Versar INC. SACRAMENTO

WORK PLAN FOR THE SUBSURFACE EVALUATION AT 1916 WEBSTER STREET ALAMEDA, CALIFORNIA

Prepared for:

Housing Authority of the City of Alameda
701 Atlantic Avenue
Alameda, California 94501

Prepared by:

Versar Inc. - Sacramento
5330 Primrose Drive, Suite 228
Fair Oaks, California 95628-3520

Versar Job No. 7703.22

March 22, 1991

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FOREWORD

This Project Work Plan was prepared by Versar Inc. of Sacramento, California, for Housing Authority of the City of Alameda, under a contract dated February 20, 1990. Mr. Mikko Valkonen, Geologist, prepared this work plan. Mr. Michael Sellens, a Registered Geologist in the State of California RG 4714, reviewed this work plan.

Approved for Release:

Michael P. Sellens
Project Manager
Senior Geologist, RPG 4714

Mikko Valkonen
Geologist

DISCLAIMER

The purpose of this work plan is only to inform the client of the proposed remediation alternatives for the subject site. Versar Inc. does not assume responsibility for the discovery and elimination of hazards that could possibly cause accidents, injuries, or damage. Compliance with submitted recommendations and/or suggestions in no way assures elimination of hazards or the fulfillment of a client's obligation under any local, state, or federal laws or any modifications or changes thereto. In many cases, federal, state, or local codes require the prompt reporting to relevant authorities if a release occurs. It is the responsibility of the client to comply with requirements to notify authorities of any conditions that are in violation of the current legal standards.

Factual information regarding operations, conditions, and test data was obtained, in part, from the client and has been assumed by Versar to be correct and complete. Since the facts stated in this report are subject to professional interpretation, they could result in differing conclusions. In addition, the findings and conclusions contained in this report are based on various quantitative and qualitative factors as they existed on or near the date of the investigation. Therefore, if the recommendations made in this report are not implemented within a reasonable period of time, there can be no assurances that intervening factors will not arise that will affect the conclusions reached herein.

Versar makes no warranty and assumes no liability with respect to the use of information contained in this report. No changes to its form or content may be made without Versar's express written approval.

This report reflects conditions, operations, and practices as observed during the investigation. Changes or modifications to procedures and/or facilities made after the site visit are not included.

work plan OK'ed

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1.0 INTRODUCTION

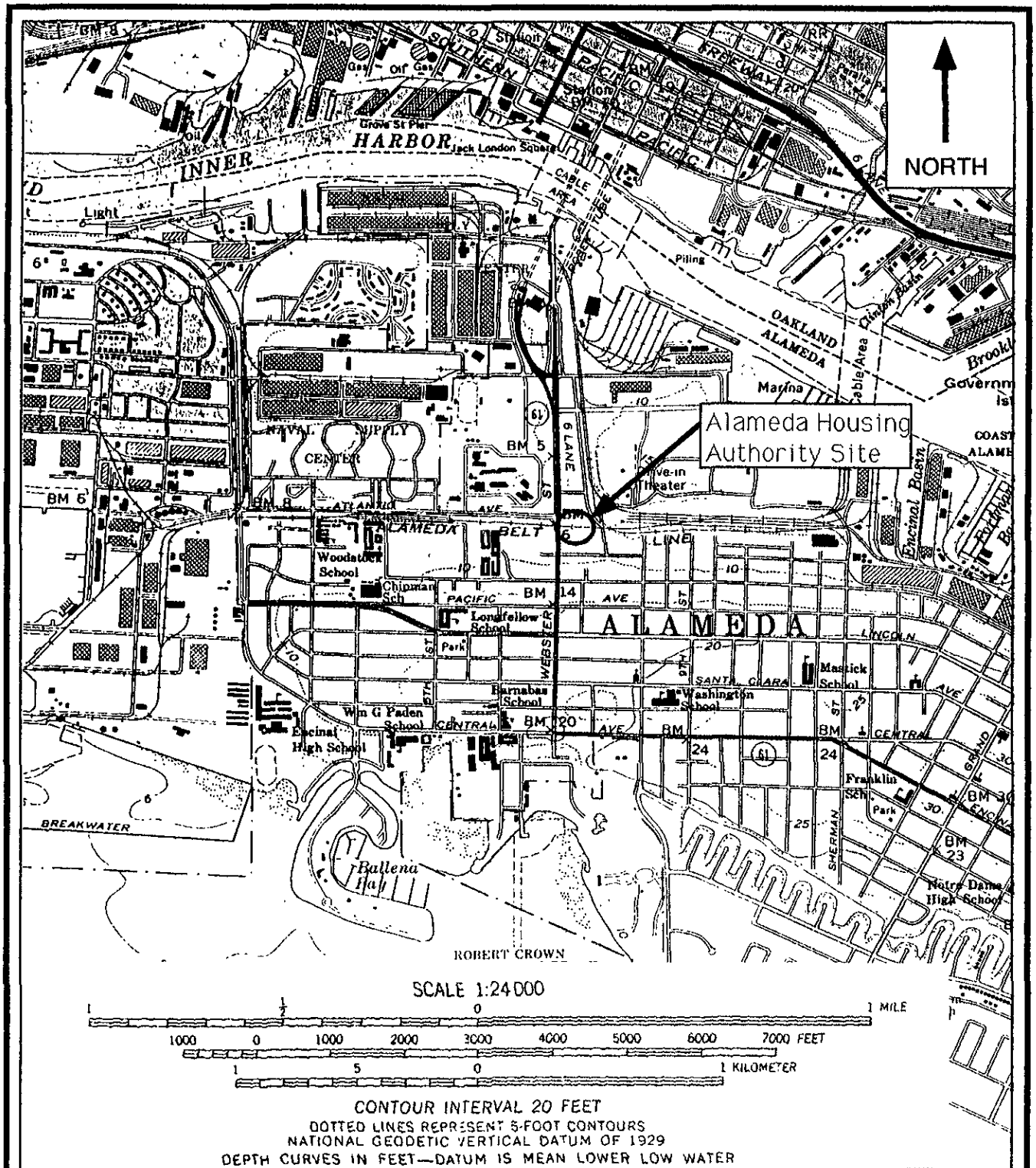
The Housing Authority of the City of Alameda (HACA) is proposing the development of the site of 1916 Webster Street in Alameda. Prior to developing the site, HACA wants to secure approval from the Alameda County Department of Environmental Health, Hazardous Materials Division and the California Regional Water Quality Control Board (RWQCB), that the site is not a concern to human health or the environment.

The potential of environmental impairment has arisen from soil contamination identified during the removal of a 280-gallon gasoline underground storage tank (UST) in July, 1986. The contaminated soil was subsequently excavation and two ground-water monitoring wells were installed in August, 1986 to evaluate ground-water quality. The purpose of this investigation is to complete the characterization of the site, and determine if any contamination is present which would delay the development of the site.

2.0 ENVIRONMENTAL SETTING

The HACA site is located at the south west corner at the intersection of Webster Street and Atlantic Avenue in the City of Alameda, see Figure 2-1. The site is the former operating office for the HACA. A layout of the site is presented in Figure 2-2.

The site is located at an approximate elevation of six feet, above mean sea level. Ground water is approximately five feet below grade (one foot above mean sea level), with ground water flow towards the north-northeast. The site is located approximately 0.5 miles south of the Oakland Inner Harbor, and 0.75 north of San Francisco Bay.



Source USGS, Oakland West, California, 1959, Photorevised 1980

Figure 2-1. Location of the Housing Authority of the City of Alameda Site

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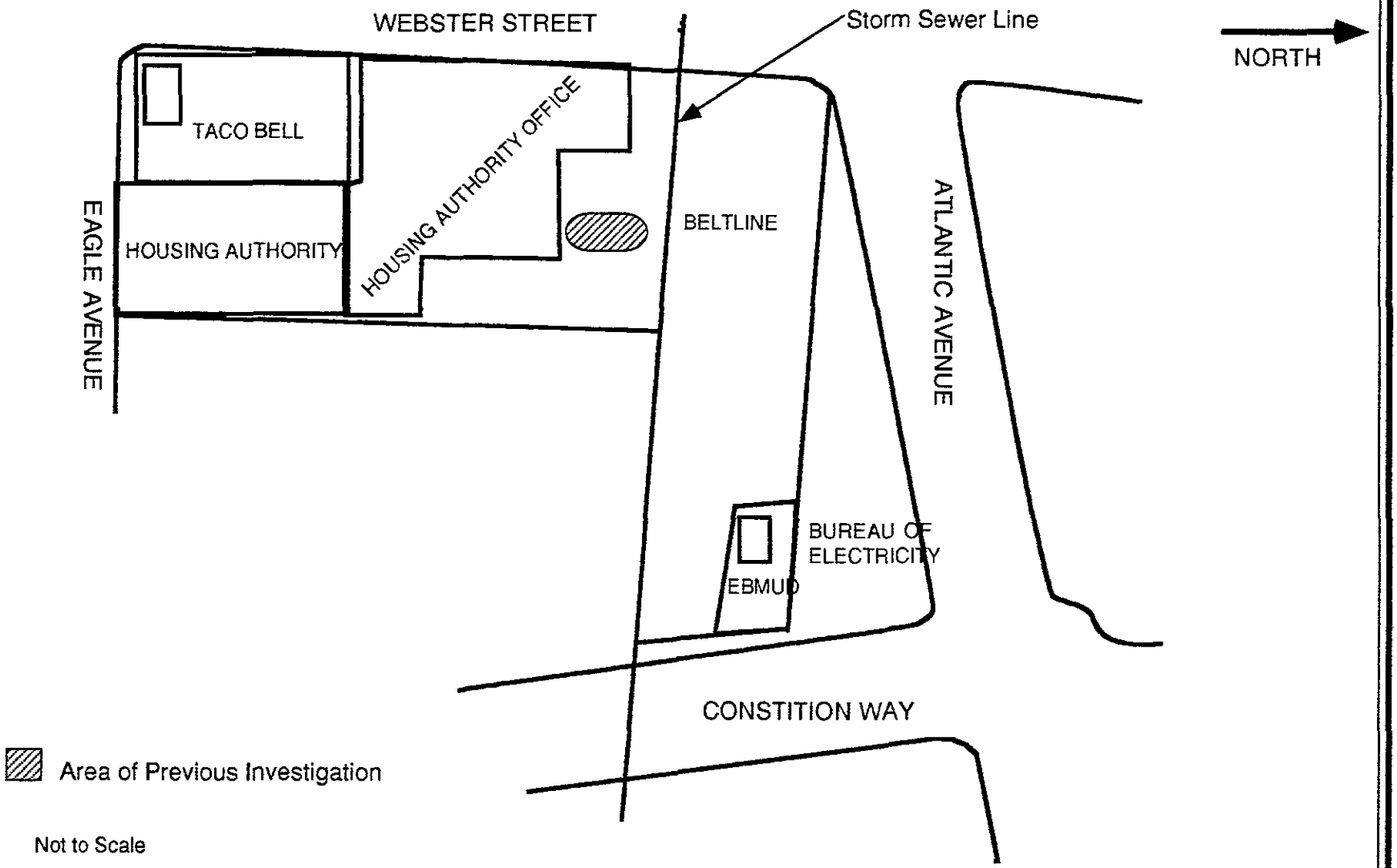

Figure 2-2. Site Location and Layout at 1916 Webster Street in Alameda

3.0 PREVIOUS HISTORY

3.1 Previous Work

On July 16, 1986, a 280-gallon UST was uncovered and removed from 1916 Webster Street in Alameda by Aqua Science Engineering Inc. Although the tank had not been in service for many years, it was found to contain a mixture of water and regular gasoline. The tank contents was evacuated prior to the tank removal. A visual inspection did not indicate the presence of any holes in the tank, however laboratory analysis of two soil samples (HA1 to HA2) collected from the excavation indicated total petroleum hydrocarbon (TPH) contamination at 3420 milligrams per kilogram (mg/kg) and 2060 mg/kg. Laboratory analysis characterized the fuel type as aged gasoline. Elevated levels of benzene, toluene, and xylene were also reported in both samples. An Underground Storage Tank Unauthorized Release (Leak)/Contamination Site Report was completed and submitted to the Alameda County Health Care Service Agency on July 30, 1986. A copy is included as Appendix A.

On July 25, 1986, an additional 50 to 60 cubic yards of impacted soil was excavated, and laid out for aeration. Laboratory analysis of four soil samples (HA3 to HA6) collected along the perimeter of the excavation identified the presence of TPH as gasoline at levels of 5000 mg/kg, 38 mg/kg, and 3.4 mg/kg, and 2.1 mg/kg, respectively. The resulting report identified contamination of 5000 mg/kg at a depth of four feet, approximately 15 feet north of the original tank location. The other samples were collected at the excavation periphery, 25 feet to the east of the UST site, at a deep of approximately six feet. During the excavation, standing water was observed in the excavation, however no sampling was conducted. The position of the soil samples are shown in Figure 3-1.

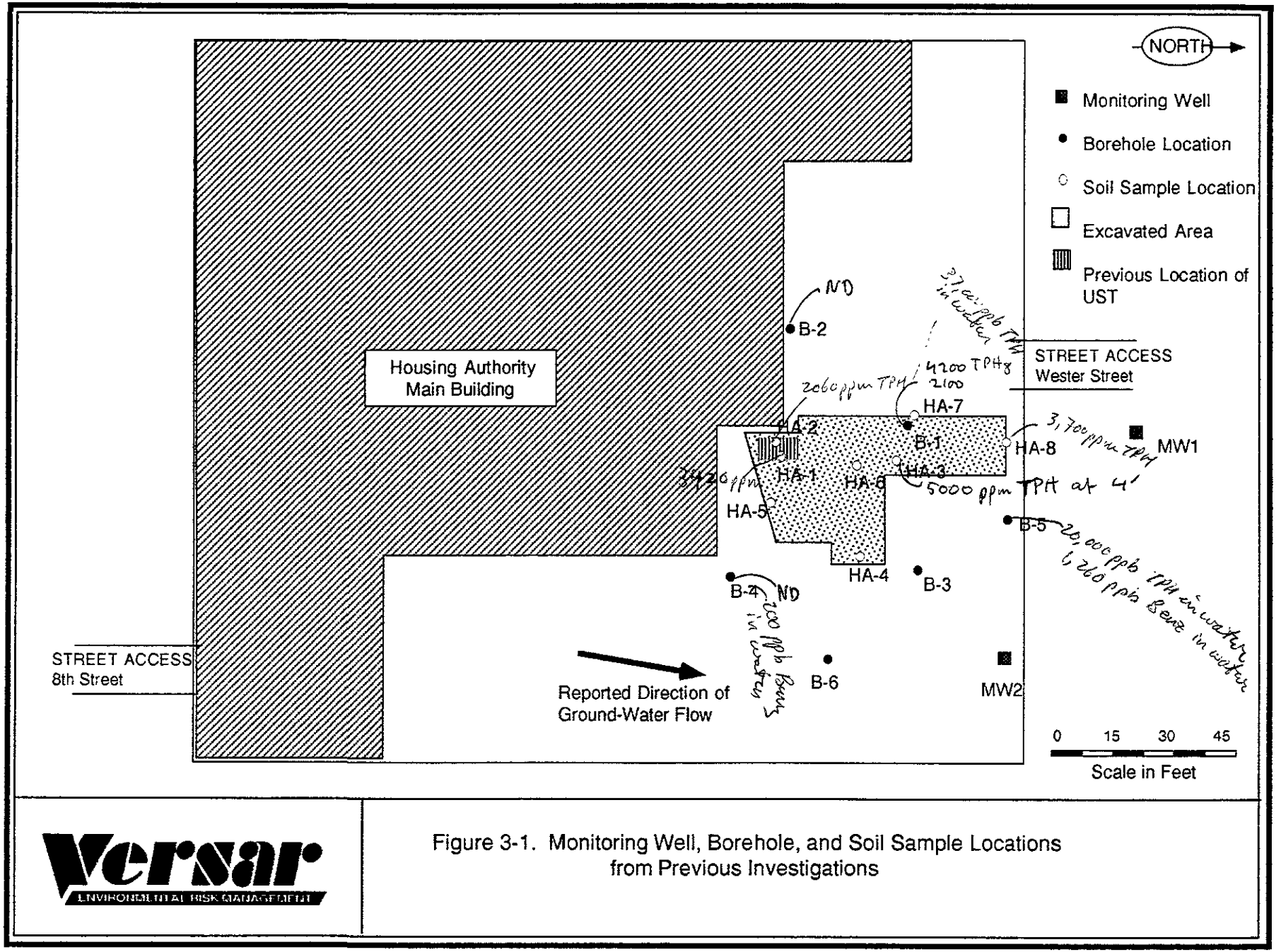

Figure 3-1. Monitoring Well, Borehole, and Soil Sample Locations from Previous Investigations

To assess the complete extend of the contamination, on August 13, 1986, four boreholes were drilled around the site of the removed UST, see Figure 3-1. From each borehole, soil samples were collected at depths of two and four feet, and a grab ground-water sample was collected at the borehole completion. Laboratory analysis report elevated levels at 4,200 mg/kg and 2,100 mg/kg in borehole BH-1, located north of the removed UST site. Soil samples from boreholes B-2 and B-4 did not identify the presence of gasoline, and borehole BH3 reported levels ranging from 0.9 mg/kg to 31 mg/kg. TPH was reported in the grab ground-water sample from borehole B-1 only, at 37 milligrams per liter (mg/L). Benzene at levels of 5.1 mg/L, 0.20 mg/L were however reported in boreholes B-1 and B-4, respectively. Toluene and xylenes was present in all borehole ground-water samples, except B-2 where no aromatic compounds were present.

Based on the results of the soil and ground-water analysis, a second series of boreholes were drilled on August 14, 1986. Four boreholes were drilled of which two were converted into ground-water monitoring wells. Soil samples were collected at depths of two and four feet during the drilling of all boreholes. Ground-water samples were collected from the boreholes and the monitoring wells, following well development. A ground-water sample was also collected from the UST excavation pit. Low levels of TPH and aromatic compounds were identified in all the soil samples analyzed. Analysis of ground-water samples identified the presence of TPH and/or aromatic compounds at low levels in all samples, including the standing water in the UST excavation.

On September 9, 1986, additional soil excavation and treatment was initiated by Aqua Science. Approximately 35 cubic yards of contaminated soil was excavated in the vicinity of borehole B-1. The excavated soil was spread on the adjacent parking lot and allowed to aerate. At the completion of the

excavating two soil samples (HA-7 and HA-8) were collected from the periphery of the excavation. One sample (HA8) collected at the northern extent of the excavation reported TPH concentration of 3,700 mg/kg, the collection depth of this sample is unknown. The other soil sample collected at the excavations east margin (HA-7) identified 38 mg/kg of TPH. At the same time, the stockpiled soil from the excavating conducted July 25, 1986, which had been aerating was resampled. Laboratory analyses reported TPH levels of 5.1 mg/kg and 38 mg/kg, TPH in the two soil samples collected from the stockpiled soil.

On September 29, 1986, the aerating soils from the September 9, 1986 excavation were resampled, along with the standing water within the excavation. Laboratory analysis reported 15 mg/kg TPH in the stockpiled soil, and 1.4 micrograms per Liter (mg/L) of TPH in the standing water.

On October 8, 1986, the excavation was dewatered, and backfilling was initiated using the aerated stockpiled soil. Approximately 150-gallons of ground water was evacuated from the excavation prior to backfilling commenced. The water was allowed to flow over the parking lot and allowed to evaporate. Backfilling and compaction was completed on October 15, 1986, and the site was repaved on October 17, 1986.

The location of all boreholes and monitoring wells at the site, along with the extent of the excavated area with the associated soil sampling locations is shown in Figure 3-1. Copies of all laboratory analysis conducted on behalf of the Aqua Science Investigation and remedial action are included in Appendix B.

In September, 1990, the two monitoring wells at the HACA site were sampled by PRC Environmental Management, Inc. as part of the sampling plan for the nearby Alameda Naval Air Station.

Ground-water samples were collected from each well, and analyzed for volatile organics compounds (VOCs) by EPA Method 624 and extractable organic compounds (EOCs) by EPA Method 625. No VOCs or EOCs were reported from either of the monitoring wells. A copy of the laboratory result are included as Appendix C.

3.2 Previous History Summary and Discussion

Overall a total of eight boreholes have been drilled at the site, of which two were converted into ground-water monitoring wells. A total of approximately 130 cubic yards of gasoline contaminated soil was excavated and aerated on site. The treated soil was later used as backfill in the excavation. In 1986, analysis of ground water identified elevated levels of benzene, which exceed the state maximum contaminant level (MCL). No additional work has been conducted since October 1986 on behalf of HACA. However, ground-water analysis of both wells conducted in 1990, did not report the presence of any aromatic compounds.

Discussions with Aqua Science personnel and review of previous reports have presented conflicting information regarding the delineation of the soil contamination plume. Soil excavation ceased in a northerly direction as verbally reported when field screening and visual observations indicated that all contaminated soil had been removed. Additionally contaminated soil beneath a column (which supports building overhang) was not removed. Based on this information and the results of the laboratory analysis, it is hypothesized that confusion related to sample identification (HA-7 and HA-8) occurred.

4.0 VERSAR'S INVESTIGATION

4.1 Versar Scope of Work

Versar has obtained and reviewed the data generated from previous site investigations and remedial actions. Based on Versar's evaluation of that work, additional work is proposed to

clarify the extent of any soil contamination that may be present, and determine the local hydrologic flow direction and ground work quality. Therefore, additional work is proposed to complete the site characterization. The objectives of the investigation are to:

1) Install a third ground-water monitoring well at the site to be used in determining the local ground-water flow direction.

2) Evaluate the condition and suitability of the two existing ground-water monitoring wells at the site.

3) Develop, sample, and analyze the ground water in the two existing wells, and the new monitoring well at the site.

4) Evaluate the water quality beneath the site to determine if any ground-water remedial action is required.

5) Drill an exploratory borehole at the northern end of the previously excavated area, in order to verify soil conditions.

6) Coordinate with local regulatory agencies to develop a remedial program, if required, to correct any environmental impairment that may be present at the site.

To achieve these objectives, the borehole for the monitoring well and the exploratory borehole will be drilled with eight inch outside diameter hollow-stem augers. The locations of the proposed monitoring well and borehole is shown in Figure 4-1. As each borehole progress, soil samples will be collected within the vadose zone at minimum intervals of two feet using a split spoon sampler to determine the subsurface conditions. All boreholes will be logged by a geologist, in accordance with USCS classifications. All of the augers, bits, and down-the-hole sampling equipment will be decontaminated after the completion of each borehole.

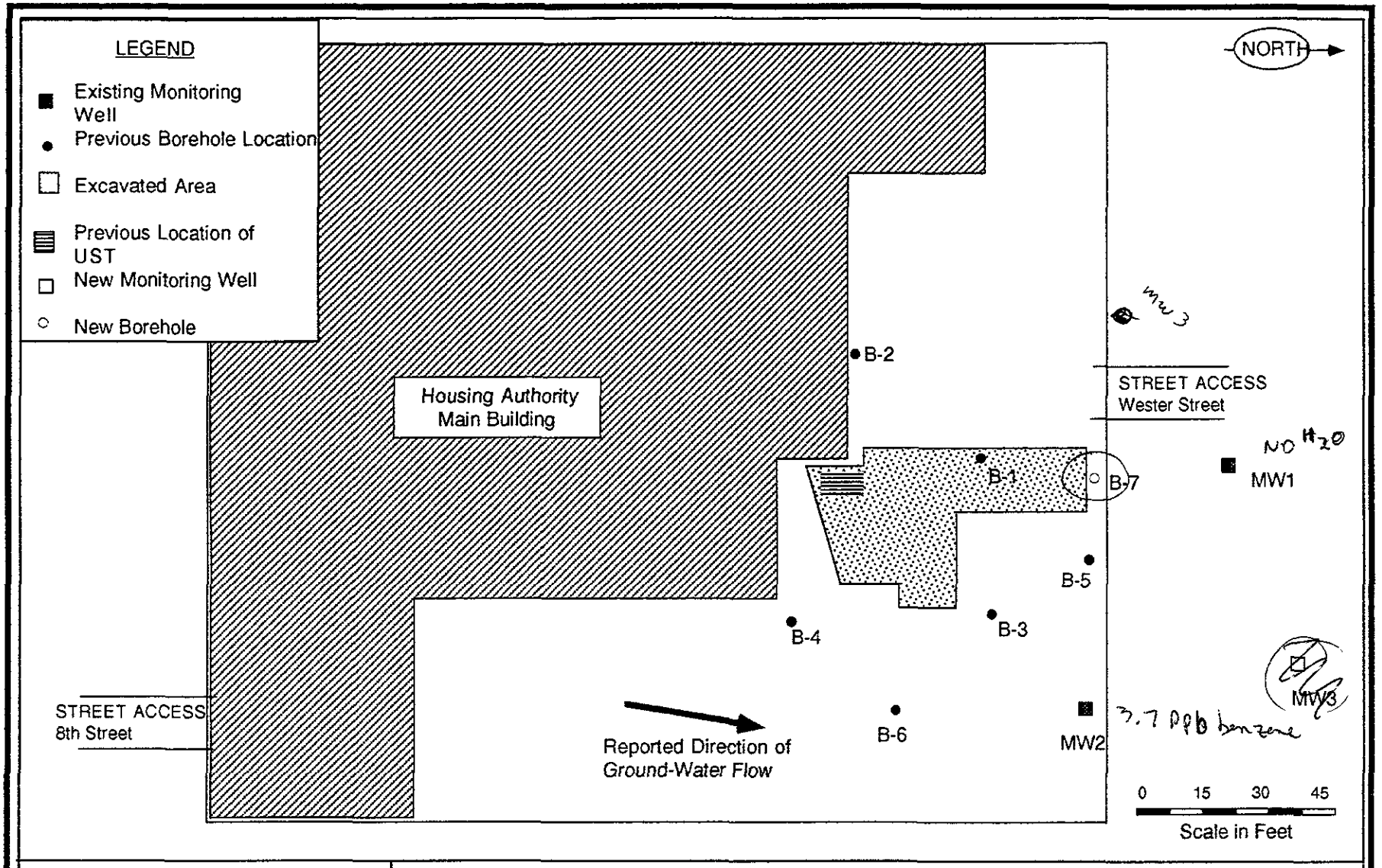

Figure 4-1. Proposed Monitoring Well and Borehole Locations, with Existing Monitoring Well and Borehole Locations from Previous Investigations

4.2 Monitoring Well Installation and Construction

The borehole, in which the monitoring well will be installed, will be drilled to a total depth of approximately 15-feet below surface level, or ten feet below the watertable unless a confining layer is identified above this level. If a confining layer is breached, a bentonite plug will be placed in the bottom of the hole. The monitoring well will be constructed using 10-feet of two-inch inside diameter, Schedule 40 PVC screen with 0.020-inch slots, and Schedule 40 PVC casing to the surface. Clean sand will be placed in the annular space between the screen and the borehole wall to a height of one foot above the top of the screen. Approximately one foot of bentonite pellets will be placed above the sand, and neat cement will be used to fill the annular space to just below the surface. A locking cap will be placed on top of the PVC casing, and a traffic box will be set in concrete over the well. The top of the traffic box will be slightly above grade to help prevent surface water from entering the well. The construction of the ground-water monitoring wells is shown in Figure 4-2. A copy of the Application to Construct Monitoring Wells is included as Appendix D.

4.3 Exploratory Borehole

The borehole will be drilled to a depth of approximately five feet, or to the top of the watertable, whatever is deeper. At the completion of all sampling, the borehole will be backfilled to the surface grade with a cement grout, and the surface will be patched with asphalt.

4.4 Collection of Samples

4.4.1 Decontamination Procedures

All sample containers will be decontaminated in a laboratory. The decontamination procedures for nondedicated field sampling and well purging equipment are given below.

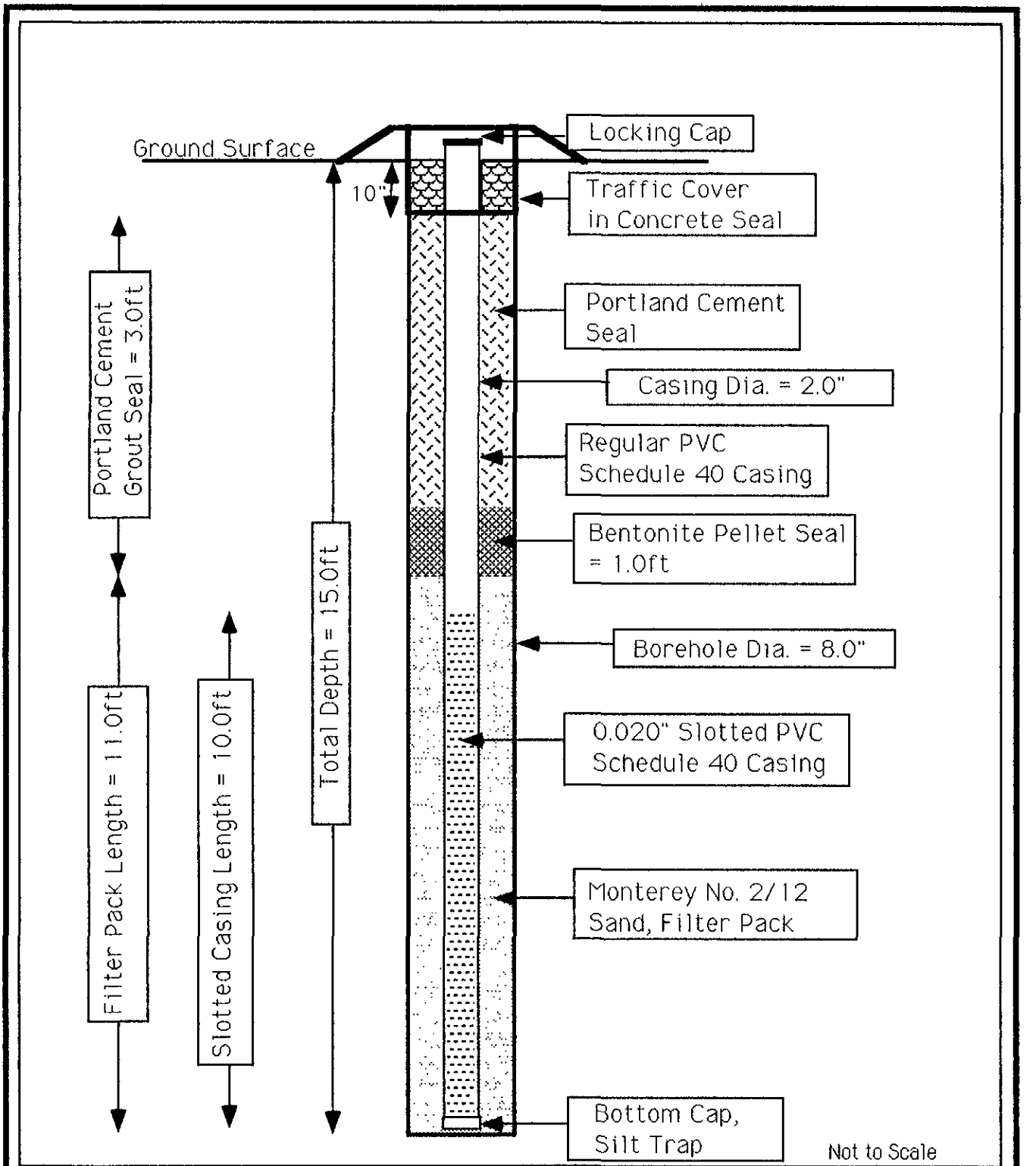

Figure 4-2.
Ground Water Monitoring Well Construction

1. Nondedicated well purging and sampling equipment must be carefully cleaned prior to each use, as follows:

   a. Carefully brush off any loose foreign debris with a soft bristle brush.

   b. Rinse the equipment thoroughly in clean water.

   c. Wash the equipment in a nonphosphate detergent bath.

   d. Rinse thoroughly in clean water.

   e. Rinse thoroughly with deionized water.

   f. Air dry in a dust-free environment.

   g. Store in sterile plastic bags or other suitable clean cover until use.

2. Clean, disposable gloves must be worn by all field personnel when handling decontaminated equipment.

3. A clean plastic apron will be positioned adjacent to or around the well riser in order to prevent equipment from coming into contact with surface materials. All purging equipment and lines must be kept on the apron or an adjacent plastic "clean area" following decontamination and when not in use.

4.4.2 Soil Sampling

Each drive sample will be subjected to field analysis with either a Foxboro Century 128 Organic Vapor Analyzer (OVA) meter or a Photovac Tip II Air Analyzer (PID) as soon as the sampling device is opened. Following this, a representative sample of the soil will be placed in a glass jar. The jar will be sealed and warmed allowing any hydrocarbons present to vaporize and collect in the headspace. The foil cover will be punctured and the probe of the field instrument inserted into the hole to detect any organic vapors present. During drilling, a minimum of two soil samples will be collected from each borehole. The samples will be collected in brass tubes and will be fitted with air tight end caps. The tubes will be packed as full as possible with the soil to minimize the head space. Based on the results of the field

headspace analysis and observations, selected samples will be analyzed for TPH as Gasoline (TPH-G) and benzene, toluene, ethylbenzene, and total xylenes (BTEX).

4.4.3 Ground-Water Sampling

Following the installation and stabilization of the new monitoring well, a ground-water sample from all three monitoring wells will be collected and analyzed for the same chemicals as the soil samples, as described below.

1. Check the ambient air surrounding the protective riser using an appropriately calibrated analytical field instruments, and record reading in the field notebook.

2. Remove the wellhead lock and open the hinged cap on the protector casing.

3. Check the air space inside the protector casing around the PVC monitoring tube with an analytical field instrument, and record reading in the field notebook.

4. Remove the cap on top of the PVC casing.

5. Check the air space inside the PVC casing with an analytical field instrument, and record the reading in the field notebook. If anomalous readings are noted, all sampling personnel must don the appropriate respiratory gear.

6. Lower a decontaminated transparent bailer to the water surface in the well and carefully sample the uppermost interval of water. Retrieve the bailer and examine the surface of the water for any non-aqeous floating chemicals.

7. Measure the water level in the well using a decontaminated electronic water level detector with a visible or acoustical indicator. All measurements must be made to the nearest 0.01 foot, and measured relative to the top of the casing. Record the depth of water in the appropriate column of the Monitoring Well Purging Table shown in Figure 4-3.

WELL No.	DATE (M/D)	DEPTH of WELL	DEPTH TO WATER (ft)			TIME			PURGE VOLUME (gals)	NOTES
			BP	AP	BS	SP	EP	SS		

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Figure 4-3. Monitoring Well Purging Table

8. Lower a decontaminated, weighted wire line or the above-water measuring instrument, as appropriate, to the bottom of the well and note the total depth of the well. Record the depth confirmation measurement in the appropriate column of the table.

9. Insert a decontaminated pump or dedicated disposable bailer into the well and begin to purge the well. A calibrated receptacle must be positioned near the wellhead to receive all of the fluid purged. The water will be withdrawn from the top of the water column. A minimum of five casing volumes will be purged from the well (or to dryness, as applicable). Do not allow the purge rate to reach a point where the recharge water is entering the well bore in an agitated state. In addition to the requirement to remove five well volumes, a grab sample of the purged fluid will be taken at the commencement of well evacuation and at periodic intervals. The temperature and pH of the sample will be measured and recorded in the field notebook. Purging will continue until the measured temperature and pH stabilizes.

10. Measure the purged volume in the designated receptacle. After the minimum specified volume has been recovered and the water temperature and pH have stabilized (or the well has been pumped dry), stop pumping, note the time, remove the pumping device, and measure the depth to water. Make the appropriate entries on the table.

11. If the fluid being purged continues to carry a high suspended load, purging may be continued until the recovered fluid is relatively clear. The decision to continue purging beyond five volumes and/or temperature stabilization is to be made by the sampling team supervisor on a case-by-case basis.

The ground-water samples will be collected using the procedures given below.

1. Measure the water level in the well using a decontaminated measuring device. All measurements must be made to the nearest 0.01 foot, and measured relative to the top of the casing. Record the depth of the water in the appropriate column in the Sample Collection Data Table, shown in Figure 4-4.

2. Inspect the dedicated disposable bailer to ensure that the bottom valve assembly is working correctly.

WELL No.	DEPTH (ft)	TEMP (C)	pH	Cond (mho/cm)	O.V.A. (ppm)	SHEEN	ODOR	FREE Product	TURBID (NTU)	Cumm. Volume Purged (gals)	NOTES

DATE : _____ LOCATION : _____

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Figure 4-4. Sample Collection Data Table

3. Insert the bailer into the PVC monitoring tube and carefully lower it into the well. Take extreme care to avoid agitating and aerating the fluid column in the well.

4. Slowly withdraw the bailer and transfer the water samples to the appropriate containers, as described herein.

5. Temperature, specific conductance, pH, and organic vapor concentration must be measured on aliquots of water prior to recovery of the primary samples. Water used for field measurements is not to be used to fill sample containers designated for laboratory analysis.

   a. Temperature: The final sample temperature reading is to be obtained by placing an aliquot of water in a flask or thermos bottle and measuring the temperature with the proper probe. After the temperature has stabilized, make the appropriate entry in the table.

   b. Specific Conductance: The specific conductance of the water is to be obtained using the appropriate meter. Carefully follow the manufacturer's instructions concerning operation of the instrument and the required temperature compensation procedures. Make the appropriate entry in the table.

   c. pH: Measure the pH of the water using a pH electrode or similar measuring device inserted into an aliquot of water. Enter the results in the table.

   d. Organic Vapor Concentration: Place 100 milliliters of the water in a jar and seal the top. After 10 minutes, measure the organic vapor concentration in the head space of a jar containing an aliquot of water using an analytical field instrument calibrated to a known concentration of gas using accepted procedures. Record the results in the table.

6. Carefully lower the bailer into the well and recover a fresh water sample.

7. Fill the appropriate sample containers by releasing water from the bailer via the bottom emptying device with a minimum of agitation.

4.5 Analysis of Samples

All of the soil and water samples will be analyzed for TPH-G using the DHS method with a purge and trap, and BTEX using EPA Method 8020. All of the quantitative chemical analyses will be performed by Trace Analysis Laboratory, a certified laboratory in the State of California.

4.6 Field Quality Control

Sampling methods detailed in this sampling plan will be strictly adhered to; deviations or additions to this plan will be carefully documented in the field notebook. All field observations, field-generated forms, and labels will be noted and attached to the field notebook. Any photographs will be logged in the field notebook and labeled when returned from the developing laboratory.

4.7 Sample Handling

4.7.1 Sample Containers, Preservation, and Holding Time

All samples will be collected, placed in containers, preserved, and analyzed within the time constraints consistent with applicable US EPA and California State procedures. All sample containers will be precleaned in accordance with prescribed EPA methods. Tape will be placed around all sample container lids to prevent leaks and to detect unauthorized tampering with individual samples following collection and prior to the time of analysis.

4.7.2 Sample Tracking and Management

All samples will be tracked using Versar's standard chain of custody form, see Figure 4-5. The chain of custody record will include the following information:

1. Sample number
2. Signature of collector
3. Date and time of collection

PROJECT NO.	PROJECT NAME					PARAMETERS									INDUSTRIAL HYGIENE SAMPLE Y / N
SAMPLERS: (Signature)					(Printed)	NO. OF CONTAINERS									REMARKS
FIELD SAMPLE NUMBER	DATE	TIME	COMP.	GRAB	STATION LOCATION										

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
(Printed)		(Printed)	(Printed)		(Printed)

Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks
(Printed)		(Printed)		

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Figure 4-5. Versar's Chain of Custody Form

4. Sample collection location
5. Sample type
6. Signature of persons involved in the chain of possession
7. Inclusive dates of possession
8. Analytical parameters
9. Pertinent field observations

The custody record will be completed using waterproof ink. Any corrections will be made by drawing a line through and initialing the error, then entering the correct information.

Custody of the samples begins at the time of sample collection and will be maintained by the sampling team supervisor until samples are relinquished for shipment to the laboratory, or until samples are hand delivered to the designated laboratory sample custodian. Partial sample sets being accumulated for hand delivery to the laboratory will be stored in coolers with custody tape affixed.

Each sample shipment will be accompanied by a chain of custody record identifying its contents. The original record will accompany the shipment and the copy will be retained by the sampling team leader. The original (the top copy) will be enclosed in a plastic zip-lock bag and secured to the inside of the cooler lid with tape.

4.8 Site Safety Procedures

A designated site safety officer will be appointed for the investigation. Site personnel will wear gloves when handling the drill cuttings and samples. In addition, the drill cuttings and samples will be monitored with an analytical field instrument. If the site safety officer determines that harmful levels of organic vapors are present, all site personnel will don Tyvek coveralls and respirators. This equipment will be worn until the site safety officer determines that no harmful vapors are present.

4.9 Contaminated Materials Control

Drill cuttings and fluid recovered during the installation, development, and sampling of the well will be stored in sealed DOT approved 55-gallon drums or similar containers in a secure area on site. The contents of the drums and the dates of collection will be clearly marked on appropriate labels. All equipment decontamination material and disposable personal protective gear will also be placed in appropriate containers. When the hazardous characteristics of these materials have been determined, they will be disposed of using proper procedures.

5.0 SCHEDULE

5.1 Data Reporting

Following evaluation of the finding and the analytical results collected during this investigation, a report will be prepared and submitted to the Alameda County Health Agency. All work will be conducted under the guidance of a registered geologist in the State of California. If no environmental impairment is encountered, site file closure will be requested, and the site development will commence.

5.2 Time Schedule

The implementation of this scope of work will commence with approval of this work plan. With your approval of this work plan, it is hoped that field work can commence during the week of April 8, 1991. All laboratory analysis will be conducted on a normal turnaround basis.

6.0 APPENDICES

Appendices A through D comprise of the technical appendix to this work plan. The contents of the appendix are list below.

Appendix A. Underground Storage Tank Unauthorized Release (LEAK)/Contamination Site Report

Appendix B. Laboratory Analytical Results from Aqua Science Engineering Inc. Investigation and Remedial Actions

Appendix C. Laboratory Analytical Results, from Ground-Water Sampling Conducted by PRC Environmental Management, September, 1990

Appendix D. Monitoring Well Permit Application

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APPENDIX

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APPENDIX A

Underground Storage Tank Unauthorized Release (LEAK/Contamination Site Report

UNDERGROUND STORAGE TANK UNAUTHORIZED RELEASE (LEAK)/CONTAMINATION SITE REPORT

EMERGENCY ☐ YES ☑ NO — HAS STATE OFFICE OF EMERGENCY SERVICES REPORT BEEN FILED? ☐ YES ☑ NO

STATE TANK ID #: NOT REGISTERED

REPORT DATE: 07/30/96 — LOCAL CASE # — REGIONAL BOARD CASE # — US EPA ID #

REPORTED BY

NAME OF INDIVIDUAL FILING REPORT: DAVID C. PAULL — PHONE: (415) 820-7391 — SIGNATURE: David C. Paull

REPRESENTING ☐ LOCAL AGENCY ☑ OTHER ☐ OWNER/OPERATOR ☐ REGIONAL BOARD — COMPANY OR AGENCY NAME: AGUA SCIENCE ENGINEERS

ADDRESS: 7500 OLD CROW CANYON RD. SUITE 121 (STREET) — SAN RAMON (CITY) — CA. (STATE) — 94583 (ZIP)

RESPONSIBLE PARTY

NAME: City of ALAMEDA ☐ UNKNOWN — CONTACT PERSON: JERRY EICHLEBERGER — PHONE: (415) 522-4100

ADDRESS: 1616 FORTMANN Way (STREET) — ALAMEDA (CITY) — CA. (STATE) — 94501 (ZIP)

SITE LOCATION

FACILITY NAME (IF APPLICABLE): HOUSING AUTHORITY; City of ALAMEDA — OPERATOR: City of ALAMEDA — PHONE: ( )

ADDRESS: 1516 WEBSTER St. (STREET) — ALAMEDA (CITY) — ALAMEDA (COUNTY) — 94501 (ZIP)

CROSS STREET: BUENA Vista — TYPE OF AREA ☑ COMMERCIAL ☐ INDUSTRIAL ☑ RESIDENTIAL ☐ RURAL ☐ OTHER — TYPE OF BUSINESS ☐ RETAIL FUEL STATION ☐ UNKNOWN ☑ OTHER: HOUSING AUTH.

IMPLEMENTING AGENCIES

LOCAL AGENCY: ALAMEDA FIRE SERVICES — AGENCY NAME: County HEALTH CARE AGENCY — CONTACT PERSON: T. M. GEROW — PHONE: (415) 874-6434

REGIONAL BOARD: REGIONAL WATER QUALITY CONTROL BOARD — CONTACT PERSON: DALE BOYER — PHONE: (415) 464-1255

TSCD — ( )

SUBSTANCE(S) INVOLVED

CAS # (ATTACH EXTRA SHEET IF NEEDED) — NAME — QUANTITY LOST (GALLONS)

(1) — REGULAR GASOLINE — ☑ UNKNOWN

(2) — ☐ UNKNOWN

DISCOVERY/ABATEMENT

DATE DISCOVERED: 07/16/96 — HOW DISCOVERED ☐ INVENTORY CONTROL ☐ SUBSURFACE MONITORING ☐ ROUTINE MONITORING ☑ TANK REMOVAL ☐ NUISANCE CONDITIONS ☐ OTHER:

DATE DISCHARGE BEGAN (M M D D Y Y) ☑ UNKNOWN

METHOD USED TO STOP DISCHARGE (CHECK ALL THAT APPLY): ☑ REMOVE CONTENTS ☐ REPLACE TANK ☑ CLOSE TANK ☐ REPAIR TANK ☐ REPAIR PIPING ☐ CHANGE PROCEDURES ☐ OTHER

HAS DISCHARGE BEEN STOPPED? ☑ YES ☐ NO IF YES, DATE: 07/16/96

SOURCE/CAUSE

SOURCE(S) OF DISCHARGE: ☐ TANK LEAK ☑ UNKNOWN ☐ PIPING LEAK ☐ OTHER (SPECIFY)

TANKS ONLY/CAPACITY: 520 GAL — AGE: YRS. ☑ UNKNOWN — MATERIAL: ☑ STEEL ☐ FIBERGLASS ☐ OTHER

CAUSE(S): ☐ OVERFILL ☐ CORROSION ☐ RUPTURE/FAILURE ☐ SPILL ☑ UNKNOWN ☐ OTHER

RESOURCES AFFECTED/AT RISK

RESOURCES AFFECTED	YES	NO	THREATENED	UNKNOWN
AIR (VAPOR)	☐	☑	☐	☐
SOIL (VADOSE ZONE)	☑	☐	☐	☐
GROUNDWATER	☑	☐	☐	☐
SURFACE WATER OR STORM DRAIN	☐	☐	☐	☑
BUILDING OR UTILITY VAULT	☐	☐	☐	☑
OTHER (SPECIFY)	☐	☐	☐	☐

GROUNDWATER BASIN NAME: ☑ UNKNOWN

WATER SUPPLIES AFFECTED	YES	NO	THREATENED	UNKNOWN	# OF WELLS
PUBLIC DRINKING WATER	☐	☐	☐	☑	
PRIVATE DRINKING WATER	☐	☐	☐	☑	
INDUSTRIAL	☐	☐	☐	☑	
AGRICULTURAL	☐	☐	☐	☑	
OTHER (SPECIFY)	☐	☐	☐	☐	

COMMENTS

COMMENTS: SEE ATTACHED PROPOSAL FOR INVESTIGATION

COMPLETE AND ATTACH A CLEANUP TRACKING REPORT IF ANY CLEANUP WORK OR PLANNING HAS STARTED

Versar INC. SACRAMENTO

APPENDIX B

Laboratory Analytical Results from Aqua Science Engineering Inc. Investigation and Remedial Actions

WESCO Laboratories

Date: July 23, 1986

Client: AquaScience

Submitted by: Dave Prull

Report to: AquaScience

WESCO Job #: AQS 8662

Client Job/P.O. #: 3532/Alameda
1816 Webster

Date collected: 7-17-86

Date submitted: 7-18-86

& type of sample(s): 4 Soil

Lab No.	Client ID	Motor Fuels (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Xylene (mg/kg)	Fuel Type	
4834	Soil HA #1 (Tailing)	3420	38.5	159	649	Aged Gasoline	
4835	Soil HA #2 (7 feet)	2060	18.8	94.2	379	"	
4836	Soil GC #1 (5 feet)	2.1	0.004	0.041	0.084	Kerosene	*
4837	Soil GC #2 (5 feet)	595	1.46	10.4	132	Aged Gas	

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METHODS: Note 1

NOTES:

Note 1 - EPA Methods 5020/8015/8020.
*Closest available hydrocarbon match.

Analytical Supervisor

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Novato, California 94947 415 883-6425
A Division of Western Ecological Services Company

WESCO Laboratories

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Date: August 12, 1986

Client: AquaScience Engineers

Submitted by: Dave Prull

Report to: AquaScience

WESCO Job #: AQS 8670

Client Job/P.O.#: City of Alameda 3361

Date collected: 7-25-86

Date submitted: 8-1-86

& type of sample(s): 4 Soil

Lab No.	Client ID	Benzene (mg/kg)	Toluene (mg/kg)	Xylene (mg/kg)	Motor Fuels (mg/kg)	Fuel Type
4945	Soil H.A. #3	56	230	168	5000	Gasoline
4946	Soil H.A. #4	0.268	0.122	0.315	38	"
4947	Soil H.A. #5	0.224	0.113	0.160	3.4	"
4948	Soil H.A. #6	0.341	0.016	0.010	2.1	Altered Gasoline
	METHODS: Note 1					

NOTES:

Note 1 - EPA Methods 5020/8015/8020.

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WESCO Laboratories

Date: August 11, 1986

Client: AquaScience

Submitted by: Dave Prull

Report to: AquaScience

WESCO Job #: AQS 8673

Client Job/P.O. #: Alameda Housing Authority/3529

Date collected: 8-7-86

Date submitted: 8-8-86

& type of sample(s): 4 Soil

Lab No.	Client ID	Benzene (mg/kg)	Toluene (mg/kg)	Xylene (mg/kg)	Motor Fuels (mg/kg)	Fuel Type
5021	S.W. Corner Aeration 9:00	0.005	0.086	0.036	17.8	Aged Gas
5022	S.E. Corner Aeration 9:15	0.064	0.507	0.373	106	Aged Gas
5023	N.E. Corner 9:30	0.075	0.478	0.694	157	Aged Gas
5024	N.W. Corner 9:20	0.057	0.227	0.243	35.5	Aged Gas
	METHODS: Note 1					

NOTES:

Note 1 - EPA Method 5020/8015/8020.

Analytical Supervisor

fig. 3

14 Galli Drive, Suite A
Novato, California 94947 415 883-6425
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WESCO Laboratories

Date: August 25, 1986

Client: AquaScience Engineers

Submitted by: Scott Cressey

Report to: AquaScience Engineers

WESCO Job #: AQS 8676

Client Job/P.O. #: Alameda Housing/3388

Date collected: 8-13-86

Date submitted: 8-14-86

& type of sample(s): 9 Soil
4 Water

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Lab No.	Client ID	Motor Fuel (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Xylene (mg/kg)	Fuel Type
5056	Soil B1A	4200	0.022	0.222	0.453	Gasoline
5057	Soil B1B	2100	0.053	0.251	0.099	"
5058	Soil B2A	< 0.10	0.003	0.003	0.003	"
5059 *	Soil B3A	28	0.355	0.177	0.322	"
5060 *	Soil B3B	3.1	0.290	0.010	0.009	"
5061 *	Soil B3C	0.9	0.031	0.011	0.122	"
5062	Soil B4A	< 0.1	< 0.005	< 0.005	< 0.005	"
5063	Soil B4B	< 0.050	0.005	0.010	< 0.001	"
5064	Soil GC3	0.82	0.023	0.040	0.005	Aged Gas

Lab No.	Client ID	Motor Fuel (mg/l)	Benzene (mg/l)	Toluene (mg/l)	Xylene (mg/l)	Fuel Type
5065	Water B-1	37	5.1	5.2	1.3	Gasoline
5066	Water B-2	< 0.050	< 0.001	< 0.001	< 0.001	"
5067	Water B-3	< 0.050	< 0.001	0.003	0.004	"
5068	Water B-4	< 0.050	0.20	0.003	0.005	"

METHOD(S): Note 1

NOTES:

Note 1 - EPA Methods 5020/8015/8020.
* Did not match standard gasoline pattern well.

Analytical Supervisor

WESCO Laboratories

Date: August 28, 1986

Client: AquaScience Engineers

Submitted by: Dave Schultz

Report to: AquaScience Engineers

WESCO Job #: AQS 8682

Client Job/P.O. #: Alameda Housing Authority/6455

Date collected: 8-14-86

Date submitted: 8-18-86

& type of sample(s): 8 Soil
3 Water

Lab No.	Client ID	Motor Fuel (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Xylene (mg/kg)	Fuel Type
5111	Soil B5A @ 2 feet	0.70	0.024	0.061	0.058	Gasoline
5112	Soil B5B @ 4 feet	2.4	0.46	0.015	0.13	"
5113	Soil B6A @ 2 feet	0.70	0.014	0.022	0.020	"
5114	Soil B6B @ 4 feet	0.36	0.014	0.017	0.031	"
5115	Soil W1A @ 2 feet	0.060	0.014	0.022	0.057	"
5116	Soil W1B @ 4 feet	< 0.050	0.003	0.008	0.017	"
5117	Soil W2A @ 2 feet	< 0.050	0.003	0.008	0.003	"
5118	Soil W2B @ 4 feet	< 0.050	0.002	0.005	0.006	Gasoline

Lab No.	Client ID	Motor Fuel (mg/l)	Benzene (mg/l)	Toluene (mg/l)	Xylene (mg/l)	Fuel Type
5119	Water W1	< 0.050	0.003	0.003	0.006	Gasoline
5120	Water B6	0.050	0.005	0.003	0.024	"
5121	Water B5	20	1.26	0.033	0.32	Gasoline

METHOD(S): Note 1

NOTES:

Note 1.- EPA Methods 5020/8015/8020.

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AQUA SCIENCE ENG.

Analytical Supervisor

7 Gill Drive, Suite A
Novato, California 94947 415 883-6426

WESCO Laboratories

Date: September 2, 1986

Client: AquaScience Engineers

Submitted by: David Prull

Report to: AquaScience Engineers

WESCO Job #: AQS 8684

Client Job/P.O. #: Alameda Housing Authority/6465

Date collected: 8-15-86

Date submitted: 8-20-86

& type of sample(s): 2 Water

Lab No.	Client ID	Motor Fuel (mg/l)	Benzene (mg/l)	Toluene (mg/l)	Xylene (mg/l)	Fuel Type
5141	Water W2	0.29	< 0.010*	0.006	0.009	Aged Gas
5142	Water TP1	3.3	0.32	0.38	0.06	Gasoline

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METHOD(S): Note 1

NOTES:

Note 1 - EPA Methods 5020/8015/8020.
*High detection limit due to interferences in sample.

Analytical Supervisor

1 Le Gal Blvd. Suite A
Novato, California 94947 (415) 883-8425

WESCO Laboratories

Date: September 30, 1986

Client: AquaScience Engineers

Submitted by: Dave Prull

Report to: Dave Prull

WESCO Job #: AQS 8696

Client Job/P.O. #: City of Alameda Housing Authority/6401

Date collected: 9-09-86

Date submitted: 9-11-86

& type of sample(s): 3 Soil

Lab No.	Client ID	Motor Fuel (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Xylene (mg/kg)	Fuel Type	
5343-44	Soil HA 100 - HA 101	5.1	0.010	0.056	0.065	Gasoline	
5345	Soil HA 7	38	0.12	0.97	1.8	Gasoline	
5346	Soil HA 8	3700	28	260	360	Gasoline	
	METHOD(S):	Note 1					

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NOTES:
Note 1 - EPA Methods 5020/8015/8020.

Analytical Supervisor

FIGURE 2

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A Division of Western Ecological Services Company

WESCO Laboratories

Date: October 8, 1986

Client: AquaScience Engineers

Submitted by: Dave Prull

Report to: Terry Carter

WESCO Job #: AQS 86107

Client Job/P.O. #: Alameda Housing Authority/

Date collected: 9-29-86

Date submitted: 9-29-86

& type of sample(s): 2 Soil / WATER

Lab No.	Client ID	Motor Fuel (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Xylene (mg/kg)	Fuel Type	
5596-97	Soil N (collate)	15	0.02	0.095	0.060	Gasoline	
5598	~~Soil~~ WATER Pit	1.4	0.030	0.041	0.008	Gasoline	?

METHOD(S): Note 1

NOTES: Note 1 - EPA Methods 5020/8015/8020.

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FIGURE 3

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APPENDIX C

Laboratory Analytical Results, from Ground-Water Sampling Conducted by PRC Environmental Management, September, 1990

Mr. Randy Fish
Page 2

October 01, 1990
PACE Project
Number: 400921501

Alameda Ann. Well S.

PACE Sample Number:			70 0814979	70 0814987	70 0814995
Date Collected:			09/20/90	09/20/90	09/20/90
Date Received:			09/21/90	09/21/90	09/21/90
Parameter	Units	MDL	MW-11C1-W-5-R-1	MW-11C1-W-5-R-2	MW-11C1-W-5-B-1
ORGANIC ANALYSIS					
VOLATILE ORGANICS, EPA METHOD 624 GC/MS					
Bromodichloromethane	ug/L	5	ND	-	ND
trans-1,3-Dichloropropene	ug/L	5	ND	-	ND
4-Methyl-2-pentanone (MIBK)	ug/L	10	ND	-	ND
Toluene	ug/L	5	ND	-	ND
cis-1,3-Dichloropropene	ug/L	5	ND	-	ND
1,1,2-Trichloroethane	ug/L	5	ND	-	ND
2-Chloroethylvinyl ether	ug/L	5	ND	-	ND
Ethylmethacrylate	ug/L	5	ND	-	ND
Dibromochloromethane	ug/L	5	ND	-	ND
2-Hexanone	ug/L	10	ND	-	ND
Tetrachloroethene	ug/L	5	ND	-	ND
Chlorobenzene	ug/L	5	ND	-	ND
Ethylbenzene	ug/L	5	ND	-	ND
Bromoform	ug/L	5	ND	-	ND
Xylene(s) Total	ug/L	5	ND	-	ND
Styrene	ug/L	5	ND	-	ND
1,1,2,2,-Tetrachloroethane	ug/L	5	ND	-	ND
1,2,3-Trichloropropane	ug/L	5	ND	-	ND
1,4-Dichloro-2-butene	ug/L	5	ND	-	ND
1,3-Dichlorobenzene	ug/L	5	ND	-	ND
1,4-Dichlorobenzene	ug/L	5	ND	-	ND
1,2-Dichlorobenzene	ug/L	5	ND	-	ND
1,2-Dichloroethane-d4 (Surrog. Recovery)			101%	-	104%
Toluene-d8 (Surrogate Recovery)			86%	-	86%
4-Bromofluorobenzene (Surrog.Recovery)			103%	-	106%
EXTRACTABLE ORGANICS BY EPA 625 (GC/MS)					
Bis(2-chloroethyl) ether	ug/L	30	-	ND	-

MDL Method Detection Limit
ND Not detected at or above the MDL.

81 Digital Drive
Novato, CA 94949
TEL: 415-883-8100
FAX. 415 883-2673

Mr. Randy Fish
Page 4

October 01, 1990
PACE Project
Number: 400921501

Alameda Ann. Well S.

PACE Sample Number:			70 0814979	70 0814987	70 0814995
Date Collected:			09/20/90	09/20/90	09/20/90
Date Received:			09/21/90	09/21/90	09/21/90
Parameter	Units	MDL	MW-11C1-W-5-R-1	MW-11C1-W-5-R-2	MW-11C1-W-5-B-1
ORGANIC ANALYSIS					
EXTRACTABLE ORGANICS BY EPA 625 (GC/MS)					
4-Chlorophenylphenyl ether	ug/L	17	-	ND	-
N-Nitrosodiphenyl amine	ug/L	27	-	ND	-
4-Bromophenylphenyl ether	ug/L	26	-	ND	-
Hexachlorobenzene	ug/L	27	-	ND	-
Phenanthrene	ug/L	20	-	ND	-
Anthracene	ug/L	23	-	ND	-
Di-n-butyl phthalate	ug/L	26	-	ND	-
Fluoranthene	ug/L	25	-	ND	-
Pyrene	ug/L	18	-	ND	-
Butylbenzyl phthalate	ug/L	22	-	ND	-
Benzo(a)anthracene	ug/L	21	-	ND	-
3,3'-Dichlorobenzidine	ug/L	22	-	ND	-
Chrysene	ug/L	20	-	ND	-
Bis(2-ethylhexyl) phthalate	ug/L	64	-	ND	-
Di-n-octyl phthalate	ug/L	43	-	ND	-
Benzo(b)fluoranthene	ug/L	51	-	ND	-
Benzo(k)fluoranthene	ug/L	47	-	ND	-
Benzo(a)pyrene	ug/L	51	-	ND	-
Indeno(1,2,3-cd)pyrene	ug/L	47	-	ND	-
Dibenzo(a,h)anthracene	ug/L	47	-	ND	-
Benzo(g,h,i)perylene	ug/L	51	-	ND	-
Phenol	ug/L	13	-	ND	-
2-Chlorophenol	ug/L	32	-	ND	-
2-Methylphenol	ug/L	23	-	ND	-
4-Methylphenol	ug/L	60	-	ND	-
2-Nitrophenol	ug/L	34	-	ND	-
2,4-Dimethylphenol	ug/L	37	-	ND	-
Benzoic Acid	ug/L	23	-	ND	-

MDL Method Detection Limit
ND Not detected at or above the MDL.

Mr. Randy Fish
Page 6

October 01, 1990
PACE Project
Number: 400921501

Alameda Ann. Well S.

Parameter	Units	MDL	70 0815002 09/20/90 09/21/90 MW-11C1-W- S-B-2
ORGANIC ANALYSIS			
EXTRACTABLE ORGANICS BY EPA 625 (GC/MS)			
Bis(2-chloroethyl) ether	ug/L	27	ND
1,3-Dichlorobenzene	ug/L	22	ND
1,4-Dichlorobenzene	ug/L	20	ND
Benzyl Alcohol	ug/L	33	ND
1,2-Dichlorobenzene	ug/L	22	ND
Bis(2-chloroisopropyl) ether	ug/L	30	ND
N-Nitroso-di-N-propylamine	ug/L	25	ND
Hexachloroethane	ug/L	34	ND
Nitrobenzene	ug/L	26	ND
Isophorone	ug/L	21	ND
Bis(2-chloroethoxy)methane	ug/L	23	ND
1,2,4-Trichlorobenzene	ug/L	30	ND
Naphthalene	ug/L	13	ND
4-Chloroaniline	ug/L	54	ND
Hexachlorobutadiene	ug/L	31	ND
2-Methylnaphthalene	ug/L	33	ND
Hexachlorocyclopentadiene	ug/L	13	ND
2-Chloronaphthalene	ug/L	13	ND
2-Nitroaniline	ug/L	69	ND
Dimethylphthalate	ug/L	26	ND
Acenaphthylene	ug/L	17	ND
2,6-Dinitrotoluene	ug/L	16	ND
3-Nitroaniline	ug/L	42	ND
Acenaphthene	ug/L	17	ND
Dibenzofuran	ug/L	33	ND
2,4-Dinitrotoluene	ug/L	13	ND
Diethyl phthalate	ug/L	25	ND
Fluorene	ug/L	15	ND

MDL Method Detection Limit
ND Not detected at or above the MDL.

REPORT OF LABORATORY ANALYSIS

Mr. Randy Fish
Page 8

October 01, 1990
PACE Project
Number: 400921501

Alameda Ann. Well S.

PACE Sample Number:			70 0815002
Date Collected:			09/20/90
Date Received:			09/21/90
Parameter	Units	MDL	MW-11C1-W-5-B-2
ORGANIC ANALYSIS			
EXTRACTABLE ORGANICS BY EPA 625 (GC/MS)			
Benzoic Acid	ug/L	20	ND
2,4-Dichlorophenol	ug/L	28	ND
4-Chloro-3-methylphenol	ug/L	37	ND
2,4,6-Trichlorophenol	ug/L	42	ND
2,4,5-Trichlorophenol	ug/L	28	ND
2,4-Dinitrophenol	ug/L	38	ND
4-Nitrophenol	ug/L	32	ND
2-Methyl-4,6-dinitrophenol	ug/L	38	ND
Pentachlorophenol	ug/L	58	ND
Date Extracted for Semi-volatiles (8270)			09/21/90

MDL Method Detection Limit
ND Not detected at or above the MDL.

The data contained in this report were obtained using EPA or other approved methodologies. All analyses were performed by me or under my supervision.

Ruth J. Siegmund
Organic Chemistry Manager

11 Digital Drive
Novato, CA 94949
TEL: 415-883-6100
FAX: 415-883 2673

TENTATIVE IDENTIFICATION AND SEMI-QUANTITATION OF EXTRA PEAKS

mple # 70 081500.2 PACE Project # 400921.501

#	Retention Time	Tentative Identification	CAS #	% Match	Semi-Quantifiable ug/L
1	0.88	Propane,2-methyl-	691372	83	2.8
2					
3					
4					
5					
6					
7					
8					
9					
10					

TENTATIVE IDENTIFICATION AND SEMI-QUANTITATION OF EXTRA PEAKS

Sample # 70 081500.2 Volatiles

PACE Project # 400921.501 Client Sample I.D.- MW-11C1-W-5-B-2

#	Retention Time	Tentative Identification	CAS #	Semi-Quantified Concentration (ug/L)
1	20.04	Unknown		320 J

LJP:314.2/1f

INCORPORATED
THE ASSURANCE OF QUALITY

CHAIN-OF-CUSTODY RECO
Analytical Request

Client: PRC
Address: 120 Howard St #700
San Francisco 94105
Phone: 543-4880

Report To: Randy Fish
Bill To: "
PO # / Billing Reference: 044-0067
Project Name / No: Alameda Annex well survey

Pace Client No.:
Pace Project Manager: LJP
Pace Project No.: 400121
Requested Due Date: 72 h

Sampled By (PRINT): Lynn Valdivia
Sampler Signature: Lynn Valdivia
Date Sampled: 9-21-90

RUSH

ITEM NO.	SAMPLE DESCRIPTION	TIME	MATRIX	PACE NO.	NO. OF CONTAINERS	PRESERVATIVES: UNPRESERVED	H_2SO_4	HNO_3	VOA	ANALYSES REQUEST: Volatiles same list as MW-11CL-W-5-B-1	REMARKS
1	MW-11CL-W-5-B-1	1140	WW	81497.9	2	X			X	X	Identify extra peaks as per Randy Fish 9/21/90
2	MW-11CL-W-5-B-2	1140	"	81498.7	2	X				X	
3	MW-11CL-W-5-B-1	1150	"	81499.5	8	X		X		X	
4	MW-11CL-W-5-B-2	1150	"	81500.2	8	X				X	
5											
6											
7											
8											

COOLER NOS.	BAILERS	SHIPMENT METHOD OUT - DATE	SHIPMENT METHOD RETURNED - DATE	ITEM NUMBER	RELINQUISHED BY / AFFILIATION	ACCEPTED BY / AFFILIATION	DATE	TIME
					Lynn Valdivia PRC	Edith Rice	9-21-90	
					Edith Rice	Steve Mayo SAIC	9-21	1603

Additional Comments:
9/2, F12

ORIGINAL

SEE REVERSE SIDE FOR INSTRUCTIONS

Versar INC. SACRAMENTO

APPENDIX D

Monitoring Well Permit Application

ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

5997 PARKSIDE DRIVE • PLEASANTON, CALIFORNIA 94566 • (415) 484-2600

GROUNDWATER PROTECTION ORDINANCE PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

LOCATION OF PROJECT 1916 Webster Street
Alameda, California

CLIENT
Name Housing Authority of the City of Alameda
Address 701 Atlantic Ave. Phone (415)522-8422
City Alameda Zip 94501

APPLICANT
Name Michael P. Sellens
Versar Inc.,
Address 5330 Primrose Dr. Phone (916)962-1612
City Fair Oaks, CA #228 Zip 95628

TYPE OF PROJECT

Well Construction		Geotechnical Investigation	
Cathodic Protection	___	General	___
Water Supply	___	Contamination	___
Monitoring	X	Well Destruction	___

PROPOSED WATER SUPPLY WELL USE

Domestic	___	Industrial	___	Other	Sampling
Municipal	___	Irrigation	___		

DRILLING METHOD:

Mud Rotary	___	Air Rotary	___	Auger	X
Cable	___	Other	___		

DRILLER'S LICENSE NO. ___

WELL PROJECTS

Drill Hole Diameter	8 in.	Maximum	
Casing Diameter	2 in.	Depth	15 ft.
Surface Seal Depth	3 ft.	Number	1

GEOTECHNICAL PROJECTS

Number of Borings	___	Maximum	
Hole Diameter	___ in.	Depth	___ ft.

ESTIMATED STARTING DATE April 8, 1991
ESTIMATED COMPLETION DATE April 8, 1991

I hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 73-68.

APPLICANT'S
SIGNATURE ___ Date ___

FOR OFFICE USE

PERMIT NUMBER ___
LOCATION NUMBER ___

PERMIT CONDITIONS

Circled Permit Requirements Apply

A. GENERAL
1. A permit application should be submitted so as to arrive at the Zone 7 office five days prior to proposed starting date.
2. Submit to Zone 7 within 60 days after completion of permitted work the original Department of Water Resources Water Well Drillers Report or equivalent for well projects, or drilling logs and location sketch for geotechnical projects.
3. Permit is void if project not begun within 90 days of approval date.

B WATER WELLS, INCLUDING PIEZOMETERS
1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth is 50 feet for municipal and industrial wells or 20 feet for domestic and irrigation wells unless a lesser depth is specially approved. Minimum seal depth for monitoring wells is the maximum depth practicable or 20 feet.

C GEOTECHNICAL. Backfill bore hole with compacted cuttings or heavy bentonite and upper two feet with compacted material. In areas of known or suspected contamination, tremied cement grout shall be used in place of compacted cuttings.

D CATHODIC. Fill hole above anode zone with concrete placed by tremie.

E WELL DESTRUCTION. See attached.

Approved ___ Date ___

12/89