

August 27, 1990

Mr. Lawrence Seto Senior Hazardous Materials Specialist Alameda County Health Care Services Agency 80 Swan Way, Room 200 Oakland, CA 94621

Subject:

Groundwater Monitoring Well Installation

500 San Pablo Avenue

Albany, CA

(Project No. 9064)

Dear Mr. Seto:

As per our meeting and discussion of August 23, 1990, concerning the installation of a groundwater monitoring well for the removed tank excavation at 500 San Pablo Avenue in Albany, California, Aqua Terra Technologies, Inc. (ATT) is submitting the following work plan for the installation of a groundwater monitoring well.

2950 Buskirk Avenue Suite 120 Walnut Creek, CA 9 4 5 9 6 415 934-4884

Aqua Terra Technologies

Consulting Engineers

& Scientists

The work plan was prepared in accordance with the San Francisco Bay Region of the Regional Water Quality Control Board (RWQCB) Tri-Regional Board Staff Recommendations for Preliminary Evaluation and Investigation of Underground Tank Sites (10 August 1990), the California Leaking Underground Fuel Tank (LUFT) Task Force LUFT Field Manual (October 1989) guidelines, and the Alameda County Health Care Services Agency (ACHCSA) requirements.

INTRODUCTION

Site Background

The subject property is located at 500 San Pablo Avenue (Plate 1, Attachment A). The property is the site of a former auto body repair shop (known as Troxell's Auto Body Shop) which contained two steel, 550-gallon underground fuel tanks in the sidewalk directly in front (east of) the building. The tanks were removed from the subject property on August 14, 1990. A closure report is being prepared by ATT.

Geologic and Hydrogeologic Setting

The site is within the Oakland Upland Alluvial Plain Groundwater subarea of the East Bay Plain [Geohydrology and Groundwater - Quality Overview, East Bay Plain Area, Alameda County, California: Alameda County Flood and Water Conservation District (ACFCWCD)] Report No. 205 (J), 1988. Regional native soils generally consist of Pleistocene Older alluvium composed of interbedded, poorly consolidated clay, silt, sand, and gravel. Soils directly underlying the site consist of backfill clay and sandy clay (to approximately 15 feet below the ground surface).

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Consultant reports from the Plaza Car Wash property at 400 San Pablo Avenue, indicate that the shallow, unconfined groundwater flow is toward the west-southwest at a gradient of 0.011 feet per foot.

SCOPE OF WORK

Monitoring Well Installation

One, two-inch diameter PVC groundwater monitoring well will be installed in the downgradient flow direction of the shallow, unconfined groundwater. Because of extensive underground utilities (gas, electric, water, sewerage) in the immediate vicinity of the tank excavation, which precludes monitoring well installation within ten feet of the removed tank excavation, ATT recommends that the monitoring well be placed approximately 40 feet from the excavation. A site map, showing the approximate monitoring well location, is shown on Plate 2 (Attachment A).

Construction of the groundwater monitoring well will conform with the RWQCB guidelines and ACHCSA requirements. At least 15-feet of slotted screen will be used in the saturated zone, if possible. The actual screened zone will be determined by the onsite field geologist during the monitoring well construction as determined by the actual site geology and field conditions. Monitoring well construction will adhere to the protocol outlined in Attachment B. A monitoring well permit will be obtained from Zone 7 of the ACFCWCD (Attachment C).

Soil Sampling and Analysis

Because the unconfined groundwater table is very shallow, approximately eight feet below the ground surface, ATT will attempt to collect one soil sample from the capillary fringe zone directly above the water table. Samples will be temporarily stored in a cooler with dry ice; sample protocol is in Attachment D. The soil sample will be submitted to a California Department of Health Services (DHS) certified laboratory under the proper chain of custody form; the sample will be analyzed for total oil and grease (TOG), total petroleum hydrocarbons as gasoline (TPH/g), benzene, toluene, ethylbenzene, and total xylenes (BTEX), and organic lead using EPA Methods 503E, 8015, 8020, and DHS (LUFT) Method, respectively. Method detection limits will follow the LUFT Manual requirements.

Groundwater Sampling and Analysis

A groundwater sample will be collected from the completed and developed groundwater monitoring well; groundwater development will occur no earlier than 24 hours after installation of the monitoring well and sampling will occur no earlier than 24 hours after well development. The groundwater sample will be stored in a cooler with bagged ice prior to shipment to a DHS certified laboratory. The groundwater sample will be analyzed for TOG, TPH/g - BTEX, and organic lead using EPA Methods 503E, 5030, and DHS (LUFT) Method, respectively.



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SITE SAFETY PLAN

A site safety plan for this investigation is presented in Attachment E.

Please contact us if you have any questions or comments.

Sincerely,

AQUA TERRA TECHNOLOGIES, INC.

Bruce Berman Staff Scientist

William E. Motzer, Ph.D. Senior Hydrogeologist

California Registered Geologist #4202

(Expires 6/30/92)

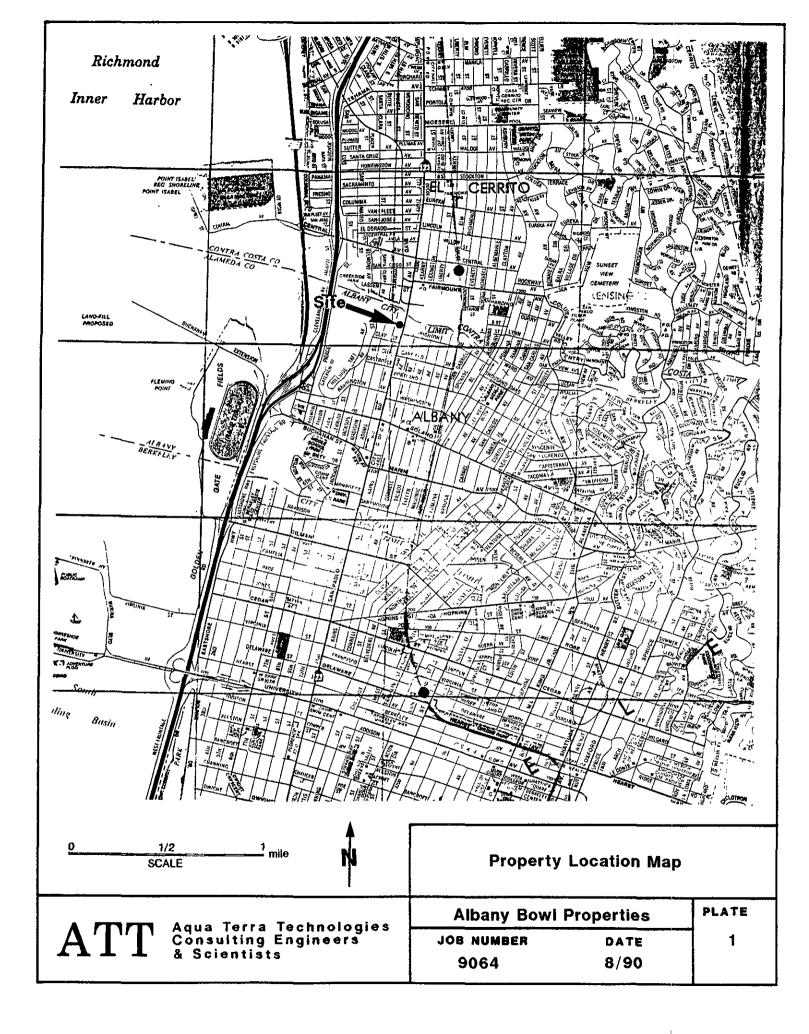
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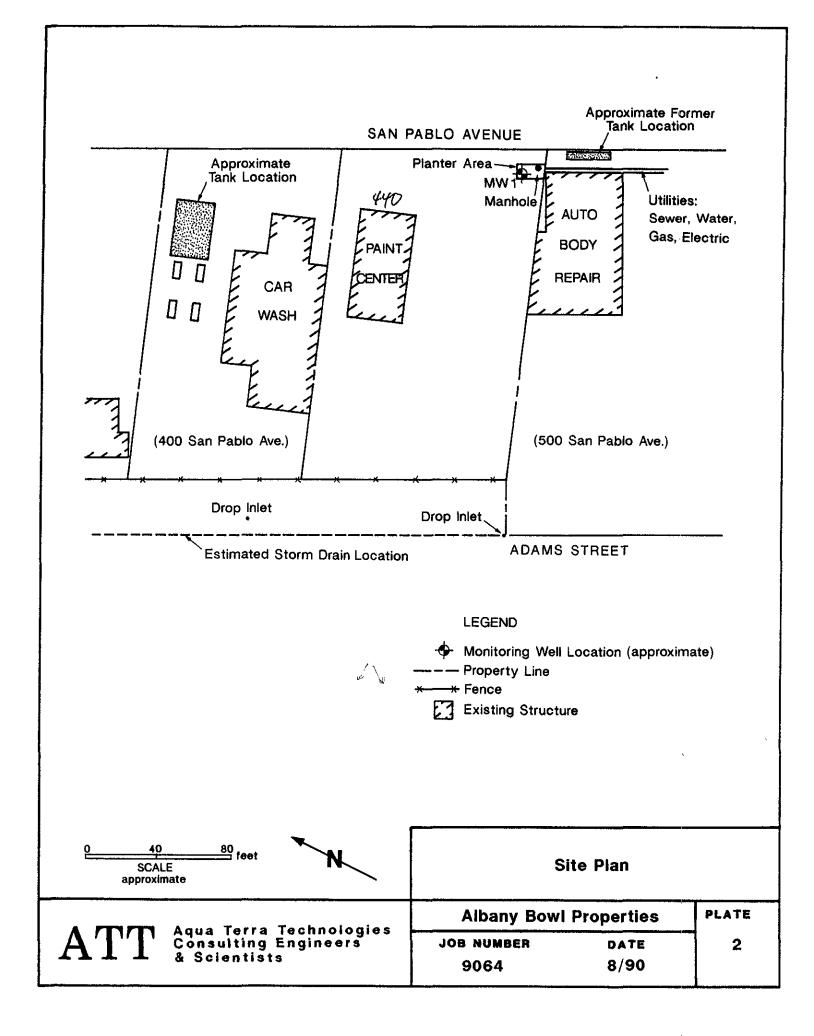
cc: Mr. Ken Freidman

Mr. Jon Benjamin

Attachment A

Plates





Attachment B

Soil Boring and Monitoring Well Construction Protocol

ATTACHMENT B

DRILLING PROCEDURES & GROUNDWATER MONITORING WELL CONSTRUCTION/DESIGN

DRILLING AND SAMPLING PROCEDURES

All borings for well construction will be drilled using eight-inch diameter or larger hollow stem auger equipment. A California Registered Geologist will direct the collection of undisturbed samples of the soils encountered and the preparation of detailed logs of each boring.

Soil sampling will be conducted using a modified California drive sampler, a standard penetration sampler, or a five-foot continuous sampler. Representative samples of each soil type will be retained in either Ziploc bags or two-inch to three-inch diameter, six-inch long, clean, brass tubes. The samples will be retained for verification of soil classification and for chemical laboratory analytical testing, as appropriate. Teflon sheeting will be placed between the soil sample and the cap, and the cap will be sealed with PVC tape.

When access limitations do not allow drilling with truck mounted equipment, either a trailer mounted drilling rig, portable power driven, or manually operated soil sampling equipment will be utilized. If soil samples are to be retained for analysis, they will be collected in clean brass tubes fitted within a thin walled drive sampler. The soil samples will be capped and sealed as described above.

All down hole sampling, drilling, and well construction equipment and materials, including augers, casing, and screens will be steam cleaned prior to their initial use. The sampling equipment will be cleaned prior to each assembly by washing with a trisodium phosphate solution, rinsing with distilled water, and allowing to air dry. The auger flights, drill bit, and sampler will be steam cleaned at each boring location.

MONITORING WELL CONSTRUCTION

Monitoring wells will be constructed in accordance with applicable local water district or California Department of Water Resources guidelines. The specific completion details for each well will be determined in the field at the time of drilling by a California Registered Geologist experienced in groundwater monitoring system design and installation.

Monitoring wells consist of two or four-inch diameter, Schedule 40 PVC casing and screens with flush, threaded joints. No PVC glue was used. The screened sections will be machine slotted with either 0.010-inch (0.255 mm) 0.020-inch (0.51 mm) openings. The smaller slot size will be used where the wells are screened within fine-grained sandy soils, and the larger slots will be used where coarse sand or gravels are encountered. The slotted sections will be fitted with a slip-on cap and placed opposite the water-bearing strata in the boring. The blank pipe will be connected to the perforated pipe and will extend to just below the ground surface.

The annulus between the side of the borchole and the slotted section will be filled with a clean sand pack to variable depths, but not less than one or two feet above the perforated pipe. The annulus will be packed with either Lonestar No. 1/20 (where 0.010-inch slotted pipe is used) or No. 3 (where 0.020-inch slotted pipe is used) washed sand filter material. The gradation of the filter material is summarized below:

U.S. Sieve No.	Opening (mm)	Percent Passing (No. 3)	Percent Passing (No. 1/20)	
6	3.35	100		
8	2.36	99 - 100		
12	1.70	62 - 78		
16	1.18	15 - 33	100	
20	0.85	0 - 8	90 - 100	
30	0.60	0 - 4	14 - 40	
40	0.425		0 - 5	

A seal of bentonite pellets approximately 24-inches thick will be placed above the sand pack to reduce the risk of grout penetration into the sand. The bentonite pellets will be hydrated with distilled water to form a tight plug. A cement/bentonite grout will be placed above the bentonite plug to a depth of approximately two feet below the ground surface. The grout will be pumped into the boreholes using a tremie pipe. Concrete will be placed from the top of the cement/bentonite mixture to the ground surface.

At most sites in sedimentary formations, it is not practical to "rationally design" a filter pack based on sieve analyses. From experience, Lonestar No. 1/20 or No. 3 washed sand as a filter material has been selected for use in the proposed wells. The 0.010-inch and 0.020-inch slot sizes were selected to retain 100 percent of the filter material.

The completed wells will be enclosed in a traffic rated enclosure placed flush with grade or in an above-ground metal enclosure, and will be fitted with a locking cap. If a groundwater level contour map is to be prepared, well head elevations will be determined by a level survey, and well coordinates will be determined by a traverse survey. The level/traverse survey will be referenced to a bench mark of known elevation and coordinates. Once water levels have stabilized, water levels in all wells will be measured.

After the wells have been completed, they will be developed by pumping and surging to clean and stabilize the soils around the screens. A manually operated, positive displacement surge pump and Teflon bailer, surge block, and/or centrifugal pump will be used for development. A minimum of 10 well casing volumes of water will be removed during development; however, development will continue until water flows clear and pH, temperature, and conductivity have stabilized. All development equipment will be steam cleaned prior to its initial use in each well. A well development log will be maintained which will include 1) a record of development water parameters at frequent intervals, 2) the quantity of water removed during development, and 3) flow rates during development.

Soil cuttings generated during drilling will be wrapped in plastic sheeting, and water generated during well development will be retained in secured 55-gallon drums until chemical analytical data from samples are received.

Attachment C

Monitoring Well Permit



ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

5997 PARKSIDE DRIVE

FOR APPLICANT TO COMPLETE

PLEASANTON, CALIFORNIA 94566 & (415) 484-2600

FOR OFFICE USE

GROUNDWATER PROTECTION ORDINANCE PERMIT APPLICATION

1) LOCATION OF PROJECT 500 San Paldo Avenue, Albany, California		PERMIT NUMBER			
	CLIENT Nome Albany Scal Properties Address 5401 San Pablo Phone 526-8818 City Albany 21p 94706	Approved Date			
(3)	APPLICANT Name Aqua Terra Technologies Address 2980 Buskirk Phone 934-4884	PERMIT CONDITIONS Circled Permit Requirements Apply			
	city walnut creek zip 94596	GENERAL A permit application should be submitted so as tarrive at the Zone 7 office five days prior to proposed starting date. 			
	PROPOSED WATER WELL USE Domestic Industrial Irrigation Municipal Monitoring Other	 Notify this office (484-2600) at least one da prior to starting work on permitted work an before placing well seals. Submit to Zone 7 within 60 days after completio of permitted work the original Department or 			
(6)	PROPOSED CONSTRUCTION Drilling Method: Mud Rotary Air Rotary Auger Cable Other	Water Resources Water Well Drillers Report o equivalent for well projects, or bore hole log and location sketch for geotechnical projects Permitted work is completed when the last surface seal is placed or the last boring is completed. 4. Permit is void if project not begun within 9			
	WELL PROJECTS Drill Hole Diameter 8 in. Depth(s) 20 ft. E Casing Diameter 2 in. Number Surface Seal Depth 5 ft. of Wells 1 (MWI) Driller's License No. 596548 Exceptech Drilling GEOTECHNICAL PROJECTS	days of approval date. WATER WELLS, INCLUDING PIEZOMETERS I. Minimum surface seal thickness is two inches o cement grout placed by tremie, or equivalent. 2. Minimum seal depth is 50 feet for municipal an industrial wells or 20 feet for domestic, irrigation, and monitoring wells unless a lesser dept			
		is specially approved. GEOTECHNICAL. Backfill bore hole with compacted cuttings or heavy bentonite and upper two feet with com			
7)	ESTIMATED STARTING DATE 8-30-90 ESTIMATED COMPLETION DATE 8-30-90	 pacted material. CATHODIC. Fill hole above anode zone with concrete placed by tremie, or equivalent. 			
(8)	I hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 73-68.	. WELL DESTRUCTION. See attached.			

Attachment D
Soil and Groundwater
Sampling Protocol

ATTACHMENT D

SOIL & GROUNDWATER SAMPLE COLLECTION & HANDLING PROTOCOL

INTRODUCTION & PURPOSE

Because reliable and representative test results must be generated from soil and groundwater samples, it is essential to establish a sampling procedure which assures that all samples are:

- Collected by approved and repeatable methods
- O Representative of the materials(s) at the desired location and depth
- O Uncontaminated by container and sampling equipment

The following sampling protocol is designed to be a guide to the sampling and handling procedures for soil and groundwater samples to be collected. Based on conditions which may be encountered in the field, some modifications to this protocol may be required to fit the needs of an individual site.

SAMPLING PROCEDURES

Groundwater Sampling

Prior to collecting groundwater samples, monitoring wells will be purged by bailing until pH, conductivity, and temperature levels stabilize. Wells will be purged and groundwater samples will be obtained using a Teflon bailer and nylon rope. New nylon rope is used for each well.

The appropriate number of sample containers and type will be used for each sample collected, in accordance with the analytical laboratory requirements and EPA protocol. The bottles will be filled using the bailer. All sample bottles will be pre-cleaned by the supplier according to EPA protocols.

To prevent cross contamination of groundwater samples by the sampling equipment, all equipment used in sampling will be washed with a trisodium phosphate solution, triple rinsed with distilled water, and allowed to air dry prior to each use. A sample of the distilled water used in the final rinse will be retained for analysis as part of sample quality assurance.

Soil Sampling

After the soil sampler is driven to the desired depth and the samples are retrieved, each end of the ring containing the soil sample to be retained for laboratory analysis will be sealed with Teflon sheeting, covered with plastic end caps, and sealed with PVC tape. All sample containers (tubes and end caps) will be steamed cleaned and air dried prior to use. The soil sample recovered in the ring just above the sample retained for chemical analysis will be examined in the field for visual and olfactory indications of chemical contamination and used for lithologic description.



The Unified Soil Classification System (USCS) will be used to log and describe the soil by the on-site geologist. These logs will also include details of the sampling process such as depth, apparent odors, discoloration, and any other factors which may be required to evaluate the presence of contamination at the site.

POST SAMPLING PROCEDURES

One field/travel blank consisting of one sample bottle filled with distilled water will accompany soil and groundwater sample containers at all times, including during transport to and from the site. Distilled water field/travel blanks will be analyzed according to the appropriate EPA Methods corresponding to the soil/groundwater sample analyses.

Sample containers will be labeled with sample number, project number, date, and the initials of the person collecting the sample. A separate sample collection record will be maintained for each groundwater sample collected.

Soil and groundwater samples collected will be analyzed by an analytical laboratory certified by the California Department of Health Services (DHS) for complete chemical analysis of hazardous waste as well as drinking water samples. Quality assurance documentation will accompany all analytical reports generated by the laboratory.

The samples will be placed in an ice cooler immediately following collection, and will remain in the ice cooler until refrigerated at the analytical laboratory. The samples will be delivered to the laboratory direct by

courier or overnight freight within 48 hours of time of collection. Appropriate chain of custody forms will be used for all samples.

Attachment E
Site Safety Plan

AQUA TERRA TECHNOLOGIES SITE SAFETY PLAN

A. GENERAL INFORMATION

Site: Former Troxell's Auto Body Shop

Location: 500 San Pablo Road

Albany, CA

Plan Prepared By: William E. Motzer Date: Aug. 27, 1990

Senior Hydrogeologist

Plan Approved By: Terrance E. Carter Date: Aug. 27, 1990

Senior Environmental Eng.

Objectives: Installation of one groundwater monitoring well to determine possible soil and groundwater contamination from removed underground fuel storage tanks.

Proposed Date of Investigation: August 30, 1990 and upon approval of the Alameda County Health Care Services Agency (ACHCSA)

Background Review: Complete: X Preliminary:

Documentation/Summary: See Aqua Terra Technologies (ATT) work plan of August 27, 1990 (Attached).

Overall Hazard: Serious: Moderate: Low: X Unknown:

B. SITE/WASTE CHARACTERISTICS

Waste Type(s): Liquid: Solid: X Sludge: Gas:

Characteristic(s): Corrosive: Ignitable: Radioactive:

<u>Volatile: X Toxic: Reactive: Unknown: Other(name):</u>

Facility Description: See Plate 2 in attached work plan. Property is at 500 San Pablo Avenue in Albany, California. The property contains a one-story building (now vacant) and parking and asphalt paved lot. Two 550 gallon underground fuel tanks were removed on August 14, 1990 from the sidewalk area, in front (northwest side) of the property.

Principal Disposal Method (type and location): Boring cutting soils and monitoring well development water will be placed in appropriate containers; disposal is dependant upon sample analytical results.

Unusual Features (power lines, terrain, utilities, etc.): Underground utilities to be established via City of Albany sewer plans, Underground Service Alert (USA), and an underground utility locator.

Facility Status: Active: Inactive: X Unknown:

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AQUA TERRA TECHNOLOGIES SITE SAFETY PLAN (continued)

History (agency action, complaints, injuries, etc.): See attached work plan.

C. HAZARD EVALUATION

Parameter:	TLV	IDLH	LEL	HEALTH
	(ppm)	(ppm)	(%)	skin/eyes/inge./inha.
			20	X

Special Precautions and Comments: Use NIOSH approved gloves when handling soil samples if contamination is encountered. Sampling to be conducted in the open air.

D. SITE SAFETY WORK PLAN

Perimeter Establishment: Map/Sketch Attached: X Site Secured: See attached work plan.

Perimeter Identified: See attached work plan.

Zone(s) of Contamination Identified: N/A

Personal Protection:

Level of Protection: A B C D X

Modifications: If necessary, tyvek suits will be used with NIOSH approved face masks. All personnel collecting soil samples will wear gloves, if contamination is encountered. Hard hats and steel toed shoes will be worn at all times on or around the drilling rig.

Surveillance Equipment and Materials:

Instrument: LEL Meter Action Level: 20%

Site Entry Procedures: Permission of the property owner/manager. Hard hats and steel toed shoes will be worn at all times.

Decontamination Procedures:

<u>Personal</u>: All personnel will wash hands, face, clothes if contamination is encountered. Smoking or eating not permitted onsite during drilling activities.

<u>Equipment</u>: Steam cleaner for all boring and sampling equipment. Washing bucket for rinsing of personnel gloves, etc.

First Aid (type of equipment available): Fully stocked first aid kit and emergency eyewash with company vehicles.

Work Limitations (time of day, weather, heat/cold stress): Winds less than 25 mph; no work during periods of precipitation; work hours during daylight only.

Investigation-Derived Material Disposal: Soil generated from soil borings and groundwater

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AQUA TERRA TECHNOLOGIES SITE SAFETY PLAN (continued)

generated from monitoring well development and sampling to be contained in 17-H, 55-gallon steel drums pending return of California Department of Health Services (DHS) certified laboratory sheets.

Team Composition:

Team Member
William E. Motzer

Bruce Berman

Responsibility

Project Hydrogeologist Project Scientist/ Safety Manager

E. EMERGENCY INFORMATION

Local Resources:

Ambulance: 911

Hospital Emergency Room: 911

Poison Control Center: 1-800-523-2222

Police: 911

Fire Department: 911 Explosives Unit: 911

Agency Contact: National Response Center (NAC)

Toxic Chemical and Oil Spills: (1-800-424-8802)

Site Resources:

Water Supply: Onsite Telephone: Onsite: none

Radio: unknown Other: None

Emergency Contacts:

Name: Phone:
Mr. Ken Friedman 1-415-383-6798

Mr. Terrance E. Carter 1-415-934-4884

Senior Environmental Engineer Aqua Terra Technologies, Inc.

Emergency Routes:

<u>Hospital</u>: From Albany Bowl at 500 San Pablo Avenue, due south on San Pablo Avenue; left turn (traveling east) on Dwight Way. East on Dwight 1.15 miles to Herrick Hospital.

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