ALTON GEOSCIENCE, INC.

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January 22, 1990

Mr. Ariu Levy
Alameda County Department
of Environmental Health
80 Swan Way, Rm. 200
Oakland, California 94621

30-103

Subject: Phase I - Site Investigation for
Former Mobil Oil Station #10-H69,
4280 Foothill Boulevard, Oakland, California

Dear Mr. Levy:

On behalf of Mobil Oil Corporation, we are submitting the enclosed Work Plan to conduct the Phase I - Site Investigation for former Mobil Oil Station #10-H69, 4280 Foothill Boulevard, Oakland, California. If you have any questions or comments, please call me at 682-1582.

Respectfully submitted,

Brady Nagle
Project Manager

Enclosure

cc: Lester Feldman, San Francisco Bay Regional Water Quality Control Board, 1800 Harrison Street, Room 700, Oakland, California 94612

Steve Pao, Mobil Oil Corporation, 3800 West Alameda Avenue, Suite 700, Oakland, California 91505-4331

David Noe, Mobil Oil Corporation

WORK PLAN
SITE INVESTIGATION

FORMER MOBIL OIL CORPORATION
SERVICE STATION NO. 10-H69
4280 FOOTHILL BOULEVARD
OAKLAND, CALIFORNIA

Project No. 30-103

January 19 ,1990

WORK PLAN
FOR SITE INVESTIGATION

FORMER MOBIL OIL CORPORATION
STATION NO. 10-H69
4280 FOOTHILL BOULEVARD
OAKLAND, CALIFORNIA

ALTON GEOSCIENCE PROJECT NO. 30-103

This Work Plan was based on currently available data and was developed in accordance with current hydrogeologic and engineering practices.

This Work Plan was prepared by:

Brady Nagle
Project Manager

1/19/90
Date

This Work Plan was reviewed by:

Al Sevilla
Registered Civil Engineer
No. 26392
Operation Manager

1/19/90
Date

REGISTERED PROFESSIONAL ENGINEER
ALBERTO SANCHEZ SEVILLA
26392
Exp. Date 3/31/92
CIVIL
STATE OF CALIFORNIA

PROPOSED SCOPE OF WORK
FOR
PHASE I - SITE ASSESSMENT

FORMER MOBIL OIL CORPORATION
SITE #10-H69
4280 FOOTHILL BOULEVARD
OAKLAND, CALIFORNIA

ALTON GEOSCIENCE PROJECT NO. 30-103

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PROPOSED SCOPE OF WORK
FOR
PHASE I - SITE ASSESSMENT

Former Mobil Oil Corporation
Site #10-H69
4280 Foothill Boulevard
Oakland, California

1.0 INTRODUCTION

This work plan presents the proposed scope of work to conduct a Phase I - Site Assessment of subsurface contamination at former Mobil Oil Site #10-H69, located at 4280 Foothill Boulevard, Oakland, California. The proposed scope of work is based on the results of preliminary site investigation study conducted by others to determine the presence or non-presence of subsurface contamination at the site.

The primary intent of the proposed supplemental investigation work is to: (1) determine the nature and extent of subsurface contamination, and (2) develop an appropriate course of action for further investigation and/or remediation.

2.0 PROJECT BACKGROUND

Mobil Oil Corporation contracted Target Environmental Services to conduct a soil gas survey at the site, as part of a property transfer program to investigate the possibility of subsurface hydrocarbon contamination onsite. The survey was conducted on March 10, 1989, and revealed the presence of detectable concentrations of petroleum hydrocarbon constituents in the soil vapor samples.

Isoconcentration maps and chromatogram data generated during the survey suggest two potential sources of hydrocarbon contamination of the subsurface soil; one west of the main building, and one between the eastern pump island and the tank field. Contaminant migration to the southwest appears to be limited. The southeastern extent of the soil gas contaminant plume was not defined since it extends beyond the limits of the survey or property.

3.0 SCOPE OF WORK

Alton Geoscience proposes to perform the required site investigation work in accordance with the applicable regulations and guidelines of the San Francisco Bay Regional Water Quality Control Board (RWQCB). The scope of work is as follows:

Task A: Literature Search and Preliminary Hydrogeologic Assessment

Alton Geoscience will conduct a literature review of available information and reports relevant to the site, and a preliminary hydrogeologic assessment prior to commencement of field work, to determine the number and placement of the soil borings and/or groundwater monitoring wells.

Information pertaining to the site history and previous hydrogeological studies will be provided by Mobil Oil Company. Other background information and reports available from other sources will be obtained and reviewed as part of this task, including:

1. Documents on water well existence and usage in the immediate area (up to 1/4 mile radius).

2. Structures and utilities that may be impacted by potential fuel release.

Task B: Prepare Work Plan and Acquire Necessary Permits

Alton Geoscience has prepared this work plan for submittal to the regulatory agencies and will procure all necessary drilling and groundwater well permits, schedule the field activities, and will locate underground utility lines, prior to commencement of field work.

Task C: Install Exploratory Soil Borings and Groundwater Monitoring Wells

To investigate the lateral and vertical extent of soil and groundwater contamination (if any), four exploratory soil borings will be drilled using a 10-inch CME 75 hollow stem auger.

Procedures for drilling, soil sampling, well installation and development, and water sampling and analysis will be in accordance with the applicable

requirements and guidelines of RWQCB as shown in Appendix A.

During drilling, soil samples will be collected at 5-foot intervals beginning at 5 feet below grade, continuing through the capillary fringe and terminating at 50 feet or to the top of the water table, if encountered. Soil samples will be obtained through a split spoon sampler lined with stainless steel tubes. The samples recovered for analysis will be sealed airtight with teflon tape and plastic caps, and placed immediately into an iced cooler.

All of the soil borings will be converted to ground water monitoring wells to a depth of about 20 feet below the top of the first saturated zone encountered. It is anticipated that ground water well be encountered at a depth of about 30 to 40 feet below grade. The wells will be constructed of clean 4-inch diameter PVC pipe in accordance with the requirements of the RWQCB. The top of each well shall be secured with locking caps and water tight boxes finished flush with the ground surface.

Task D: Develop, Sample and Survey Groundwater Monitoring Wells

The groundwater monitoring wells will be properly developed and sampled in accordance with the RWQCB guidelines. Three to ten days following well development, water samples will be collected in sterile containers and transported to a State certified laboratory for analysis. Each well will be surveyed from top of casings to 0.01 foot accuracy to a common datum and an established benchmark with respect to location and elevation.

Task E: Analyze Soil and Groundwater Samples

Soil and groundwater samples will be transported to a state certified laboratory and analyzed for total petroleum hydrocarbons (TPH), benzene, toluene, ethylbenzene, and xylene (BTEX), and for organic lead, using appropriate standard EPA methods. The samples will be analyzed on a one week turnaround time.

Task F: Analyze Data and Laboratory Results

Upon completion of the sample analysis and background research, a detailed analysis of results and available information will be conducted to determine the extent and nature of subsurface contamination, if any. This will include interpretation of geologic and hydrogeologic information and assessment of the potential short-and long-term impacts of contamination, if any, on the beneficial uses of ground water and surface water.

Based on the results of the investigation and data analysis, Alton Geoscience will develop appropriate courses of action by considering one or a combination of the following:

1. Request regulatory agencies for closure of the case.

2. Further site characterization to adequately define the extent of subsurface contamination.

3. Remediation of subsurface contamination.

Task G: Prepare Report

A report presenting our findings, conclusions, and recommendations will be prepared and submitted to Mobil Oil for review and approval prior to submittal to the Alameda County Department of Environmental Health and the RWQCB. The report will include all the information outlined in the Technical Specifications, and as required by the regulatory agencies. Two copies of the preliminary draft report will be submitted to Mobil Oil. Upon receipt of the comments, Alton Geoscience will prepare the final report and submit five copies to Mobil Oil.

4.0 SITE SAFETY PLAN

All field procedures and activities related to the conduct of the site investigation work will be in accordance with the site specific safety plan (SSP) to be developed for the project. The site safety plan will be developed in compliance with applicable requirements of the California Department of Health Services, and the Federal and State Occupational Safety and Health Administration (OSHA and Cal-OSHA). An example SSP is presented in Appendix B.

5.0 IMPLEMENTATION SCHEDULE

The final schedule for completion of the proposed scope of work will be established during the development of the work plan and in accordance with requirements of the regulatory agencies. Assuming a start date of January 15, 1989, we anticipate to complete the proposed tasks as follows:

Task/Activity	Estimated Completion Date
- Data review/hydrogeologic assessment	January 18, 1990
- Work plan preparation	January 20, 1990
- Soil borings/well installation	January 29, 1990
- Well development/sampling	January 30, 1990
- Sample analysis	February 5, 1990
- Data analysis	February 10, 1990
- Report preparation	February 18, 1990

6.0 RESPONSIBLE PARTIES

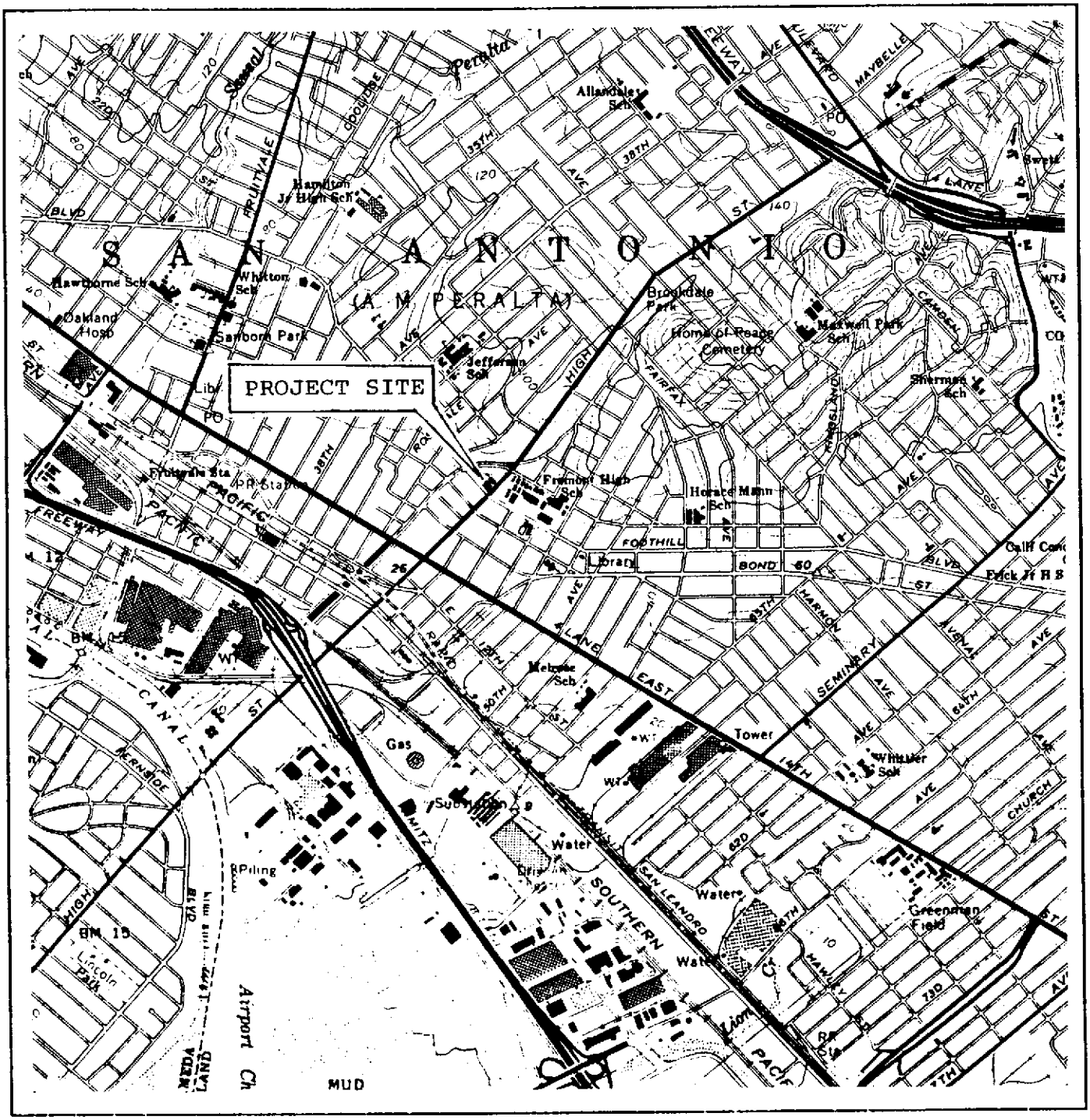
Responsible parties involved with the site investigation and installation of the tank monitoring system are:

- Mobil Oil Corporation
  3800 West Alameda Ave., Suite 700
  Burbank, CA 91505-4331

  Contact: Mr. David Noe, P.E.
  Environmental Advisor
  (818) 953-2626

- Alton Geoscience, Inc.
  1170 Burnett Avenue, Suite "S"
  Concord, CA 94520

  Contact: Al Sevilla, P.E. or Brady Nagle
  Operations Manager Project Manager
  (415) 682-1582



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SCALE IN FEET

Source: U.S.Geological Map, Oakland East Quadrangle, California. 7.5 minute series. 1959. Photorevised 1980.

FIGURE 1 VICINITY MAP

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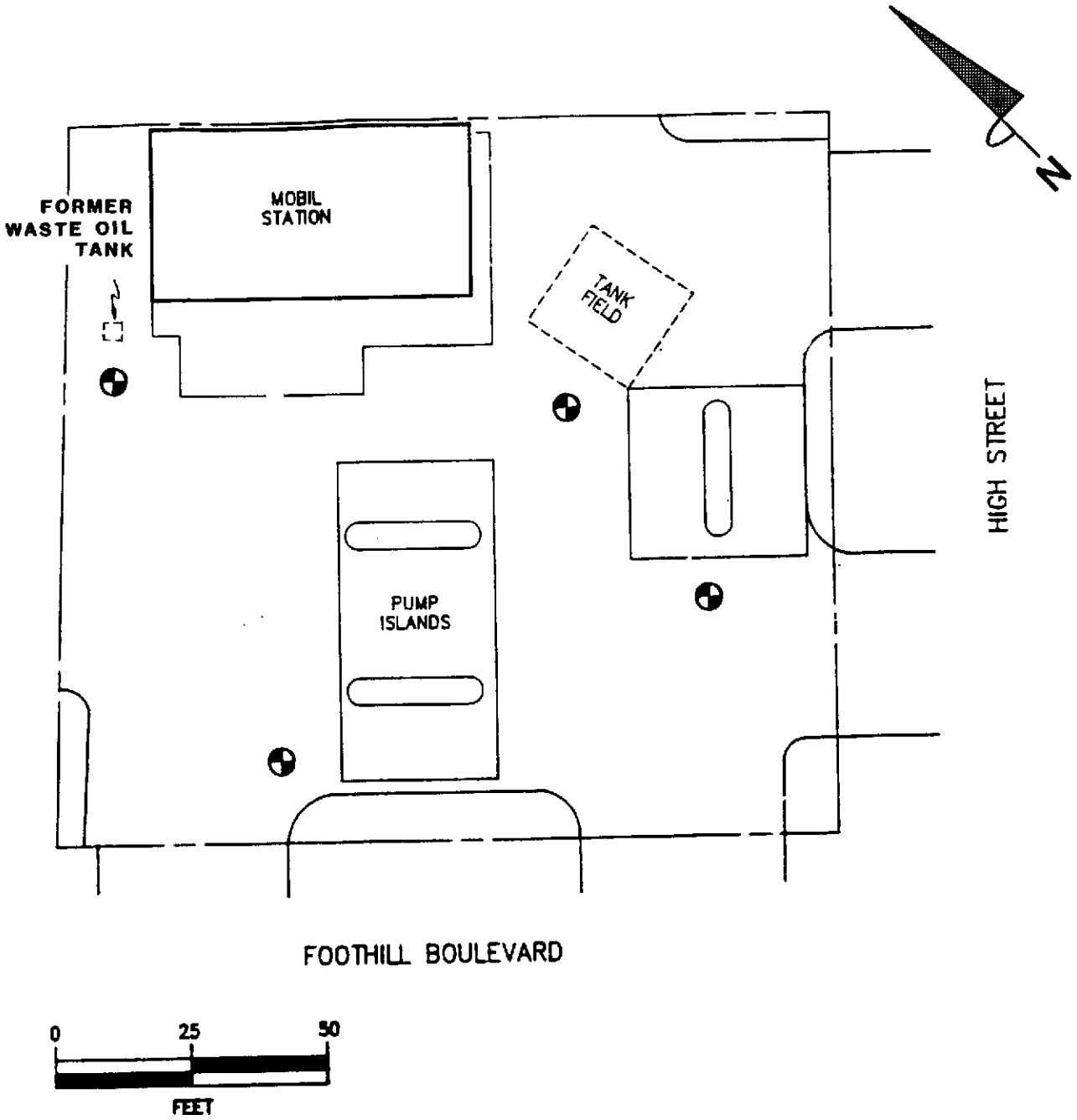
CONCORD, CA. 94520



KEY

Proposed Ground Water Monitoring Location

FIGURE 2 SITE PLAN SHOWING MONITORING WELL AND SOIL BORING LOCATIONS

MONITORING WELL CONSTRUCTION DETAIL

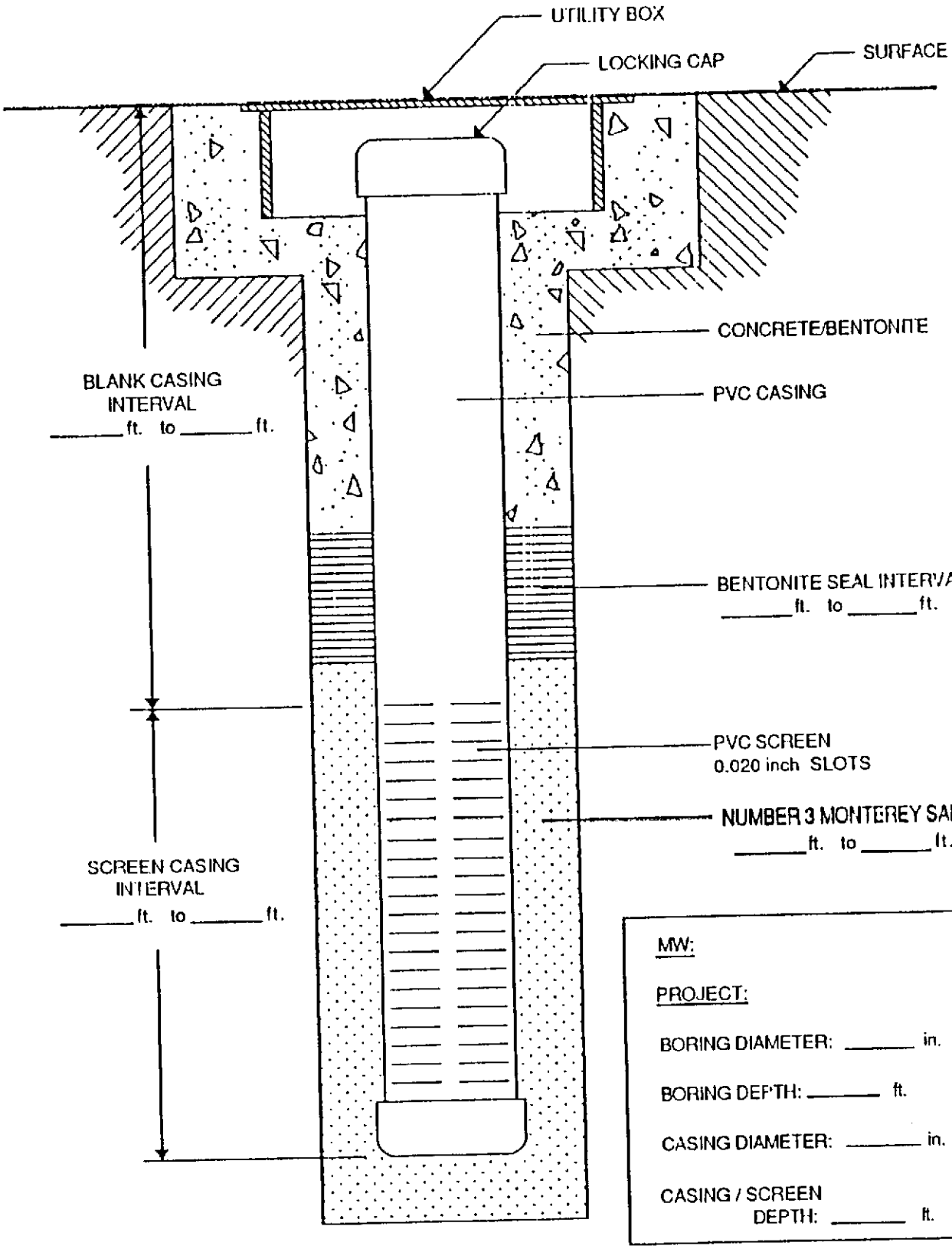


FIGURE 3 TYPICAL WELL CONSTRUCTION

NOTE: DRAWING IS NOT TO SCALE

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CONCORD, CA. 94520

APPENDIX A

GENERAL FIELD PROCEDURES, BORING LOGS, AND WELL CONSTRUCTION DETAILS

A description of general field procedures to be utilized during the proposed investigation is presented below.

A.1 Drilling and Soil Sampling

Soil borings are to be drilled using 8-inch-diameter, continuous-flight hollow-stem augers. The first 5 feet of each boring will be hand excavated to avoid damage to subsurface structures. To avoid cross-contamination, the augers will be steam-cleaned prior to drilling each soil boring.

Soil samples will be obtained from each boring for soil description, field hydrocarbon vapor testing, and laboratory analysis. Soil samples will be retrieved ahead of the lead auger utilizing an 18-inch-long by 2-inch-diameter, split-spoon sampler lined with 1.5-inch-diameter, stainless steel sample inserts. The sampler and sample tubes will be washed with a sodium trisodiumphosphate solution and rinsed with clear water before each sample is collected. The sampler will be driven by a 30-inch free fall of a 140-pound hammer. Blow counts will be recorded for three successive 6-inch intervals.

Soil samples will be collected from borings at 5-foot intervals to the total depth of the boring. If ground water is encountered, soil samples will also be collected from the capillary fringe just above the water table. For borings drilled within the tank cavity backfill, a soil sample will be obtained from the native material approximately one foot below the base of the backfill. Samples collected below the water table will not be submitted for laboratory analysis.

If monitoring well combinations (shallow vadose zone well adjacent to a deeper ground water monitoring well) are required adjacent to the piping trenches, the shallow vadose zone well will be placed within five feet of the accompanying ground water monitoring well. To avoid duplication of logging and laboratory analysis, soil samples will not be

collected from the vadose zone boring during well installation.

During each sampling event, the bottom sample insert will be removed immediately from the sampler and securely sealed with Teflon sheeting and polyurethane caps. The sample will be labeled with a sample identification number, sample depth, geologist's initials, and date of collection. The soil samples will be kept on ice prior to and during transport to a state-certified laboratory.

Soil from the next higher sample insert will then be extruded and tested for elevated hydrocarbon concentrations using a Gastech Model 1238 combustible gas indicator (CGI). The CGI readings will be recorded on the boring log. The remaining soil recovered will then be extruded from the sample insert and described in accordance with the Unified Soil Classification System. For each soil type, field estimates of density/consistency, moisture, color, grading, and soil type will be recorded on the boring logs.

A.2 Monitoring Well Installation

Ground water monitoring wells will be constructed of 4-inch-diameter, flush-threaded, Schedule 40 PVC blank and screened (0.02-inch slot size) casing, constructed as shown in
Figure 4. The casing will be installed after overdrilling the original borehole with 10-inch-diameter hollow-stem augers. The annular space surrounding the screened portion of the well will be backfilled with an appropriately-sized filter pack to a minimum of one and one-half feet above the top of the screened interval. A maximum of one-foot thick bentonite annular seal will be placed above the filter pack and the remaining annulus will be grouted with concrete to the surface. Utility boxes will be installed slightly above grade to minimize infiltration of surface water. Locking well caps will be installed to ensure the integrity of the well. A permanent marker indicating well number, well depth, date of installation, and well owner will be attached to each well.

A.3 Ground Water Sampling

Each newly installed monitoring well will be initially developed to remove as much sand, silt, and turbidity as possible. During development and purging, pH, temperature, and conductivity will be measured to assure these parameters have equilibrated indicating formation water has entered the well casing.

All purging, development, and sampling equipment that comes in contact with ground water will be triple-rinsed prior to each sampling event in successive baths consisting of trisodiumphosphate solution, dilute methanol, and tap water. Ground water samples will be collected by lowering a 2-inch diameter, bottom-fill Teflon bailer to just below the water level in the well. Samples will be carefully transferred form the check-valve equipped Teflon bailer to zero-headspace 1-liter and 4-milliliter glass containers fitted with Teflon-sealed caps. All samples are to be inverted to ensure that entrapped air is not present. Each sample will be labeled with sample number, well number, sample date, and sampler's initials. The samples will remain on ice until they are analyzed at the laboratory.

All soil and fluids generated during the drilling, development, and purging activities are to be temporarily stored onsite in appropriate containers pending results of laboratory analysis. Each container used for fluid disposal will be clearly labeled. Contaminated soil and ground water will be disposed of at an appropriate waste facility upon receipt of laboratory results.

APPENDIX B

SITE SAFETY PLAN

B.1 Introduction

A Site Safety Plan (SSP), designed to address safety provisions needed during the site investigation, will be implemented to provide established procedures to protect all on-site personnel from direct skin contact, inhalation, or ingestion of potentially hazardous materials that may be encountered at the site. The SSP establishes personnel responsibilities, personal protective equipment standards, decontamination procedures, and emergency action plans.

Alton Geoscience will enter the property described above, conduct the proposed investigation and/or installation of a monitoring system following the procedures set forth in this SSP.

The SSP describes means for protecting all on-site personnel from deleterious contamination or personal injury while conducting on-site activities. As described below, Alton Geoscience will strive to meet all requirements promulgated by the California Department of Health Services and Federal and State Occupational Health and Safety Administrations (OSHA and Cal-OSHA).

B.2 Responsibilities of Key Personnel

All personnel onsite will have assigned responsibilities. The Project Geologist, assigned to supervise field work, will also serve as Site Safety Officer (SSO). The SSO will assure that all onsite personnel have received a copy of the SSP. All personnel will be required to document their full understanding of the SSP before admission to the site. Compliance with the SSP will be monitored at all times by the SSO. Appropriate personal protective equipment, listed below in Subsection B.3.3, will be available and utilized by all onsite personnel. Prior to beginning work the SSO will conduct a training session to assure that all onsite personnel are aware of safe work practices and potential hazards at the site. Material Safety Data Sheets (MSDS) will be made available to all personnel.

All onsite employees will take reasonable precautions to avoid unforeseen hazards. After documenting full understanding of the SSP, each onsite employee will be responsible for strict adherence to all procedures described herein. Any deviation observed will be reported to the SSO and corrected. Onsite employees will be held responsible to perform only those tasks for which they believe they are qualified.

Provisions of this SSP are mandatory and all personnel associated with onsite activities will adhere strictly hereto.

B.3 Job Hazard Analysis

Hazards likely to be encountered onsite include those commonly encountered when operating any mechanical equipment, such as the danger of falling objects or moving machinery. Simple precautions will reduce or eliminate risks associated with operating such equipment.

A qualified drilling contractor will be employed to deliver and operate all drilling equipment. Only qualified personnel will have any contact with this equipment. All onsite personnel, including the drilling contractor and his employees, will be required to wear hard hats when in close proximity to drilling equipment. Latex sampling gloves will be worn by persons collecting or handling samples to prevent exposure to contaminants. Gloves will be changed between samples, and used ones discarded, to avoid cross-contamination. Proper respiratory equipment will be worn if vapor contamination levels onsite exceed action levels as determined using a Photo-Ionization Detector (PID) or Organic Vapor Analyzer (OVA). Furthermore, no onsite smoking, open flame, or sparks will be permitted, to prevent accidental ignition of gasoline contamination. All personnel shall also adhere to safety procedures and requirements of Mobil Oil Corporation.

B.3.1 Risk Assessment Summary

Exposure to chemicals anticipated onsite as major contaminants, including benzene, toluene, and xylene (BTX), ethyl benzene, gasoline fuel hydrocarbons, and tetraethyl lead, represents a hazard because they are moderately to extremely toxic and most are highly flammable. Threshold Limit Values (TLV's), Short Term

Exposure Limits (STEL's), and Toxicity Levels (LD50, oral-rat), all in mg/kg (ppm), are listed below:

Compound	TLV	STEL	Toxicity	Skin Contact
Benzenes	10	25	4894	-
Toluene	100	150	5000	-
Xylene	100	150	4300	-
Tetraethyl lead	-	-	-	0.1

Benzene is considered an extreme cancer hazard. Applicable MSDS forms are included in Appendix C.

B.3.2 Exposure Monitoring Plan

A Photo-Ionization Detector (PID) or Organic Vapor Analyzer (OVA) will be used to monitor vapor concentrations around the site. Should concentrations exceed TLV's, protective measures will be implemented.

B.3.3 Personal Protective Equipment

All personnel onsite will have access to respirators with organic vapor cartridges. Replacement cartridges will be available onsite as needed. When handling samples, the onsite geologist will wear latex gloves. Hard hats will be worn by all personnel onsite when in proximity of drilling equipment.

B.4 Work Zones and Security Measures

Access to the site will be restricted to authorized personnel. Barricades and/or traffic cones will be placed to form a barricade at least 50 feet away from and surrounding the site during drilling operations. The Project Geologist will be responsible for site security.

B.5 Decontamination Measures

Avoidance of contamination whenever possible is the best method for protection. Common sense dictates that onsite personnel avoid sitting, leaning, or placing equipment on possibly contaminated soil or surfaces. All personnel will be required to wash hands, neck, and face with soap and water before taking a break or leaving the site. Respirators will be washed with soap and water following each day's use.

Drilling and sampling equipment used will be decontaminated by steam-cleaning. Sampling equipment will be decontaminated before each sample is taken and drilling equipment will be decontaminated before each boring is commenced.

B.6 General Safe Work Practices

Personal safety and hygiene should be of utmost consideration while onsite. To prevent ingestion of contaminants no person shall be allowed to eat, drink, or smoke on the site. The Site Safety Officer will designate an appropriate nearby area.

B.6.1 Standard Operating Procedures

Drillers and other onsite personnel will be briefed each day in "tail-gate" meetings as to the day's goals and equipment to be used. Anticipated contaminants and emergency procedures will be reviewed. Appropriate personal protective equipment will be put on and verified correct by the SSO, including respirator fit.

Drilling and sampling equipment will be steam-cleaned before being brought onsite. Split-spoon sampling equipment will be steam-cleaned before each use. Augers will be steam-cleaned between borings.

The Project Geologist will oversee all operations and log all borings in consultation with drillers. Further, he or she will assure that proper protocol is used at all times in collecting and handling samples.

B.6.2 Training Requirements

The SSO will conduct a pre-job training session which will include all points of MSDS forms, contaminant properties to be encountered, warning signs, health hazard data, risks from exposure, and emergency first aid. All points of the SSP will be covered and the SSO will assure that everyone fully understands site hazards before work begins.

B.6.3 Medical Surveillance Program

According to CFR 29, 1910.120, Paragraph (f), employees who wear respirators 30 days or more during one year or who have been exposed to hazardous substances or health hazards above established permissible exposure limits

are required to be monitored medically. As of this date our personnel have had to wear respirators only a few days each year and no serious exposures have taken place. Under these regulations we are exempt from the surveillance requirement.

B.6.4 Record-keeping

Documentation will be kept on all personnel exposed to contaminant hazards on the job site according to OSHA regulations. These will include documentation that employees have received training on the SSP, respiratory protection, MSDS forms, and all emergency procedures. These will be reviewed during the pre-site training meeting.

Exposure records on each job will be kept for 30 years to meet requirements. Included will be names and Social Security numbers of employees, medical evaluations, on-the-job logs from entry to exit, first aid administered, visits onsite by outside persons, and personal air monitoring records.

B.7 Emergency Response and Contingency Plans

In the event of accident, injury, or other emergency the Project Geologist, Site Safety Officer, or other person will notify appropriate government agencies or individuals as follows:

1) Alameda County Department of Environmental Health
   Mr. Ariu Levy
   Hazardous Materials Specialist
   Telephone: (415) 271-4320

2) Police, Fire, or Ambulance emergency
   911

3) Nearest Emergency Hospital:

   To be determined by Police, Fire, or Ambulance emergency personnel.