2116

WORKPLAN
FOR
GROUNDWATER INVESTIGATION

2345 E. 14TH STREET
OAKLAND, CA 94610

8-4-95

Prepared For:
MESSRS. AARON AND STANLEY WONG
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OAKLAND, CA 94606

Submitted By:
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August 4, 1995

Project Number 267

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Expiration 4/30/96

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Principal Engineer

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This workplan has been prepared by the staff of **Tank Protect Engineering of Northern California, Inc.** under direction of an Engineer and/or Geologist whose seal(s) and/or signature(s) appear hereon.

The findings, recommendations, specifications or professional opinions are presented, within the limits prescribed by the client, after being prepared in accordance with generally accepted professional engineering and geologic practice. We make no other warranty, either expressed or implied.

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1.0 INTRODUCTION

The subject site is located at 2345 E. 14th Street in the City of Oakland in Alameda County, California and is owned by Messrs. Aaron and Stanley Wong [(Wong); telephone number (510) 532-1672]. The site is presently vacant but was most recently occupied by a used car dealership known as Credit World Auto Sales. The only onsite structure is a building which includes an office and automotive service bay.

Soil and groundwater hydrocarbon contamination have been documented at the site as the result of underground tank closure activities in August, 1988. Since that time, several consultants have conducted soil and groundwater investigations to characterize the extent of contamination. Soil remediation activities were begun by Tank Protect Engineering of Northern California, Inc. (TPE) in December of 1994.

In a May 17, 1995 letter to Wong, the Alameda County Health Care Services Agency (ACHCSA) has requested an additional groundwater investigation. In response to the ACHCSA's letter, Wong has contracted with TPE to prepare this workplan. The workplan summarizes the background of work conducted at the site and proposes a scope of work for an additional groundwater investigation.

2.0 BACKGROUND

Previous work conducted by others and TPE:

- August 5, 1988 - West Coast Tank Company of Campbell, California removed one 8,000-gallon and two 6,000-gallon underground gasoline storage tanks; one 1,000-gallon underground waste oil storage tank; 2 dispenser islands; and associated piping from the site.

- August 25, 1988 - SCS Engineers (SCS) of Dublin, California collected soil samples from beneath the former locations of each gasoline tank and the waste oil tank. Samples collected from beneath the gasoline tanks were analyzed for total petroleum hydrocarbons as gasoline (TPHG) by the United States Environmental Protection Agency (EPA) Method 8015;

for benzene, toluene, ethylbenzene, and xylenes (BTEX) by EPA Method 8020; and for lead by EPA Method 7420. Samples collected from beneath the waste oil storage tank were analyzed for total petroleum hydrocarbons as diesel (TPHD) by EPA Method 8015, for total oil & grease (TOG) by Standard Method 503E, and for volatile organics by EPA Method 624. The reader is referred to SCS's September 19, 1988 letter report to Mr. Dino Gonis for documentation of the work conducted on August 5 and 25, 1988.

- October 3, 1988 - California Environmental Consultants (CEC) drilled 3 soil borings, B-1 through B-3, to characterize the soil in the vicinity of the tanks. Borings B-1 and B-2 were drilled in the area of the former underground gasoline tanks and boring B-3 was drilled in the area of the former waste oil tank. One soil sample and 1 "grab" groundwater sample were collected from each boring. Soil samples were collected at depths of about 15 feet. The reader is referred to CEC's November 21, 1988 letter report to Mr. Dino Gonis for documentation of the work and analytical results.

- May 22, August 21, and August 22, 1991 - Earth Systems Environmental, Inc. (ESE), under subcontract to Mobile Labs, installed 3 groundwater monitoring wells, MW-1 through MW-3, and drilled 5 soil borings, TH-1 through TH-5, as a further characterization of soil and groundwater contamination.

- August 23, 1991 - ESE collected groundwater samples from the monitoring wells and analyzed the samples for TPHG by Modified EPA Method 8015 and for BTEX by EPA Method 602. The reader is referred to ESE's December 23, 1991 Phase I Soil and Ground Water Assessment report for documentation of the work conducted during May and August, 1991.

- April 16, 1992 - NKJ Environmental Monitoring (NKJ) measured depth-to-groundwater in each well and found floating product present in all wells. The thickness of product ranged from 0.16 to 5.12 feet. The

reader is referred to NKJ's May 1, 1992 letter report to Mobile Labs, Inc. for documentation of the work.

- October 19, 1992 - The ACHCSA submitted a letter to Wong titled Request for Report of Subsurface Investigation and Workplan Addendum for Former Taxi Taxi, Inc. at 2345 E. 14th St., Oakland, CA 94601. This letter requested additional information about the tank closure, disposition of stockpiled soil, and an additional workplan to further characterize soil and groundwater contamination.

- October 30, 1992 - The ACHCSA submitted a letter to Wong titled Subsurface Investigation at Former Taxi Taxi at 2345 E. 14th St., Oakland, CA 94601. This letter approved ESE's recommendations for installation of 2 additional groundwater monitoring wells and recommended a product removal system.

- June 18, 1993 - TPE submitted a Workplan for Construction of Groundwater Monitoring Wells (WP) to Wong.

- June 25, 1993 - The ACHCSA submitted a letter to Wong approving TPE's WP.

- July 22 and 23, 1993 - TPE installed groundwater monitoring wells TMW-4 and TMW-5 and collected soil samples from each boring for chemical analysis for TPHG and BTEX.

- August 17, 1993 - TPE conducted a groundwater sampling event for wells MW-1 through TMW-5 to evaluate groundwater contamination by TPHG and BTEX.

- November 4, 1993 - TPE submitted a Preliminary Site Assessment Report, Credit World Auto Sales, 2345 E. 14th Street, Oakland, CA 94601 to Wong.

- March 28, 1994 - TPE conducted a groundwater quarterly sampling event for wells MW-1 through TMW-5 to evaluate groundwater contamination by TPHG and BTEX.

- May 18, 1994 - TPE submitted a First Quarter Report, 1994, Credit World Auto Sales, 2345 E. 14th Street, Oakland, CA 94601 to Wong.

- June 27, 1994 - TPE conducted a quarterly groundwater sampling event for wells MW-1 through TMW-5 to evaluate groundwater contamination by TPHG and BTEX.

- July 29, 1994 - TPE submitted a Second Quarter Report, 1994, Credit World Auto Sales, 2345 E. 14th Street, Oakland, CA 94601 to Wong.

- September 16, 1994 - TPE conducted a quarterly groundwater sampling event for wells MW-1 through TMW-5 to evaluate groundwater contamination by TPHG and BTEX.

- November 2, 1994 - TPE submitted a Third Quarter Report, 1994, Credit World Auto Sales, 2345 E. 14th Street, Oakland, CA 94601 to Wong.

- December 5, 1994 - TPE began excavation of contaminated soil in the area of the former underground fuel tank complex.

- February 14, 1995 - TPE began remediation of stockpiled soil by aeration.

- March 31, 1995 - TPE conducted a quarterly groundwater sampling event for wells MW-1 through TMW-5 to evaluate groundwater contamination by TPHG and BTEX.

- May 3, 1995 - TPE submitted a First Quarter Report, 1995, Credit World Auto Sales, 2345 E. 14th Street, Oakland, CA 94601 to Wong.

- May 11 and 12, 1995 - TPE collected verification soil samples to document stockpiled soil remediation.

- June 26, 1995 - TPE partially backfilled the excavation with the remediated stockpiled soil.

- June 28, 1995 - TPE conducted a quarterly groundwater sampling event for wells MW-1 through TMW-5 to evaluate groundwater contamination by TPHG and BTEX.

- June 30, 1995 - TPE continued excavation of contaminated soil and collected verification soil samples.

3.0 PROPOSED SCOPE OF WORK

As an additional investigation of groundwater contamination, TPE proposes the following scope of work:

- Obtain soil boring permits from the Alameda County Flood Control and Water Conservation District, Water Resources Management, Zone 7 (Zone 7) and excavation permits from the City of Oakland.

- Conduct an Underground Service Alert (USA) location request and contract with a private underground utility locating service to minimize the potential of encountering subsurface utilities and underground objects while conducting soil borings.

- Notify appropriate regulators prior to commencing the soil borings.

- Drill 9 exploratory soil borings to the depth of groundwater to further investigate the horizontal extent of groundwater contamination.

- Collect soil samples from each boring at approximately 5-foot depth intervals, changes in lithology, and occurrence of apparent soil

contamination for construction of a boring log and for potential selection for chemical analysis.

- Collect a "grab" groundwater sample from each soil boring for chemical analysis.
- Seal the soil borings to ground surface with neat Portland cement.
- Analyze selected vadose zone soil samples and "grab" groundwater samples from each boring for TPHG and BTEX chemicals.
- Prepare a Site Assessment Report.

Details of the proposed scope of work are presented below.

3.1 Prefield Activities

Prior to drilling soil borings, TPE will: obtain soil boring permits from Zone 7 and excavation permits from the City of Oakland, notify USA and contract with private subsurface utility locating service to minimize the potential of encountering underground utilities and objects while conducting soil borings, and notify the ACHCSA.

3.2 Rationale for Locations of Soil Borings

TPE proposes to drill 9 soil borings (SB-1 through SB-9) at the locations shown in Figure 1.

The proposed soil borings have been located to investigate the horizontal extent of groundwater contamination, both upgradient and downgradient of existing onsite wells.

Because groundwater flow direction ranges from northeast to northwest to southwest, proposed soil borings SB-3 through SB-8 have been located in East 14th Street and on private property to the northwest and southwest of Wong's property to investigate

the extent of the hydrocarbon plume in those directions. To verify the absence of the hydrocarbon plume in upgradient directions and/or to investigate for potential offsite sources of contamination, proposed soil borings SB-1, SB-2, and SB-9 have been located in Miller Avenue to the southeast and south of Wong's property.

TPE will assist Wong in obtaining permission to conduct soil borings on private property.

3.3 Soil Investigation

The following discussion proposes soil boring and sampling procedures and chemical analyses. Appendices A, B, and C document TPE's protocols relative to sample handling, waste handling and decontamination, and quality assurance and quality control procedures.

3.3.1 Soil Boring and Sampling Procedures

The exploratory borings are proposed to be drilled to depths up to 35 feet by a soil core procedure used by State of California licensed (C-57 Water Well Driller contractor's license 636387) Precision Sampling, Inc. (PSI) located in San Rafael, California. The core procedure collects continuous soil cores by driving nested (inner and outer) sampling rods 3 feet at a time. As the rods are driven, soil is collected into a 1 and 7/8-inch diameter, 3-foot long sample barrel that is attached to the end of the inner rods. The sample barrel contains six 1 and 3/4-inch diameter, 6-inch long, stainless steel sleeves. After being driven 3 feet, the inner rods, with sample barrel attached, are removed from the borehole with a hydraulic winch, and soil samples are retrieved for logging and selection for chemical analysis. The outer rods remain in place in the soil to seal the formation from sloughing. The procedure is repeated until the desired depth is reached (see Appendix D for PSI Enviro-Core Wireline Sample Recovery System). All drive casing, inner sample barrels, inner rods, and tools will be cleaned with a high-pressure, hot water washer between borings. The sample barrels will be washed with trisodium phosphate and double-rinsed with deionized water between sampling events.

All soil cores will be examined for apparent contamination based on field-screening criteria that include staining, hydrocarbon odors, and headspace analysis. Headspace analysis will be conducted on selected samples for detection of volatile organic compounds using a Gastech, Inc., Trace-Techtor hydrocarbon vapor detector (HVT). The analysis will be performed by sealing soil samples in quart-size plastic bags and warming the bagged samples to promote volatilization of any hydrocarbons that may be present in the soil. The headspace in the plastic bags will be tested by inserting the probe of the HVT into the bag (while minimizing the entry of new air into the bag) and recording the response in parts per million (ppm).

All soil borings will be sealed to ground surface by tremie with neat cement.

Detailed boring logs will be prepared from the continuous soil cores. The soil will be logged according to the Unified Soil Classification System under the direction of a California Registered Geologist or Professional Engineer.

Drill cuttings and rinsate will be stored on site in labeled, 5-gallon, DOT 17H pails and/or 55-gallon DOT 17H drums. The labels will show contents, date stored, suspected chemical contaminant, expected date of removal, company name, contact person, and telephone number. Maintenance of the pails and/or drums and disposal of the cuttings, rinsate, and pails and/or drums is the responsibility of Wong. After the cuttings and rinsate are characterized by chemical analysis, TPE will provide recommendations to Wong and, upon their request, assist them in remediation and/or disposal of the cuttings and disposal of the pails and/or drums in an appropriate manner as additional work items.

3.3.1.1 Number of Soil Samples to be Analyzed and Sample Handling

Soil samples having apparent hydrocarbon contamination, based on the above field-screening methods, will be collected for chemical analysis. If no apparent hydrocarbon contamination is present in any boring, a soil sample collected within 5 feet of the first occurrence of groundwater will be collected for chemical analysis.

Soil samples collected for chemical analysis will be preserved in the stainless steel tubes by quickly covering the open ends with Teflon sheeting and capping them with plastic end-caps. The samples will be labeled to show site name, project number, date and time collected, sample name, depth collected, and sampler name; sealed in quart-size plastic bags; stored in an iced-cooler; and delivered to a California Department of Health Services (DHS) certified laboratory for chemical analysis.

3.3.1.2 Chemical Analyses

All soil samples are proposed to be analyzed for TPHG and BTEX by EPA Methods GCFID 5030/8015 and 8020, respectively.

3.3.2 "Grab" Groundwater Sampling

After reaching the first water bearing zone in each boring, by the above soil boring procedure, the sample barrel and inner rods will be removed from the borehole. A 1-inch diameter schedule 40 polyvinyl chloride (PVC) casing with a 5-foot section of .010-inch slotted well screen will be installed in the borehole and the drive casing will be pulled up about 3 feet to allow groundwater to enter the boring. A "grab" groundwater sample will be collected from within the PVC casing with a 1-inch diameter Teflon of stainless steel bailer.

The groundwater samples will be stored in laboratory provided, 40-milliliter, preserved, vials having Teflon-lined caps. The bottles will be filled with no headspace, labeled to show site name, project number, date and time collected, sample name, depth collected, and sampler name; stored in an iced-cooler; and delivered to a DHS certified laboratory for chemical analysis.

3.3.2.1 Chemical Analyses

All groundwater samples are proposed to be analyzed for TPHG and BTEX by EPA Methods GCFID 5030/8015 and 8020, respectively.

3.4 Site Assessment Report

The information collected, analytical results, and TPE's conclusions and recommendations will be summarized in a report. The report will describe the work performed and include: copies of all permits required to conduct the work, a detailed site plan showing locations of soil borings, graphic boring logs, tabulated results of soil and groundwater chemical analyses, and copies of certified analytical reports with chains-of-custody. Conclusions regarding the extent of contamination will be presented within the context of this workplan. Recommendations for feasible remedial alternatives and/or supplemental sampling and analyses will be included.

The report will be reviewed and signed by a California Registered Geologist or Professional Engineer.

4.0 SITE HEALTH AND SAFETY PLAN

The above scope of work will be conducted according to Site Health and Safety Plans developed earlier for the subject site.

5.0 TIME SCHEDULE

The projected time schedule for implementation of the activities described in this workplan is presented below. The schedule reflects a relatively problem-free program. However, delays in the workplan review, permitting, or laboratory analyses could lengthen the project schedule. Access difficulties, adverse weather, and regulator review could also delay the proposed time schedule. TPE will make every effort to adhere to the project schedule.

Week 1: Client submits workplan for regulator approval.

Week 2: Regulator approves workplan; TPE assists Wong in obtaining access to private property to conduct soil borings, obtains drilling and excavation permits, notifies USA, and

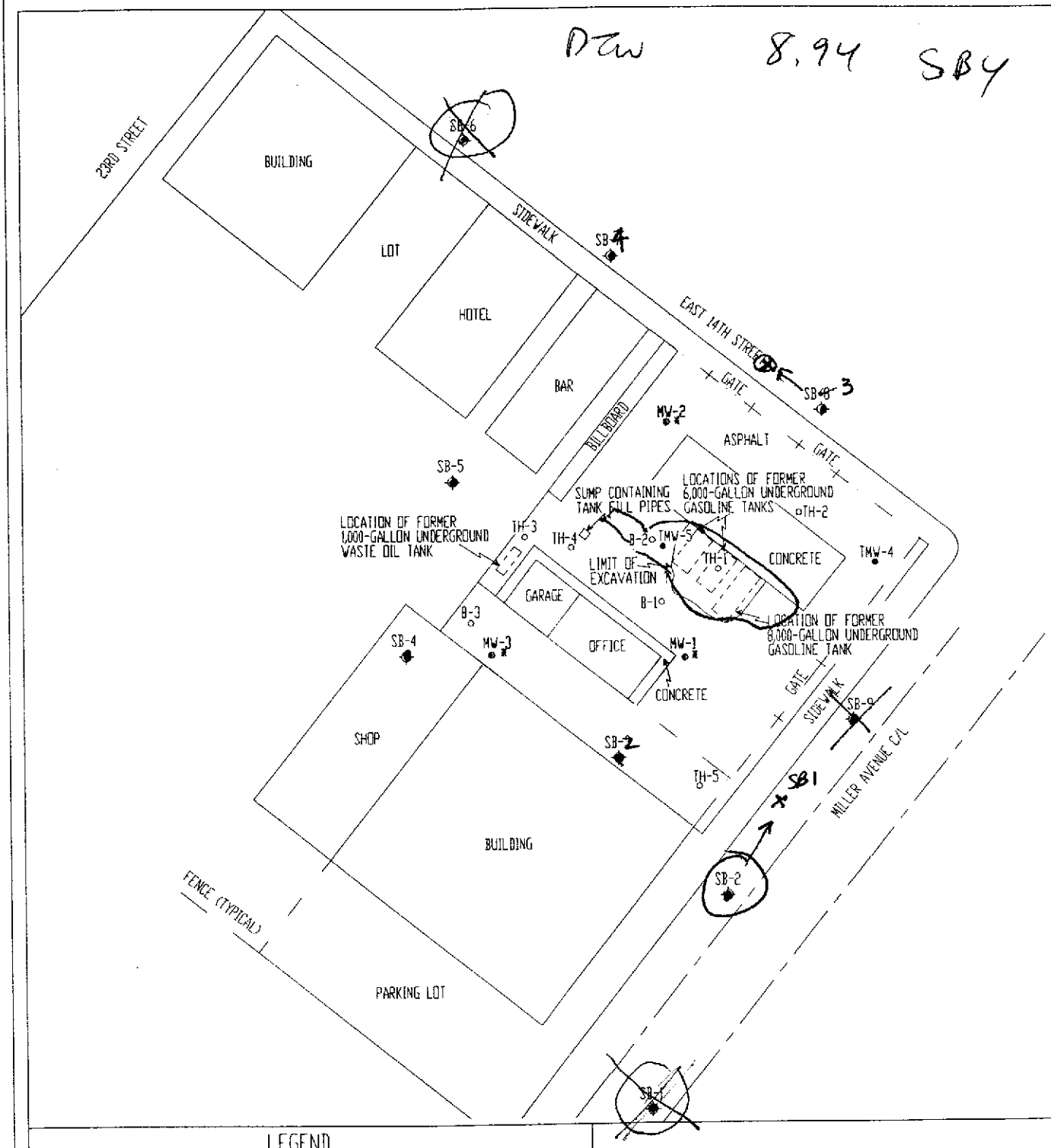
subcontracts with subsurface utility locators and drilling company.

Week 4: TPE drills 10 soil borings and submits soil and groundwater samples for chemical analyses.

Week 6: TPE submits a Site Assessment Report to Wong.

DTW 2nd time 15.19 SB5

DTW 8.94 SB4



LEGEND

- TMW-4 ● — NAME AND LOCATION OF MONITORING WELL INSTALLED BY TPE
- MW-1 ◐ — NAME AND LOCATION OF MONITORING WELL INSTALLED BY OTHERS
- B-1 ○ — NAME AND APPROXIMATE LOCATION OF SOIL BORING DRILLED BY OTHERS
- SB-1 ◇ — LOCATION OF PROPOSED SOIL BORING

-N-

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SCALE IN FEET

TANK PROTECT ENGINEERING

SITE PLAN

CREDIT WORLD AUTO SALES
2345 E. 14TH STREET
OAKLAND, CA 94601

DATE	8/2/95
FIGURE	1
FILE #	267-SN
DRAWN BY	VK
CHECKED BY	JVM

APPENDIX A

SAMPLE HANDLING PROCEDURES

APPENDIX A

SAMPLE HANDLING PROCEDURES

Soil and groundwater samples will be packaged carefully to avoid breakage or contamination and will be delivered to the laboratory in an iced-cooler. The following sample packaging requirements will be followed.

- Sample bottle/sleeve lids will not be mixed. All sample lids will stay with the original containers and have custody seals affixed to them.

- Samples will be secured in coolers to maintain custody, control temperature, and prevent breakage during transportation to the laboratory.

- A chain-of-custody form will be completed for all samples and accompany the sample cooler to the laboratory.

- Ice, blue ice, or dry ice (dry ice will be used for preserving soil samples collected for the Alameda County Water District) will be used to cool samples during transport to the laboratory.

- Water samples will be cooled with crushed ice. In the Alameda County Water District, water samples will be buried in the crushed ice with a thermometer, and the laboratory will be requested to record thermometer temperature at the time of receipt.

- Each sample will be identified by affixing a pressure sensitive, gummed label or standardized tag on the container(s). This label will contain the site identification, sample identification number, date and time of sample collection, and the collector's initials.

- Soil samples collected in brass tubes will be preserved by covering the ends with Teflon tape and capping with plastic end-caps. The tubes will

be labeled, sealed in quart size bags, and placed in an iced-cooler for transport to the laboratory.

All groundwater sample containers will be precleaned and will be obtained from a State Department of Health Services certified analytical laboratory.

Sample Control/Chain-of-Custody: All field personnel will refer to this workplan to verify the methods to be employed during sample collection. All sample gathering activities will be recorded in the site file; all sample transfers will be documented in the chain-of-custody; samples will be identified with labels; and all sample bottles will be custody-sealed. All information is to be recorded in waterproof ink. All TPE field personnel are personally responsible for sample collection and the care and custody of collected samples until the samples are transferred or properly dispatched.

The custody record will be completed by the field technician or professional who has been designated by the TPE project manager as being responsible for sample shipment to the appropriate laboratory. The custody record will include, among other things, the following information: site identification, name of person collecting the samples, date and time samples were collected, type of sampling conducted (composite/grab), location of sampling station, number and type of containers used, and signature of the TPE person relinquishing samples to a non-TPE person with the date and time of transfer noted. The relinquishing individual will also put all the specific shipping data on the custody record.

Records will be maintained by a designated TPE field employee for each sample: site identification, sampling location, station number, date, time, sampler's name, designation of the sample as a grab or composite, notation of the type of sample (e.g., groundwater, soil boring, etc.), preservatives used, onsite measurement data, and other observations or remarks.

APPENDIX B

WASTE HANDLING AND DECONTAMINATION PROCEDURES

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Decontamination: Any drilling, sampling, or field measurement equipment that comes into contact with soil or groundwater will be properly decontaminated prior to its use at the site and after each incident of contact with the soil or groundwater being investigated. Proper decontamination is essential to obtain samples that are representative of environmental conditions and to accurately characterize the extent of soil and groundwater contamination. Hollow-stem auger flights and the drill bit will be steam-cleaned between the drilling of each well.

All sample equipment, including the split-spoon sampler and brass tubes, will be cleaned by washing with trisodium phosphate or alconox detergent, followed by rinsing with tap water. Where required by specific regulatory guidelines, a nonphosphate detergent will be used.

Waste Handling: Waste materials generated during site characterization activities will be handled and stored as hazardous waste and will be stored on site in appropriately labeled containers. Waste materials anticipated include excavated soil, drill cuttings, development and purge water, water generated during aquifer testing, water generated during decontamination, and used personnel protection equipment such as gloves and Tyvek. The site owner will be responsible for providing the storage containers and will be responsible for the disposal of the waste materials. Drill cuttings from individual borings will be stored separately in drums or covered by plastic sheeting, and the appropriate disposal procedure will be determined by the site owner or TPE following receipt of the soil sample analytical results. Drums will be labeled to show material stored, known or suggested contaminant, date stored, expected removal date, company name, contact, and telephone number.

APPENDIX C

QUALITY ASSURANCE AND QUALITY CONTROL PROCEDURES

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QUALITY ASSURANCE AND QUALITY CONTROL PROCEDURES

The overall objectives of the field sampling program include generation of reliable data that will support development of a remedial action plan. Sample quality will be checked by the use of proper sampling, handling, and testing methods. Additional sample quality control methods may include the use of background samples, equipment rinsate samples, and trip and field blanks. Chain-of-custody forms, use of a qualified laboratory, acceptable detection limits, and proper sample preservation and holding times also provide assurance of accurate analytical data.

TPE will follow a quality assurance and quality control (QA/QC) program in the field to ensure that all samples collected and field measurements taken are representative of actual field and environmental conditions and that data obtained are accurate and reproducible. These activities and laboratory QA/QC procedures are described below.

Field Samples: Additional samples may be taken in the field to evaluate both sampling and analytical methods. Three basic categories of QA/QC samples that may be collected are trip blanks, field blanks, and duplicate samples.

Trip blanks are a check for cross-contamination during sample collection, shipment, and laboratory analysis. They are water samples that remain with the collected samples during transportation and are analyzed along with the field samples to check for residual contamination. Analytically confirmed organic-free water will be used for organic parameters and deionized water for metal parameters. Blanks will be prepared by the laboratory supplying the sample containers. The blanks will be numbered, packaged, and sealed in the same manner as the other samples. One trip blank will be used for each sample set of less than 20 samples. At least 5% blanks will be used for sets greater than 20 samples. The trip blank is not to be opened by either the sample collectors or the handlers.

The field blank is a water sample that is taken into the field and is opened and exposed at the sampling point to detect contamination from air exposure. The water

sample is poured into appropriate containers to simulate actual sampling conditions. Contamination due to air exposure can vary considerably from site to site.

The laboratory will not be informed about the presence of trip and field blanks, and false identifying numbers will be put on the labels. Full documentation of these collection and decoy procedures will be made in the site log book.

Duplicate samples are identical sample pairs (collected in the same place and at the same time), placed in identical containers. For soils, adjacent sample liners will be analyzed. For the purpose of data reporting, one is arbitrarily designated the sample, and the other is designated as a duplicate sample. Both sets of results are reported to give an indication of the precision of sampling and analytical methods.

The laboratory's precision will be assessed without the laboratory's knowledge by labeling one of the duplicates with false identifying information. Data quality will be evaluated on the basis of the duplicate results.

Laboratory QA/QC: Execution of a strict QA/QC program is an essential ingredient in high-quality analytical results. By using accredited laboratory techniques and analytical procedures, estimates of the experimental values can be very close to the actual value of the environmental sample. The experimental value is monitored for its precision and accuracy by performing QC tests designed to measure the amount of random and systematic errors and to signal when correction of these errors is needed.

The QA/QC program describes methods for performing QC tests. These methods involve analyzing method blanks, calibration standards, check standards (both independent and the United States Environmental Protection Agency-certified standards), duplicates, replicates, and sample spikes. Internal QC also requires adherence to written methods, procedural documentation, and the observance of good laboratory practices.

APPENDIX D

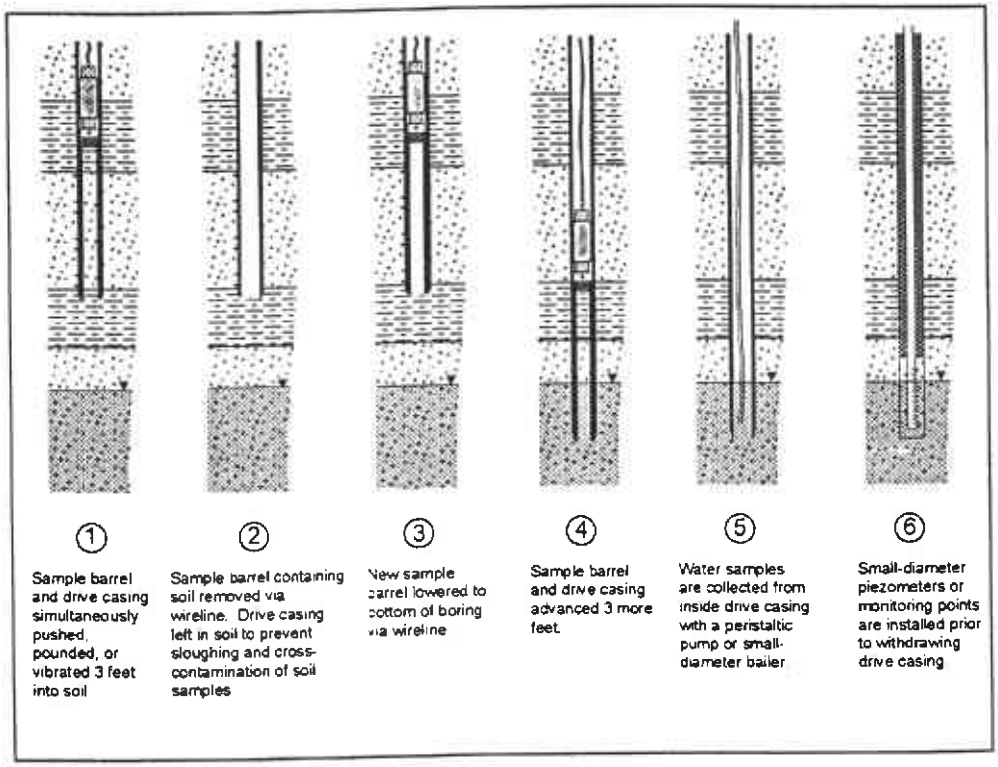
PSI ENVIRO-CORE WIRELINE SAMPLE RECOVERY SYSTEM

NEW ENVIRO-CORE™ FEATURES WIRELINE SAMPLE RECOVERY SYSTEM

Precision has made several modifications to the design of our down-hole equipment in order to maximize soil sample recovery in difficult conditions and to increase our rate of penetration. The Enviro-Core™ sampling system (pat. pending) now uses a type of heat-treated steel casing used in the oil industry. Greater material strength allows Precision to use thinner-walled casing, increasing the size of the sample we collect from 1.5"-diameter to 1.75", while decreasing the amount of soil displaced by the system; both factors which enhance recovery.

We have also tested a wireline mechanism for inserting and removing the sample barrel from the drive casing. The wireline replaces the inner sampling rods that were used to keep the sample barrel in place against the drive shoe. The Enviro-Core™ system sample barrel can now be inserted and removed from the borehole more quickly, dramatically increasing the rate of penetration. The wireline also makes shorter sampling runs an option, which can improve recovery in many conditions.

Collecting a larger diameter soil core also means that the Enviro-Core™ casing can now accept slightly larger diameter PVC well screen and casing for collecting groundwater samples. More volume in a larger diameter bailer will make filling sample containers less time consuming.



Enviro-Core™ system maximizes core recovery and rate of penetration. Enviro-Core™ is also ideal for collecting grab groundwater samples and installing small-diameter piezometers.

SECOND XD-1 RIG AVAILABLE SOON

PSI's XD-1 sampling rig

Due to overwhelming demand, we have decided to build a second XD-1 sampling rig! While we intend to introduce a more powerful XD-2 in 1994, unprecedented demand for the XD-1 rig during Fall 1993 has convinced us that a second XD-1 is needed to respond to short - notice projects.

The XD-1 is mounted on a Case 1840 Skid Loader — a hydraulically-powered, 4-wheel-drive all terrain vehicle. The XD-1 uses a hydraulic hammer and vibratory head to quickly advance our Enviro-Core™ soil and groundwater sampling system. The new XD-1 rig will be ready for action in March 1994.