WORKPLAN
HAZARDOUS WASTE PRELIMINARY SITE INVESTIGATION
TASK ORDER NUMBER 04-952137-ES
CONTRACT NUMBER 43A0012

SIXTH AND CASTRO STREET
OAKLAND, CALIFORNIA

prepared for

CALIFORNIA DEPARTMENT OF TRANSPORTATION
District 4
P.O. Box 23660
Oakland, California

prepared by

Professional Service Industries, Inc.
1320 West Winton Avenue
Hayward, California 94545
(510) 785-1111

May 14, 1999
575-9G034

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Information To Build On
Engineering • Consulting • Testing

Received May 18 '99

May 14, 1999

Ms. Juliet Shin
Alameda County Environmental Health Services
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502

RE: WORKPLANS FOR CALTRANS SITES
OAKLAND AND HAYWARD, CALIFORNIA

Dear Ms. Shin:

Professional Service Industries, Inc. (PSI), is pleased to enclose a copy of the Workplans for the above referenced sites. PSI refers you to the workplans for details. PSI has the drilling scheduled for these sites for May 19 and 20, therefore PSI is requesting a quick review of the workplans.

If you have any questions regarding these reports or any aspect of the project, please do not hesitate to call.

Sincerely,

Frank R. Poss
Senior Hydrogeologist

cc: Ms. Chris Zdunkiewicz, Caltrans District 4

Enclosures

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STATEMENT OF LIMITATIONS AND PROFESSIONAL CERTIFICATION

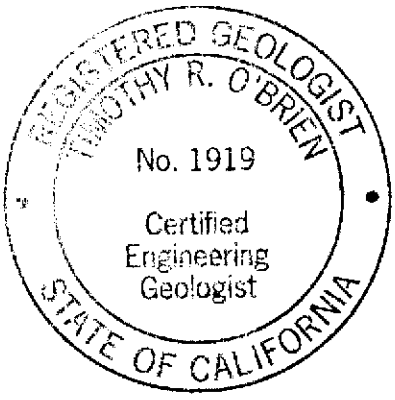
Information provided in this Workplan, prepared by Professional Service Industries, Inc. (PSI), is intended exclusively for the use of Caltrans for the evaluation of subsurface conditions as it pertains to the subject site. The professional services provided have been performed in accordance with practices generally accepted by other geologists, hydrologists, hydrogeologists, engineers, and environmental scientists practicing in this field. No other warranty, either expressed or implied, is made. As with all subsurface investigations, there is no guarantee that the work conducted will identify any or all sources or locations of contamination.

PSI reserves the right to deviate from the proposed scope of services outlined in this Workplan as needed to obtain the required information. If such deviation is necessary, PSI will seek prior approval from the client and the regulatory agency overseeing this project.

This Workplan is issued with the understanding that Caltrans is responsible for ensuring that the information contained herein is brought to the attention of the appropriate regulatory agency. This Workplan has been reviewed by a geologist who is registered in the State of California and whose signature and license number appear below.

Frank R. Poss, R.E.A.
Senior Hydrogeologist

Timothy R. O'Brien RG/CEG/CHG
Senior Geologist



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1.0 INTRODUCTION

Professional Service Industries, Inc. (PSI) has been retained by the California Department of Transportation (Caltrans), under Task Order Number 04-952137-ES and Contract Number 43A0012, to prepare this Workplan to assess current soil and groundwater conditions at property at the intersection of 6th and Castro Street in Oakland, California (subject site; Figure 1).

The scope of work for this investigation includes:

- Drill 11 soil borings to collect soil and groundwater samples,
- Based on the results of samples collected in the 11 soil borings, drill three more borings to construct three groundwater monitoring wells,
- Develop, survey, and sample the installed groundwater monitoring wells,
- Chemical analyses of soil and groundwater samples; and
- Prepare a technical report describing the investigation and interpretation of the data generated.

The work being conducted will include an initial groundwater monitoring event. Subsequent groundwater monitoring events will be conducted and reported per requirement by the Alameda County Health Care Agency.

1.1 PROJECT OBJECTIVE

The object of the project is to determine the concentrations of selected potentially hazardous constituents in soil and groundwater. Analytical results from the soil and groundwater investigation will be examined with respect to regulatory criteria and published guidelines. The purpose of this workplan is to define the scope of work and to describe the methodology to be utilized to complete the scope of work.

1.2 SITE HISTORY

The site is currently a vacant lot that is surrounded by Brush Street to the west, 7th Street to the north, Castro Street to the east, and 6th Street to the south. In 1987, ERM-West Consultants (ERM) conducted an environmental site assessment to identify any environmental problems at the above site resulting from past uses of the site. Historical records searches determined that the site had formerly been occupied by a number of businesses, most notably a gas station, an auto repair garage, Durham Farm Creamery,

a machine shop, and a laundry facility. At least four underground storage tanks (USTs) were associated with the former gas station and dairy. ERM drilled seven boring at the site to collect soil samples for analyses. Analyses of the soil samples identified up to 1.3 parts per million (ppm) ethylbenzene, 1.5 ppm toluene, and 7.9 ppm xylenes. Groundwater samples collected drilling had concentrations up to 0.5 ppb ethylbenzene, 0.3 ppb toluene, and 5 ppb total xylenes.

In a 1995 investigation conducted by Geocon Environmental Consultants (Geocon), soil and groundwater samples were collected from seven locations. Analyses of the soil samples identified up to 410 ppm lead and 8,000 ppm Oil and Grease. The two groundwater samples analyzed did not contain detectable concentrations of Total Petroleum Hydrocarbons as Gasoline (TPH-G); TPH as Diesel (TPH-D); and Benzene, Toluene, Ethylbenzene, and Total Xylenes (BTEX).

In a 1996 investigation conducted by International Technology Corporation (IT), soil and groundwater samples were collected from eleven borings. The maximum concentration in the soil samples analyzed were the following:

Total Petroleum Hydrocarbons as Gasoline (TPH-G)	1,100 ppm
Benzene	2.6 ppm
Toluene	34 ppm
Ethylbenzene	25 ppm
Total Xylenes	140 ppm
Total Lead	397 ppm

The maximum concentration in the four groundwater samples analyzed were the following:

Total Petroleum Hydrocarbons as Gasoline (TPH-G)	1,700 ppb
Benzene	51 ppb
Toluene	200 ppb
Ethylbenzene	59 ppb
Total Xylenes	290 ppb
1,2 Dichloroethane	5.4 ppb

2.0 PRE-FIELD ACTIVITIES

This section describes the tasks PSI will perform prior to initiating any field activities. These tasks include: 1) attending the Caltrans Task Order Meeting; 2) identifying borehole locations; 3) preparing the Pre-Work Site Visit Checklist; 4) locating any underground utility lines in conjunction with Underground Service Alert (USA); and 5) completing the Investigation Completion Schedule.

2.1 TASK ORDER MEETING

A Task Order Meeting was completed on May 3, 1999, with Mr. Frank Poss and Ms. Chris Zdunkiewicz of Caltrans in attendance. The primary purpose of the meeting was to familiarize PSI with site conditions that may impact field operations.

At the Task Order Meeting, the boring locations were determined and a Pre-Work Site Visit Checklist was completed. Topics specified in the Checklist included identification of borehole locations, confirmation of underground utility clearance, location of water/power supply sources, and storage areas for drill cuttings.

2.2 HEALTH AND SAFETY PLAN

Prior to the commencement of field activities at the site, a site-specific Health and Safety Plan (HSP) will be developed in compliance with 29 CFR 1910.120, under the supervision of a Certified Industrial Hygienist. The HSP is designed to address the potential hazardous materials that may be encountered during field activities at the site. Further, the HSP will be designed to minimize the exposure to potentially hazardous materials and unsafe working conditions to on-site personnel.

2.3 UTILITY CLEARANCE

At least 48 hours prior to drilling activities, PSI will contact Underground Service Alert (USA) to identify utility lines that may underlie the areas of investigation.

3.0 SUBSURFACE INVESTIGATION

This section describes the methodology that will be implemented during the soil and groundwater investigation at the site. The objectives of the sampling procedures are to provide an accurate assessment of the current soil and groundwater conditions and to minimize the potential for cross-contamination during sampling operations.

3.1 SOIL BORINGS

Eleven soil borings are scheduled to be drilled to investigate the soil and groundwater quality at the site. The boring locations are presented in Figure 2. V&W Drilling of Rio Vista, California will provide the drilling services. The borings will be drilled by the Geoprobe direct push drilling technique. Soil samples will be collected at .15, 0.3, 0.9, 1.5, 3.0, and 4.5 meters (0.5, 1, 3, 5, 10, and 15 feet) below ground surface (bgs). Field work for drilling and soil sampling activities will be conducted in accordance with the field procedures described in Appendix A. Following drilling, the borings will be grouted according to State and Local requirements.

3.2 SOIL SAMPLING PROTOCOL

Soil samples will be collected by a PSI geologist working under the supervision of a State of California Registered Geologist. The samples will be collected in 0.46 meter (1.5-foot) long acetate tubes. Upon retrieval of the sampler, a representative soil sample will be preserved for chemical analyses.

The soil samples will be logged on chain-of-custody records and transported to Centrum Analytical of Redlands, California, a California Department of Health Services certified hazardous materials testing laboratory, following chain-of-custody protocol.

3.3 SOIL CLASSIFICATION

Soil will be described by a PSI geologist and recorded on a field boring log for each boring drilled. The data recorded on the logs will be based on examination of soil samples retrieved and drilling conditions observed in the field. Boring logs will include information regarding the location of the boring, type of sampler used, and geologic descriptions of materials encountered.

Soils will be classified according to the "Soil and Rock Logging Classification Manual" prepared by the State of California, Department of Transportation. Other information to be recorded on the logs will include indications of contamination and the occurrence of groundwater. Organic vapor analyzer (OVA) measurements for soil samples will be recorded on the field boring logs.

3.4 GRAB GROUNDWATER SAMPLING

Grab groundwater samples will be collected from each of the borings. The 11 grab groundwater samples will be collected using disposable polyethylene tubing lowered through the drill stem. Groundwater samples will be collected using positive displacement and a check valve. Groundwater sampling will be conducted in accordance with the procedures described in Appendix A.

3.5 MONITORING WELL INSTALLATION AND DEVELOPMENT

Following receipt of the analytical results from the grab groundwater sampling and consultation with Caltrans and Alameda County Environmental Health Services (ACEHA), PSI will select three locations at the site for installation of groundwater monitoring wells.

* (One well must be located near former boring B1-41)

The well casings will consist of 5-centimeter (cm) (2-inch) inside diameter Schedule 40 PVC casing with 0.0508 cm (0.020-inch) machine-slotted screen. The length of screen will be based on the depth to groundwater encountered during the initial boring program. The sand pack will extend approximately 0.6 meters (2 feet) above the screen interval. The sand pack will be surged prior to installation of the bentonite transition seal. Number 3 sand will be used for the sand pack. Approximately 0.3 meters (1 foot) of hydrated bentonite chips will be placed above the sand pack; neat cement mixed at a ratio of 5 gallons of water per 94-pound sack of cement will provide the annular seal from the top of the bentonite to grade.

Also Should wait 72 hours.

The annular seal will be allowed to set for at least 24 hours. The wells will be developed by bailing. The development water will be collected in 55-gallon drums for proper disposal.

The well casings and boring locations will be surveyed by a professional Land Surveyor. Elevation and location will be surveyed to accuracy of at least 0.003 m (0.01 foot) vertically and 0.003 m (0.01 foot) horizontally. Wells Must be surveyed to MSL.

3.6 MONITORING WELL SAMPLING

Must wait at least 72 hours after developing before sampling.

The three groundwater monitoring wells will be sampled for chemical analyses. Prior to groundwater sampling, the groundwater elevation will be measured from the top of the well casing. This data will be collected to allow calculation of the hydraulic gradient. The monitoring well will be purged of a minimum of three well volumes until pH, conductivity, and temperature stabilizes. The purging will be completed by bailing or pumping. Samples to be chemically analyzed for volatile organic compounds will be collected first. The groundwater samples will be collected according to PSI's standard protocol, presented in Appendix A.

Which samples are these? G.W. samples must be analyzed for TPHG, BTEX, Oil & Grease, Soluble lead, Chlorinated hydrocarbons (8010).

Following groundwater sample collection, the samples will be logged on a chain-of-custody record and stored in an ice chest at 4 degrees Celsius. Sample preservatives will be utilized as instructed by the analytical laboratory. All transportation and handling of the groundwater samples will follow chain-of-custody protocol.

3.7 DECONTAMINATION PROCEDURES

Decontamination procedures will be implemented to maintain sample integrity and to prevent cross-contamination between sampling locations. All re-usable equipment will be cleaned with a non-phosphate detergent and rinsed twice with deionized water prior to use at a new sampling location. Sampling equipment includes:

- Stainless-steel sample barrel and tubes,
- Drilling equipment,
- Groundwater sampling equipment, and
- Sounders.

3.8 STORAGE AND DISPOSAL OF GENERATED WASTES

Water from equipment cleaning, well development, and well purging activities will be stored in individually labeled 55-gallon drums. Disposition of the water will be determined upon receipt of laboratory analytical results of the soil and water samples. PSI will arrange for the management and appropriate disposal of soil and water generated during the field activities under Contract 43A0012.

4.0 LABORATORY ANALYSIS PROGRAM

The soil and groundwater samples collected during this investigation will be submitted to Centrum Analytical, a State of California Department of Health Services certified hazardous waste laboratory. A summary of the types of analyses and analytical methods is presented below.

All soil and groundwater samples collected will be analyzed for the following:

- EPA Method 8015 modified - TPH-G;
- EPA Method 8015 modified - TPH-D;
- EPA Method 1664 – Oil & Grease;
- EPA Method 8260 – Volatile Organic Compounds (VOC), including fuel oxygenates, ethylene dibromide, and ethylene dichloride & BTEX!
- EPA Method 6010 – Total Lead

Additionally, one soil sample from each boring scheduled to be a monitoring well will be analyzed for the following constituents:

- Total Organic Carbon according to EPA Method 9060
- Soil Porosity
- Moisture Content in accordance with ASTM-2216

During groundwater sampling, the following parameters will be measured:

- pH (field measurement)
- Conductivity (field measurement)
- Temperature (field measurement)

5.0 FIELD QUALITY ASSURANCE/QUALITY CONTROL

The following equipment calibration procedure and field documentation procedures will be implemented by PSI field personnel.

5.1 SAMPLE IDENTIFICATION

Soil samples collected in the field will be labeled according to standard protocol, as described in Appendix A.

5.2 CHAIN-OF-CUSTODY PROCEDURES

Chain-of-custody records will be used to document sample handling and shipping procedures. Chain-of-custody records will trace the samples from collection, through any custody transfers to the analytical laboratory. Information recorded on the Chain-of-Custody records will include location of sample collection, sample identification, number, date and time of collection, number and type of sample containers, and analyses requested. The shipping conditions will also be described on the chain-of-custody records. The name of the sampler(s) as well as the name of the person relinquishing the samples will be documented. Chain-of-custody procedures are described in Appendix A.

5.3 FIELD INSTRUMENTS

An organic-vapor analyzer (OVA) will be used in the field for health and safety monitoring, as well as site assessment purposes.

Organic Vapor Analyzer

An OVA will be calibrated daily using a reference calibration gas. Calibration gas is pre-bottled by a laboratory supply house and has a listed calibration value in parts per million for each specific gas. The OVA will be used as an indicator of total petroleum hydrocarbons in soil samples and for health and safety purposes.

6.0 DATA MANAGEMENT

In accordance Contract 43A0012, a Daily Work Force Log will be completed by on-site personnel for each day in the field. The log will include the following items listed below:

- Task order number and contract number;
- Project name and location;
- Name, Title, and Company of person performing the work;
- Date work is being performed;
- Actual begin and end times of work;
- Description of work being performed;
- Additional notations, observations, or remarks to further characterize or clarify work being performed;
- Equipment utilized on site; and
- Change orders issued during site activities.

6.1 DATA STORAGE

Project correspondence, field notes, maps, and data will be filed within the main Project File at PSI's Hayward office. Chemical data will be entered onto a spreadsheet program for ease of organization, review, and presentation of data in the report. Hard copy files within the main Project File may include, but not be limited to:

- Basic Data: Soil boring logs, field procedures, forms, maps, analytical data.
- Project Field Logs: The project notebook and all field memorandums.
- Correspondence: All written correspondence and telephone conversation records.
- Data Presentation: All maps and tables generated from basic data analyses.
- Data Verification: Documentation that all tables, maps and texts using basic information have been reviewed.

7.0 SITE INVESTIGATION REPORT PREPARATION

Upon completion of the field activities described in this workplan, a draft report will be prepared presenting the investigative methodology implemented, findings, and conclusions for the subject site. The report will include the following elements:

- Title sheet,
- Signature page,
- Table of contents,
- Investigative summary,
- Introductory narrative of the project,
- File review Information,
- Investigative methods,
- Investigative results and field observations,
- Data evaluation and discussion,
- Graphs, Tables and Figures,
- Summary table (s) indicating laboratory results,
- Contaminant concentrations, analytical methods, and detection limits,
- Copies of original laboratory documentation,
- Field procedure forms, and chain-of-custody records,
- Conclusions, and
- Recommendations. Interpretation Section

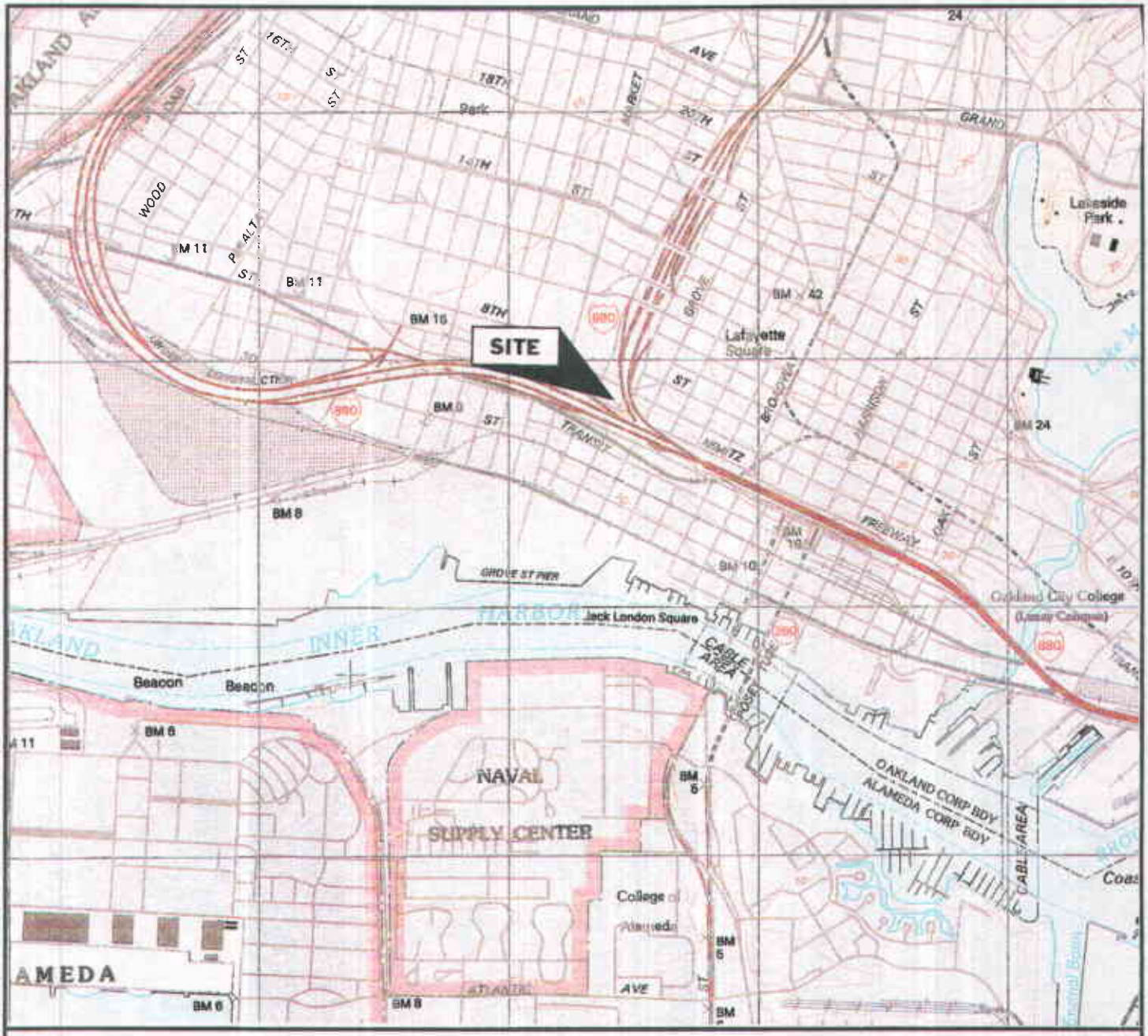
REFERENCES

Alameda County Health Care Agency, 1998, Investigations at the CalTrans vacant lot letter, November 16, 1998.

Caltrans, 1999, Task Order # 04-52137-ES, Hazardous Waste Preliminary Site Investigation, prepared for Caltrans, March 31,1999.

Caltrans, 1999, Contract NO. 43A0012

Caltrans, 1996, Soil and Rock Logging Classification Manual (Field Guide), prepared for Office of Structural Foundations, August

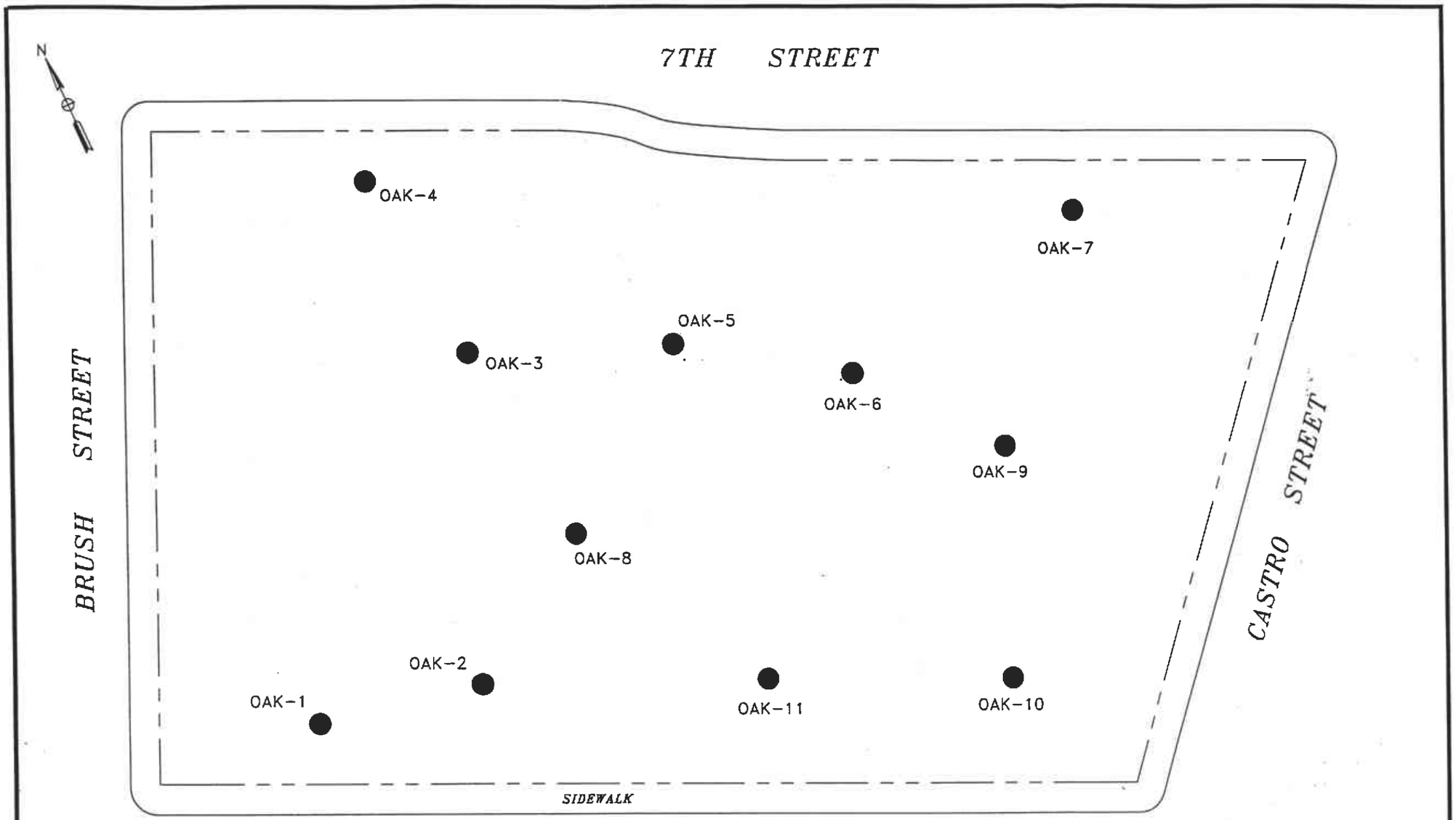


REFERENCE:
U.S.G.S. OAKLAND WEST, CALIFORNIA, 1993

PSI ENVIRONMENTAL GEOTECHNICAL CONSTRUCTION
CONSULTING • ENGINEERING • TESTING

SITE LOCATION
STATE RIGHT-OF-WAY
SIXTH AND CASTRO STREETS
OAKLAND, CALIFORNIA
PROJECT NUMBER: 575-9G034

DATE: 5/05/99	CK'D BY:	FIGURE NO.: 1
FILE NO.: 9G034-1		DRAWN BY: S. BOWERS



LEGEND

● PROPOSED SOIL BORING LOCATION

— — — FENCE

0 50 100

SCALE IN FEET

SOURCE: NORCAL, 1999

psi ENVIRONMENTAL GEOTECHNICAL CONSTRUCTION
CONSULTING • ENGINEERING • TESTING

PROPOSED BORING LOCATIONS
STATE RIGHT-OF-WAY
SIXTH AND BRUSH STREETS
OAKLAND, CALIFORNIA
PROJECT NUMBER: 575-9G034

DATE: 5/4/99	CKD BY:	FIGURE NO.: 2
FILE NO: 9G034-2		DRAWN BY: S.BOWERS

APPENDIX A
FIELD PROCEDURES

I. DRILLING OF SOIL BORINGS AND COLLECTION OF SOIL SAMPLES

The following procedures will be used for the drilling and sampling of the soil borings drilled at the site:

1. Drilling will be conducted by V&W Drilling under the supervision of PSI. Drilling equipment will be pressure washed at the beginning of the day and between soil borings.

2. Prior to the commencement of drilling activities at the site, Underground Service Alert (USA) will be contacted to identify underground utilities in the areas that the borings will be located.

3. Boring logs for the soil borings drilled at the site will be prepared under the supervision of a State of California Registered Geologist. The soil cuttings observed during drilling will be described in accordance with the Unified Soil Classification System.

4. Soil samples will be collected using a 1-inch diameter stainless steel sampler. When the boring has been advanced to the appropriate sampling depth, a 1-inch diameter sampler lined with 1-inch diameter acetate tubes, with a retractable tip will be placed in the open boring. When the sampler is advanced to the appropriate depth, the tip will be retracted and an undisturbed soil sample will be collected by pushing the sampler into the subsurface using a percussion hammer.

5. Once the sampler has been retrieved the ends of the sample tube will be covered with Teflon sheets and capped with polyethylene end caps. The sample will be labeled and placed in a zip-lock bag in a chilled cooler pending delivery to the laboratory for analysis.

6. Soil samples will be assigned identification numbers such as B1-0.9, where B1 indicates the parcel address, boring 1 and -0.9 indicates that the sample was collected at 0.9 meters bgs from boring 1 at that address. The samples will be labeled with the sampling designation, depth, date, client name, and project number.

7. Soil samplers will be washed between sampling intervals with Alconox soap followed by two deionized-water rinses.

8. Chain-of-custody procedures using chain-of-custody forms will be used to document sample handling and transportation.

9. A Century 128 organic vapor analyzer (OVA) will be used to monitor volatile organic compounds (VOCs) in the ambient air during drilling at the site in accordance with the site health and safety plan. VOC concentrations in the soil will be measured and recorded on the borings logs for depths that soil samples were collected. VOCs in the soil will be measured at the sampling depths by partially filling a zip-loc bag with soil. The components of the soil are allowed to volatilize and fill the head space in the tube for approximately 30 minutes prior to inserting the OVA probe through one of the end caps and recording the measurements.

10. Soil cuttings and steam wash water generated during drilling activities at the site will be contained in Department of Transportation (DOT) approved 55-gallon drums. The drums will be labeled with the contents, date, well or boring number, client name, and project number.

II FIELD DOCUMENTATION OF SAMPLING PROCEDURES

The following outline describes the procedures adhered by PSI for proper sampling documentation.

1. Sampling procedures will be documented in a field notebook that will contain:

    1. Sample collection procedures
    2. Date and time of collection
    3. Date of shipping
    4. Sample collection location
    5. Sample identification number(s)
    6. Intended analysis
    7. Quality control samples
    8. Sample preservation
    9. Name of sampler
    10. Any pertinent observations

2. Samples will be labeled with the following information:

    1. Sample number
    2. Well number
    3. Date and time sample was collected
    4. Sampler's name
    5. Sample preservatives (if required)

3. The following is the sample designation system for the site:

    For Borings, the samples will be labeled B-(Boring Number)-(Depth) (i.e. sample collected from boring 4 at 5 feet would be B4-5)

    For groundwater samples (W) (Boring Number) (i.e. WB4)

4. Handling of the samples will be recorded on a chain of custody form which shall include:

    1. Site name
    2. Signature of Collector
    3. Date and time of collection
    4. Sample identification number
    5. Number of containers in sample set
    6. Description of sample and container
    7. Name and signature of persons, and the companies or agencies they represent, who are involved in the chain of possession
    8. Inclusive dates and times of possession
    9. Analyses to be completed

The following are procedures were implemented while performing well monitoring, well purging, and water sampling.

1. All equipment was washed prior to entering the well with an Alconox solution, followed by two tap water rinses and a deionized water rinse.

2. Prior to purging the wells, depth-to-water was measured using an Solinst groundwater interface probe to an accuracy of approximately 0.01 foot. The measurements were made to the top of the well casing on the north side.

3. Monitoring wells at the site were prepared for sampling by purging the well of approximately 3 well volumes of water using a polyvinyl chloride (PVC) bailer.

4. Water samples were collected with a single-use Teflon bailer after the well had been purged and water in the well had equilibrated to approximately 80 percent of the static water level or 2 hours after well purging, whichever occurred first. The water collected was immediately decanted into laboratory-supplied vials and bottles. The containers were overfilled, capped, labeled, and placed in a chilled cooler prior to delivery to the laboratory for analysis.

5. Chain-of-custody procedures, including chain-of-custody forms, were used to document water sample handling and transport from collection to delivery to the laboratory for analyses.

6. Groundwater samples were delivered to the State-certified hazardous waste laboratory within approximately 48-hours of collection.

7. Purged water was contained in a DOT approved 55-gallon drum. The drum was labeled with the contents, date, well number, client name, and project number.

III. GROUNDWATER SAMPLING

The following are procedures were implemented while performing well monitoring, well purging, and water sampling.

1. All equipment was washed prior to entering the well with an Alconox solution, followed by two tap water rinses and a deionized water rinse.

2. Prior to purging the wells, depth-to-water was measured using an Solinst groundwater interface probe to an accuracy of approximately 0.01 foot. The measurements were made to the top of the well casing on the north side.

3. Monitoring wells at the site were prepared for sampling by purging the well of approximately 3 well volumes of water using a polyvinyl chloride (PVC) bailer.

4. Water samples were collected with a single-use Teflon bailer after the well had been purged and water in the well had equilibrated to approximately 80 percent of the static water level or 2 hours after well purging, whichever occurred first. The water collected was immediately decanted into laboratory-supplied vials and

bottles. The containers were overfilled, capped, labeled, and placed in a chilled cooler prior to delivery to the laboratory for analysis.

5. Chain-of-custody procedures, including chain-of-custody forms, were used to document water sample handling and transport from collection to delivery to the laboratory for analyses.

6. Groundwater samples were delivered to the State-certified hazardous waste laboratory within approximately 48-hours of collection.

7. Purged water was contained in a DOT approved 55-gallon drum. The drum was labeled with the contents, date, well number, client name, and project number.