&D recommends that a vapor extraction pilot test be performed to evaluate the feasibility of vapor extraction as a remedial technology for petroleum-impacted soil. The scope of work proposed by P&D entails the following activities:

- o Regulatory agency coordination.
- o Performance of a soil vapor extraction pilot test at the subject site.
- o Report preparation, including recommendations for installation of a soil vapor extraction system, if appropriate.

Each of these is discussed below in more detail.

Regulatory Agency Coordination

Following approval of this work plan, Bay Area Air Quality Management District (BAAQMD) permits will be obtained for the vapor extraction pilot test. P&D will notify Underground Service Alert for underground utility location and schedule dates for the pilot test following BAAQMD permit approval. Permits will be obtained for installation of temporary vapor extraction wells from the Alameda County Department of Public Works, if required. The ACDEH will be notified of the pilot test dates by telephone as soon as they have been set. In addition, a health and safety plan will be prepared.

Soil Vapor Extraction Pilot Test

A total of nine temporary vapor extraction wells will be installed to evaluate vapor extraction feasibility at the site. The temporary vapor extraction wells will consist of one-inch diameter steel pipe with perforations in the lowermost five feet of the pipe. The pipes will be driven directly into the ground. The area surrounding the upper three feet of each well will be sealed to prevent entry of surface air into the perforated portions of the wells. The flow obtained at different rates of vacuum, the vacuum observed at other locations, and petroleum hydrocarbon concentrations in the air removed from the ground at the well where vacuum is applied will be evaluated. Exhaust vapors will be treated to meet BAAQMD requirements prior to release to the atmosphere. The wells will be installed to evaluate three different areas, as follows.

A total of two temporary vapor extraction wells will be used to evaluate the petroleum-impacted subsurface sand layers located to the west of the former UST pit. One temporary vapor extraction well will each be installed in the vicinity of boreholes B2 and B9. The perforated depth below grade for the wells will be 12 to 17 feet for the well near B2, and 15 to 20 feet for the well near B9. A high-volume, low vacuum blower will be used for these wells.

A total of three temporary extraction wells will be used to evaluate the petroleum-impacted silty clay located beneath or to the north of the former UST pit. One temporary vapor extraction well will each be installed in the vicinity of boreholes B4, B5, and B6. The perforated depth below grade for the wells will be 15 to 20 feet for the well near B4, 25 to 30 feet for the well near B5, and 15 to 20 feet for the well near B9. A low-volume, high vacuum blower will be used for these wells.

A total of four temporary extraction wells will be used to evaluate the shallow (less than 10 feet below grade) silty clay which was evaluated previously with a soil gas survey. One each of the temporary vapor extraction wells will be located in the vicinity of the four soil gas survey boreholes where the highest concentrations of petroleum hydrocarbons were detected. The perforated depth for the wells will be three to eight feet below grade for all of the wells. A low-volume, high vacuum blower will be used for these wells.

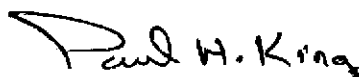
Report Preparation

Following receipt of the laboratory analytical results, P&D will prepare a report documenting the results of the vapor extraction pilot test. The report will contain copies of the laboratory analytical reports and chain of custody documentation for the air samples. The laboratory results will be summarized in a tabulated format. The report will also contain a site plan showing the vapor extraction point locations, a description of the local geology and hydrogeology, a discussion of the sample results, recommendations based on the sample results, and the stamp of a Registered Geologist. Based on the results of the pilot test, the report will make recommendations for the installation of a soil vapor extraction system, as appropriate.

Should you have any questions, please do not hesitate to contact us at (510) 658-6916.

Sincerely,

P&D Environmental



Paul H. King
California Registered Geologist
Registration No. : 5901
Expires: 12/31/01

Attachments: Figure 1, Site Location Map
Figure 2, Site Plan

cc: Mr. Keith Simas, XTRA OIL Company

PHK/gmb
0067.W4

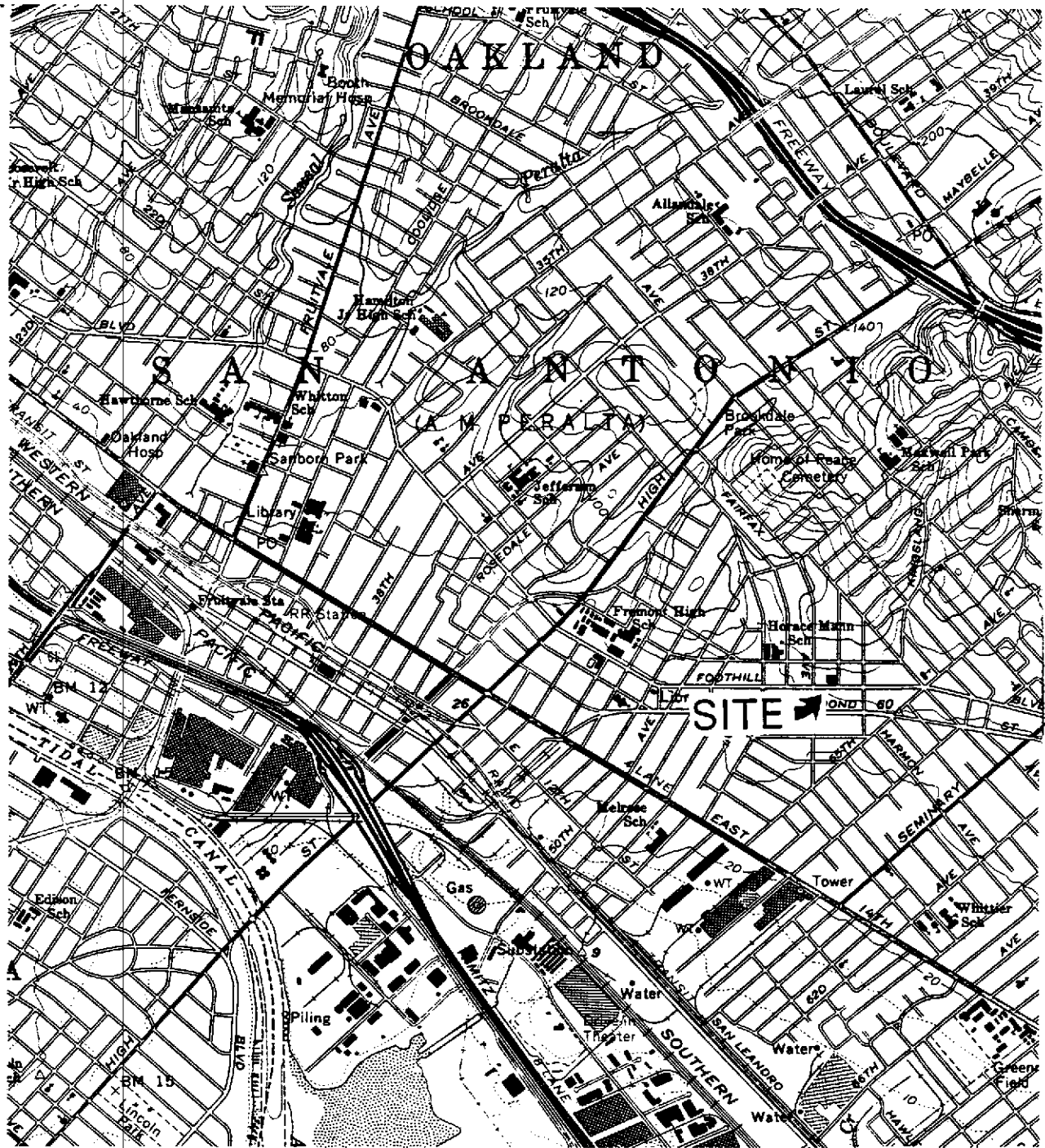
P & D ENVIRONMENTAL

A Division of Paul H. King, Inc.

4020 Panama Court

Oakland, CA 94611

(510) 658-6916



Base Map From
U.S. Geological Survey
Oakland East, Calif.
7.5 Minute Quadrangle
Photorevised 1980

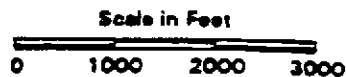
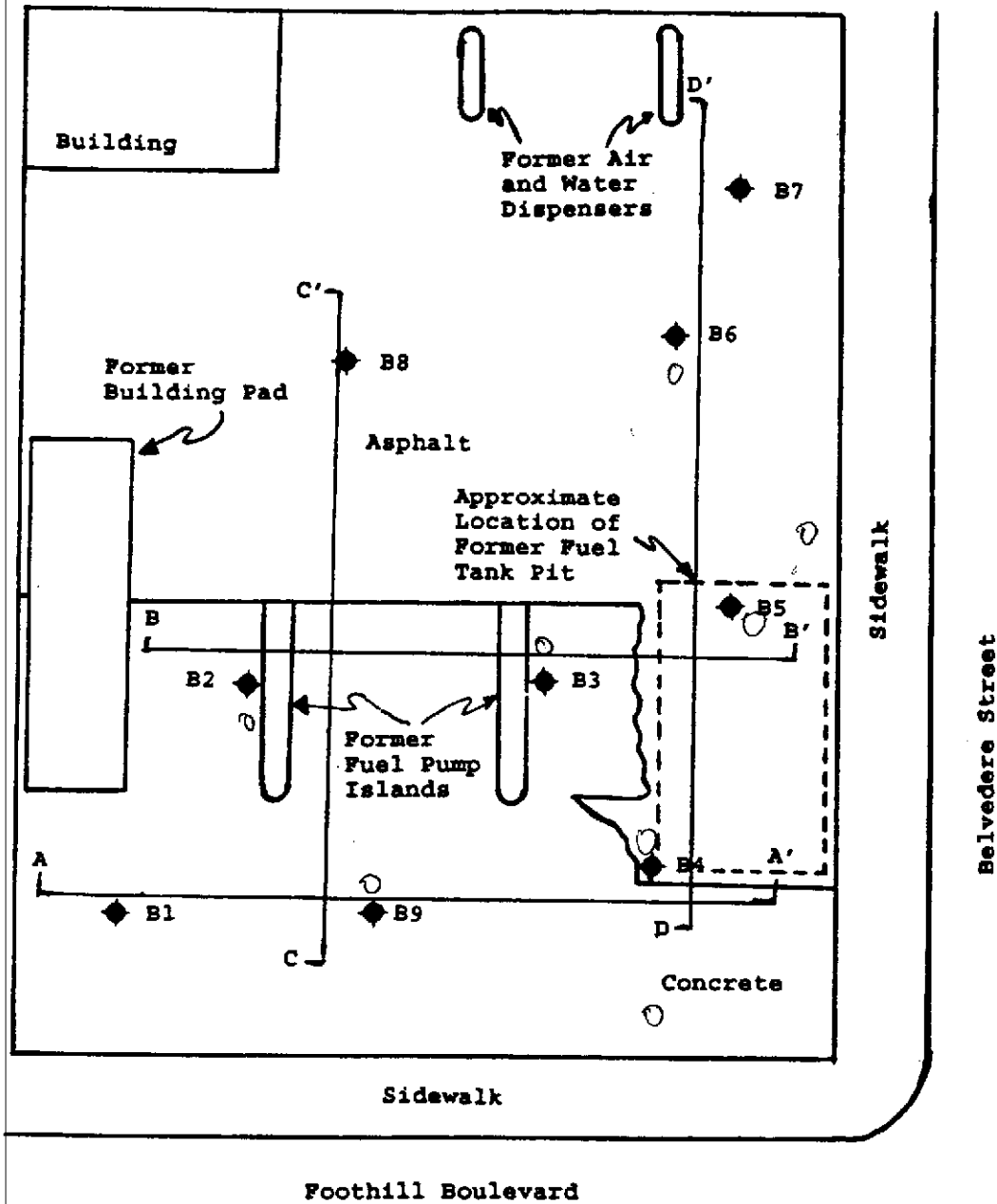


Figure 1
SITE LOCATION MAP
Former Service Station
5330 Foothill Blvd.
Oakland, California

P & D ENVIRONMENTAL

4020 Panama Court
Oakland, CA 94611
Telephone (510) 658-6916



LEGEND
◆ Soil Boring Location
— Geologic Cross-Section Location

Base Map From
P&D Environmental
August, 1994



0 10 20
Scale in Feet

Figure 2
SITE PLAN
Former Service Station
5330 Foothill Blvd.
Oakland, California