

LETTER OF TRANSMITTAL

Date: October 18, 1990

To: Mr. Lawrence Seto
Senior Hazardous Materials Specialist
Alameda County Health Care Services Agency
Division of Hazardous Materials
Department of Environmental Health
80 Swan Way, Room 200
Oakland, CA 94621

From: William E. Motzer, Ph.D. *WEM*
Senior Hydrogeologist

Aqua Terra Technologies
Consulting Engineers
& Scientists

Re: Tank Closure Report and Monitoring Well Installation report for property at
450 and 500 San Pablo Avenue in Albany, CA.

2950 Buskirk Avenue
Suite 120
Walnut Creek, CA
94596
415 934-4884

At the request of Mr. Ken Friedman of Albany Bowl Properties, I am enclosing one copy of the tank closure and monitoring well installation report for the property at 450 and 500 San Pablo Avenue in Albany, California. If you have any questions concerning this report, please call.

90 OCT 22 AM 9:01



QUESTIONS? CALL 800-238-5355 TOLL FREE.

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Recipient's Phone Number (Very Important): _____

Company: Bill Motzer

Department/Floor No: _____

Company: Mr. Lawrence Seto

Department/Floor No: _____

Street Address: AQUA TERRA TECHNOLOGY

Exact Street Address (We Cannot Deliver to P.O. Boxes or P.O. Zip Codes): Dept. of Environmental Health

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State: CA

City: Oakland CA

State: CA

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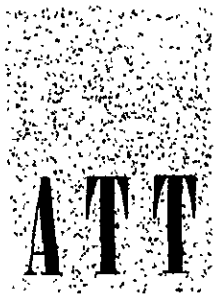
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October 17, 1990

Mr. Jon L. Benjamin
Attorney at Law
Heller, Erhman, White & McAuliffe
333 Bush Street
San Francisco, CA 94104

**Subject: Tank Closure Report and Monitoring Well Installation
450 and 500 San Pablo Avenue
Albany, CA
(Project No. 9064)**

Dear Mr. Benjamin:

The following report, compiled by Aqua Terra Technologies, Inc. (ATT), covers tank removal and closure for the property at 500 San Pablo Avenue and monitoring well installation (Phase II environmental site assessment) for the property at 450 San Pablo Avenue in Albany, California (herein after referred to as the subject property). The Phase II investigation included the installation of three groundwater monitoring wells, soil sample collection and analysis from the monitoring well borings, and subsequent monitoring well development, groundwater sampling, and analysis.

Aqua Terra Technologies
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& Scientists

2950 Buskirk Avenue
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Walnut Creek, CA
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415 934-4884

SUMMARY

The subject property is located in the City of Albany, California near the intersection of Cerrito Creek and San Pablo Avenue. Two 550-gallon, unused and abandoned-in-place underground fuel storage tanks (USTs) were discovered under the sidewalk in front of the 500 San Pablo Avenue property. Initial tank closure procedures began on July 12, 1989 with complete tank removal initiated on August 14, 1990. Tank removal was supervised by the Alameda County Health Care Services Agency (ACHCSA) as the lead and enforcing agency and monitoring well installations were installed under permits obtained from the Alameda County Flood Control and Water Conservation District (ACFCWCD) Zone 7, with a work plan submitted to and approved by the ACHCSA.

One downgradient monitoring well (MW-1), in the immediate vicinity of the tank excavation, was installed on August 30, 1990 as part of the final tank closure workplan; two additional downgradient monitoring wells MW-2 and MW-3 (adjacent to the Plaza Car Wash property boundary) were installed to comply with the Phase I site assessment recommendation for the subject property.

Depth to groundwater in the subject property area is approximately 4.5 to 5.6 feet below the ground surface (BGS) with a gradient of 0.004 to 0.008 feet per foot directed to the west-northwest. Groundwater flow reversal (to the south-southeast), during periods of precipitation, is known to occur in the area. The subsurface soils, to approximately 19.0 feet BGS, are silty to sandy clays.

Sample analyses from soil and groundwater samples collected from the tank excavation indicated the presence of residual petroleum hydrocarbons in soils in the tank excavation walls. Contaminated soil in the tank excavation which could feasibly be removed and excavated was



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removed; however, buried utility lines on either side of the excavation prevented the removal of additional soil. Analyses of soil and groundwater samples collected during and after the downgradient monitoring well MW-1 installation, indicated no detectable hydrocarbons as did soil and groundwater samples collected from the second downgradient monitoring well MW-2 (placed in the northwest corner of the subject property). No further remedial actions are believed necessary for the former tank excavation area except for groundwater monitoring.

Soil sample analyses from samples collected during the installation of a third groundwater monitoring well (MW-3), installed along the property line with and adjacent to the Plaza Car Wash property USTs, indicated no detected hydrocarbons; however, the groundwater sample collected and analyzed from this well had detectable concentrations of total petroleum hydrocarbons as gasoline, benzene, toluene, ethylbenzene, and total xylenes.

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A gasoline leak, discovered on the Plaza Car Wash property in 1989, from an underground product line in the pump island, resulted in significant soil and groundwater contamination of the adjacent, downgradient Plaza Car Wash property. The leaking line has been repaired, several soil borings and groundwater monitoring wells were installed with subsequent reports submitted to the ACHCSA and San Francisco Bay Region of the Regional Water Quality Control Board (RWQCB). However, gasoline contamination probably remains in soils and has been reported in groundwater samples collected from the monitoring wells on this property.

A comparison of hydrocarbons detected in the groundwater samples collected from monitoring wells on the Plaza Car Wash property and the groundwater sample collected from monitoring well MW-3, suggests that "fresh" unleaded gasoline remains in the Plaza Car Wash property soils and that hydrocarbons in groundwater are impacting the Albany Bowl Properties' groundwater. Although "aged" leaded gasoline was detected in the tank excavation water sample, on the subject property, the adjacent downgradient monitoring well MW-1, did not have detectable quantities of petroleum hydrocarbons.

Remedial measures, currently being supervised by the ACHCSA for the Plaza Car Wash property, should alleviate and decrease the impact of gasoline contaminated groundwater to the subject property. A quarterly groundwater sampling program for the subject property for one year for monitoring well MW-1 is proposed; monitoring wells MW-2 and MW-3 should remain in place to determine if contamination from the Plaza Car Wash property continues to impact the subject property groundwater, but sampling of these wells should not be the responsibility of the owners of the subject property.

SITE CHARACTERISTICS

Site Setting

The subject properties, which are under common ownership (and are herein after referred to as the subject property), are located in Albany, California, approximately 0.1 miles south of the El Cerrito - Albany city limits near the intersection of San Pablo Avenue and Cerrito Creek (Plate 1, Attachment A). The property which contained two 550-gallon underground fuel storage

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tanks (USTs) is located at 500 San Pablo Avenue; the groundwater monitoring wells were installed (in a downgradient direction from the former tank locations) on the adjacent 450 San Pablo Avenue property (Plate 2, Attachment A).

Previous Investigations

During the month of July, 1989 the City of Albany Fire Department (AFD) and Alameda County Health Care Services Agency (ACHCSA) initiated a reconnaissance of the area to locate potential sources of an observed and detected petroleum product occurrence in nearby Cerrito Creek. Because of this investigation, two unused 550 gallon USTs were discovered beneath approximately four feet of fill in the sidewalk fronting the building at 500 San Pablo Avenue. The current property owner had not been aware of the existence of the USTs. ATT was retained by the property owner to conduct a field investigation and determine the contents of the USTs (ATT, 1989). The investigation indicated that the tanks had not been in active service, or in use, for at least ten years and perhaps as long as 20 years; they were believed to have been installed approximately 40 years ago.

Sample analyses of the tank contents indicated that, at one time during the tank's history, one tank was used to store waste oil (Tank 1) and the other tank (Tank 2) was used to store leaded gasoline. However, the liquid in the tanks was identified as water containing very dilute amounts of petroleum based substances. Apparently the tanks had been closed in place by a previous owner by completely filling them with water.

The liquid contents were compared with water samples collected from Cerrito Creek; this comparison showed that each of the three samples (Tank 1, Tank 2, and Cerrito Creek) were representative of distinctly different materials and that a correlation could not be made between the tank contents and the sample material from Cerrito Creek (ATT, 1989). The ACHCSA concurred with this evaluation (ACHCSA, 1989 - see Attachment B). ATT recommended temporary in-place closure measures for the tanks until site redevelopment could be implemented. The ACHCSA concurred but set a requirement that the two USTs be removed no later than August 22, 1991.

A Phase I environmental site assessment of the subject property was conducted on June 20, 1990 by ECOS, Inc. The Phase I assessment indicated that gasoline contamination to Cerrito Creek had allegedly originated from two potential sources: 1) the Mobil Station at 6700 Fairmont Street, and 2) the Plaza Car Wash, which is located at 400 San Pablo Avenue, immediately adjacent and downgradient from the subject property (ECOS, 1990).

Site Geology and Hydrogeology

The subject property is within the Oakland Upland Alluvial Plain Groundwater subarea of the East Bay Plain (ACFCWCD, 1988). Regional native soils generally consist of Older Pleistocene (at least 1.5 million years old) alluvium composed of interbedded, poorly consolidated clay, silt, sand, and gravel.

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Soil boring logs from the monitoring well installations (Attachment C) indicate that the soils at the subject properties (below 12- to 18-inches of asphalt paving and gravel fill) consist of silty to sandy plastic clay, ranging to approximately 10.0 to 11.0-feet below the ground surface (BGS). Underlying the upper clay-rich soils (from 11.0- to 19.0-feet BGS) are clayey gravel and sand to sandy and gravelly clay. Clean sand occurs below the 19.0-foot depth interval (the depths at which the borings were terminated).

Shallow, unconfined groundwater in the area ranges from approximately eight to ten feet BGS, with groundwater flow toward San Francisco Bay which is west of the subject properties (ACFCWCD, 1988). However, natural and man-made conditions may alter or affect the local groundwater flow direction and gradient in the subject property area.

The subject property is located just to the east and near the base of Albany Hill, which may act as a groundwater barrier and/or recharge area. Therefore, local groundwater flow directions are generally directed northwest toward Cerrito Creek. During periods of little to no precipitation, the storm drain (which is situated approximately two feet below the shallow groundwater table) may also act as a subsurface drain [International Technology Corporation (ITC), 1990 and ECOS, 1990].

Depth to groundwater, in the subject property area, is reported to be approximately 8.0 feet BGS. Groundwater flow direction, on the adjacent property (at 400 San Pablo Avenue) was calculated to be fairly consistent, flowing primarily west-northwest (ITC, 1990). Groundwater flow direction was reported to reverse after significant rainfall events (ECOS, 1990). Such an event occurred in February, 1990 (ITC, 1990); groundwater table measurements indicated that groundwater flow, after the rainfall, had reversed and was temporarily directed to the south-southeast. This groundwater flow direction reversal probably reflects recharge to the local, shallow alluvial aquifer from Cerrito Creek (and perhaps also from the damaged storm drain until its repair) during periods of high surface water runoff.

For this report, static groundwater levels were taken from groundwater monitoring wells on the subject properties and the adjacent downgradient property (with the property owners permission) by ATT personnel on September 6, 1990 (Table 1, Attachment D). Groundwater gradient and flow direction calculations indicate that the shallow groundwater flow is toward the west-northwest at 0.004 feet per foot in the area of the Plaza Car Wash property (Plate 3, Attachment A). In the vicinity of the Dry Cleaners, the groundwater gradient steepens slightly to 0.008 feet per foot. This confirms the earlier groundwater flow direction studies which also indicated west-northwest directed groundwater flow.

SITE INVESTIGATION

Based on ATT's initial closure activity summary study, the ACHCSA required no further action for final tank closure until the August 22, 1991 tank removal date (ATT, 1989 and ACHCSA, 1990 - Attachment B). However, the subject property owner decided to remove the USTs prior to the ACHCSA deadline; therefore, tank closure and removal was initiated in August, 1990. After tank removal, and as part of final tank closure requirements, ATT implemented a scope

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of work for the installation of one groundwater monitoring well to be located immediately downgradient from the removed tank excavation; soil and groundwater sampling and analysis would occur subsequent to monitoring well installation. This scope of work was outlined by ATT in an August 27, 1990 workplan which was submitted to the ACHCSA (Attachment E). Monitoring well permits were obtained from the Alameda County Flood Control and Water Conservation District (ACFCWCD) Zone 7 (Attachment E).

Placement of monitoring well MW-1 in a downgradient direction and within ten feet of the tank excavation was not possible because of numerous underground utilities (storm sewer, gas, electric, and public water) in the immediate vicinity of the USTs; the utilities occurred below the sidewalk between the tank excavation and the existing building, and in the adjacent street. Therefore, ATT personnel and Mr. Lawrence Seto of the ACHCSA, conducted a site meeting and walk-through, in which the groundwater monitoring well location was placed in a mutually agreed upon, downgradient position (Plate 2, Attachment A).

Although not required by the ACHCSA, two additional groundwater monitoring wells (MW-2 and MW-3) were installed near and along the property line with the Plaza Car Wash property. These monitoring wells were requested by the property owner to conform with the due diligence recommendations made in the ECOS (1989) Phase I investigation for the subject property.

Tank Closure and Removal

Initial tank closure activities began on July 12, 1989 when the material (largely water) filling the USTs was removed by pumping it into twenty-one, 55-gallon drums. The drums were removed under manifest by a licensed hazardous waste hauler (Attachment F). The empty USTs were cleaned of residual material and the fill pipe to each tanks was fitted with a tight fitting, expandable plug, and capped with cement. The tanks remained empty of liquid until their final removal.

On August 14, 1990, tank removal on the subject property was supervised by ACHCSA personnel. Other personnel who witnessed the UST removal were, Mr. Bruce Berman (ATT), Mr. Ken Friedman (Albany Bowl Properties), Mr. Frank Westphal (City of Albany Fire Marshall), Lt. Rivers (City of Albany Fire Department), and Mr. Chuck Kiper (tank removal contractor and Vice President of SEMCO Inc.). Vent pipes and most of the tank feeder pipes were completely removed and capped.

After excavation, the tanks were loaded on a flatbed truck, and removed from the subject properties by a California licensed hazardous waste hauler (Attachment F). No holes were noted in the removed tanks and no water recharge via infiltration was noted; therefore, the tanks were considered to be intact. Attempts to excavate soils further than the immediate excavation was impeded by the buried utilities on both sides of the tank excavation. Three soil samples and one groundwater sample were collected from the excavation sidewalls and the bottom of the tank excavation by SEMCO personnel, at the direction of the ACHCSA, from the sidewalls and bottom of the tank excavation, respectively.

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Excavated soil was temporarily stored behind the 500 San Pablo Avenue building; the soils were placed on, and covered with, visqueen plastic. The soils will be removed from the subject property and transported to an appropriate landfill. One composite soil sample (from four discrete samples) was collected, by SEMCO personnel from the soil stockpile. SEMCO personnel submitted the samples to a California Department of Health Services (DHS) certified laboratory for chemical analysis.

Soil Boring and Sampling

For the three monitoring well installations, three soil borings were drilled with 8.0-inch hollow stem auger to approximately 20 feet below grade. The soil borings were logged using the Unified Soil Classification System (USCS); soil boring logs and the USCS code are in Attachment C. Soil samples were retrieved from a California modified split-spoon sampler advanced through the auger. Soil sample collection and handling protocol are provided in Attachment G.

Monitoring Well Construction/Location and Groundwater Sampling

Three groundwater monitoring wells were installed in the soil borings on August 30, 1990. The groundwater monitoring wells were designated as MW-1 (located near and immediately downgradient from the tank excavation), MW-2 and MW-3 (located along the adjacent Plaza Car Wash property line). Monitoring wells belonging to and on the Plaza Car Wash property are identified (in this report) as numbers 1, 2, 3, and 4. Groundwater monitoring well locations, for the subject property and the adjacent Plaza Car Wash property, are shown on Plate 2 (Attachment A). Drilling procedures and groundwater monitoring well construction/design, well development details and groundwater collection procedures (for monitoring wells installed by ATT) are in Attachment G.

CHEMICAL ANALYSIS

Samples from the tank excavation and stockpiled soil were collected by SEMCO personnel under the direction of the ACHCSA. Tank excavation soil samples were submitted, by SEMCO, to Superior Analytical Laboratories, Incorporated, a California Department of Health Services (DHS) certified laboratory. Soil and groundwater samples, collected by ATT personnel, from the soil borings and monitoring wells were submitted, under the proper chain of custody, to Anametrix, Incorporated, a DHS certified laboratory. Soil and groundwater sample collection records, completed chain of custody forms, and the signed laboratory analytical reports are in Attachment H.

Samples collected from tank excavation activities, soil borings, and monitoring wells were analyzed for total oil and grease (TOG) using Environmental Protection Agency (EPA) analytical method number 503E, total petroleum hydrocarbons as gasoline (TPH-G) by EPA Method 5030, benzene, toluene, ethylbenzene, total xylenes (BTEX) by EPA Method 8020, and tetraethyl (organic) lead (Pb) by the California Leaking Underground Fuel Tank (LUFT) Task Force LUFT Manual (1989) method.

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Tank Excavation Analytical Results

The laboratory analytical results, for all samples collected, by SEMCO, during tank excavation activities, are summarized on Table 2 (Attachment D). Soil samples 1, 2, and 3, and groundwater sample 4 were collected from the tank excavation; sampling locations are shown on Plate 4 (Attachment A). Sample CS is a composite sample, derived by combining four discrete samples, collected from the stockpiled soil removed from the tank excavation.

Petroleum hydrocarbons, in the soil samples collected from the tank excavation, ranged from below method detection limits to 660 mg/Kg TOG (for the sample collected from the mid-tank area at 6.5 feet BGS), to 560 mg/Kg TPH-G, 0.590 mg/Kg ethylbenzene, and 3.60 mg/Kg for total xylenes (for the sample collected near Tank 1). Benzene and toluene were not detected in the tank excavation soil samples. Organic Pb was detected in only one soil sample (Tank 2) at 0.41 mg/Kg.

Soil Boring Analytical Results

Soil sample analytical results, from samples collected during monitoring well installation drilling on the 450 San Pablo Avenue property, are summarized on Table 3 (Attachment D). None of the soil samples from the borings for monitoring wells MW-1, MW-2, and MW-3 contained detectable hydrocarbons or organic lead.

Monitoring Well Analytical Results

Chemical data for groundwater samples collected by ATT, from the three groundwater monitoring wells installed on the 450 San Pablo Avenue property, are summarized on Table 4 (Attachment D). Water samples collected from monitoring wells MW-1 (next to and downgradient from the tank excavation) and MW-2 (in the northwest corner of the subject property) contained no detectable hydrocarbons or organic Pb. The water sample collected from monitoring well MW-3 (adjacent to the Plaza Car Wash property boundary and closest to the Plaza Car Wash Service Station pump islands and USTs) contained 0.140 mg/L TPH-G, 0.026 mg/L benzene, 0.015 mg/L toluene, 0.002 mg/L ethylbenzene, and 0.014 mg/L total xylenes. TOG and organic Pb were not detected in this sample.

DISCUSSION

Impact to Soil/Groundwater from Former USTs

Although hydrocarbons from leaded gasoline were detected in the soil samples from the tank excavation on the 500 San Pablo Avenue property, no residual hydrocarbons were detected in soil or groundwater samples collected from monitoring well MW-1 which is located immediately downgradient and in close proximity to the excavation.

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Other Probable TPH Sources

Significant hydrocarbon contamination of soils and groundwater has been reported from the downgradient Plaza Car Wash property (ITC, 1990). The gasoline spill on this property resulted from a leak of unleaded gasoline from a product line connecting the underground fuel tanks and above ground tanks. Concentrations of 27,000 mg/Kg TPH-G and 380 mg/Kg, 1,400 mg/Kg, 280 mg/Kg, and 1,500 mg/Kg BTEX, respectively were reported in soil samples collected at 2.5 feet BGS; these concentrations decreased to 2,500 mg/Kg TPH-G, 23 mg/Kg, 110 mg/Kg, 28 mg/Kg, and 150 mg/Kg BTEX, respectively, in the 8.0 foot BGS soil sample [Subsurface Consultants, Inc. (SCI) 1989]. Dissolved concentrations of TPH-G, BTEX, and free product have been reported in water samples collected from the Plaza Car Wash property groundwater monitoring wells (SCI, 1989; ITC, 1990; see Table 4, Attachment D).

Because excavation of the contaminated soils has not occurred on the Plaza Car Wash property, residual hydrocarbons probably are present in soils as light nonaqueous phase liquids (LNAPLs). Until the soil hydrocarbon source is removed, the LNAPLs would continue to occupy soil void spaces in the capillary fringe zone. The groundwater gradient is sufficiently shallow enough (0.004 feet per foot to 0.008 feet per foot) to allow for "pancaking" of the hydrocarbon plume emanating from the Plaza Car Wash property (e.g. Dragun, 1988; U.S. EPA, 1989). There is also sufficient evidence to indicate that groundwater flow direction reversal occurs during periods of increased rainfall (ITC, 1990), resulting in contaminated groundwater from the Plaza Car Wash property impacting the 450 San Pablo Avenue property.

A comparison of the analytical data for BTEX concentrations from the groundwater collected from the tank excavation on the subject property (Table 3, Attachment D), with BTEX concentrations from the groundwater sample collected from monitoring well MW-3 (adjacent to and on the property line with the Plaza Car Wash property) (Table 4), and BTEX concentrations from groundwater samples collected from the Plaza Car Wash monitoring wells (Nos. 1, 2, 3, and 4 on Table 5) suggest that the tank excavation water sample contains aged leaded gasoline and the MW-3 and Plaza Car Wash groundwater samples contain relatively fresh unleaded gasoline.

Generally, by observation, the soluble constituents in aged gasoline (i.e. BTEX) in groundwater will have much lower benzene (B) concentrations as compared to those in fresh gasoline. TEX concentrations will also appear to become slightly decreased in aged versus fresh gasoline, but in much smaller quantities. Therefore, benzene should be transported more readily by groundwater than TEX; this is supported, in part, by the literature (Tabak, et al., 1981; DeAngelis, 1984; Barker, et al., 1981) and probably occurs because of the higher solubility of benzene (1,791 mg/L), in water, versus the lower solubility range for TEX (146 to 534.8 mg/L). Other physical/chemical characteristics for the monocyclic aromatic hydrocarbons (Table 6, Attachment D) show that volatilization, ionization, hydrolysis, and biodegradation rates are quite similar for BTEX. Soil sorption coefficients (Kds) calculated for these chemicals (assuming a constant soil organic fraction) indicates very similar sorption and

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desorption characteristics. Therefore, solubility in groundwater for these compounds becomes an important parameter for BTEX transport, particularly if groundwater transport is largely by advection.

To determine if this may actually occur, B/TEX ratios from the groundwater analytical data (from Tables 3 and 4) were derived and compared. The analytical concentrations were used in a numerical comparison by first correcting the benzene (B) and TEX concentrations by their relative average weight percent concentrations found in gasoline [using ranges of BTEX present in gasoline as defined by the LUFT (1989) manual]. The value for benzene (B) was then divided by the average of the summed TEX concentrations. The numerical comparison shows that the B/TEX ratios are numerically higher for aged gasoline (B/TEX ratio values of approximately 1.0 or greater) and much lower for fresh gasoline (B/TEX ratio values of approximately 1.0 or smaller). B/TEX ratios for the Plaza Car Wash groundwater samples are quite similar and range from 0.180 to 0.397. The groundwater sample from MW-3 (on the 450 San Pablo Avenue property) has a B/TEX ratio of 0.644 and the groundwater sample from the tank excavation has a ratio of 4.27.

Therefore, B/TEX ratios for the hydrocarbons detected in the groundwater sample collected from monitoring well MW-3 suggest that this probably is a result of the contamination by fresh unleaded gasoline spill from the adjacent (downgradient) property at 400 San Pablo Avenue. Residual hydrocarbons remaining in the Plaza Car Wash soils are probably continuing to migrate to groundwater and are impacting the upgradient 450 San Pablo Avenue property by pancaking, groundwater reversal which is moving the hydrocarbon plume against the "normal" upgradient direction, or a combination of both processes.

CONCLUSIONS AND RECOMMENDATIONS

Tank Closure/Removal - 500 San Pablo Avenue Property

The two tanks removed from the 500 San Pablo Avenue property contained water with residual hydrocarbons; residual concentrations of hydrocarbons from leaded gasoline were also detected in soil in the tank excavation. However, the source for these hydrocarbons has been removed with the excavated tanks and most of the accompanying soil. However, because of the position of underground utilities in the immediate vicinity of the tank excavation, excavation of additional soil is not feasible or warranted.

The downgradient groundwater monitoring well (MW-1) should detect possible migrating hydrocarbons. Therefore, groundwater monitoring, for MW-1, should be on a quarterly basis for three more quarters with a review of the analytical data after the first year to determine if further steps are required (such as continued groundwater monitoring on a semiannual basis) or abandonment of the monitoring well. A proposed groundwater monitoring and analytical reporting schedule is included in Table 7 (Attachment D). The quarterly groundwater monitoring reports should be submitted to the ACHCSA and RWQCB.

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Groundwater Monitoring Wells MW-2 and MW-3 - 450 San Pablo Avenue Property

Monitoring wells MW-2 and MW-3 should be left in place to monitor possible groundwater contamination migration from the Plaza Car Wash property. However, because the groundwater contamination in the sample from MW-3 is most likely a result of the Plaza Car Wash gasoline spill, groundwater monitoring and/or remediation should not be the responsibility of the owners of the subject property.

According to the ACHCSA, the Plaza Car Wash owner is taking the appropriate steps to remediate gasoline contamination of the soils and groundwater on the Plaza Car Wash property. These steps include possible excavation of gasoline contaminated soil, possible tank removal, and possible installation of a pump and treat-type system in a downgradient direction from the gasoline spill. Such steps should adequately relieve the groundwater contamination detected in monitoring well MW-3 on the Albany Bowl Property and therefore lower the impact of such groundwater contamination to the subject property.

References cited in this report are listed in Attachment I.

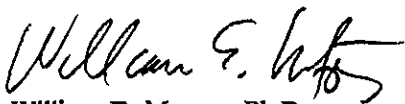
If you have any questions regarding this report, please contact us.

Sincerely,

AQUA TERRA TECHNOLOGIES, INC.



Bruce Berman
Project Scientist



William E. Motzer, Ph.D.
Senior Hydrogeologist/Project Manager
California Registered Geologist #4202
(Expires 6/30/92)

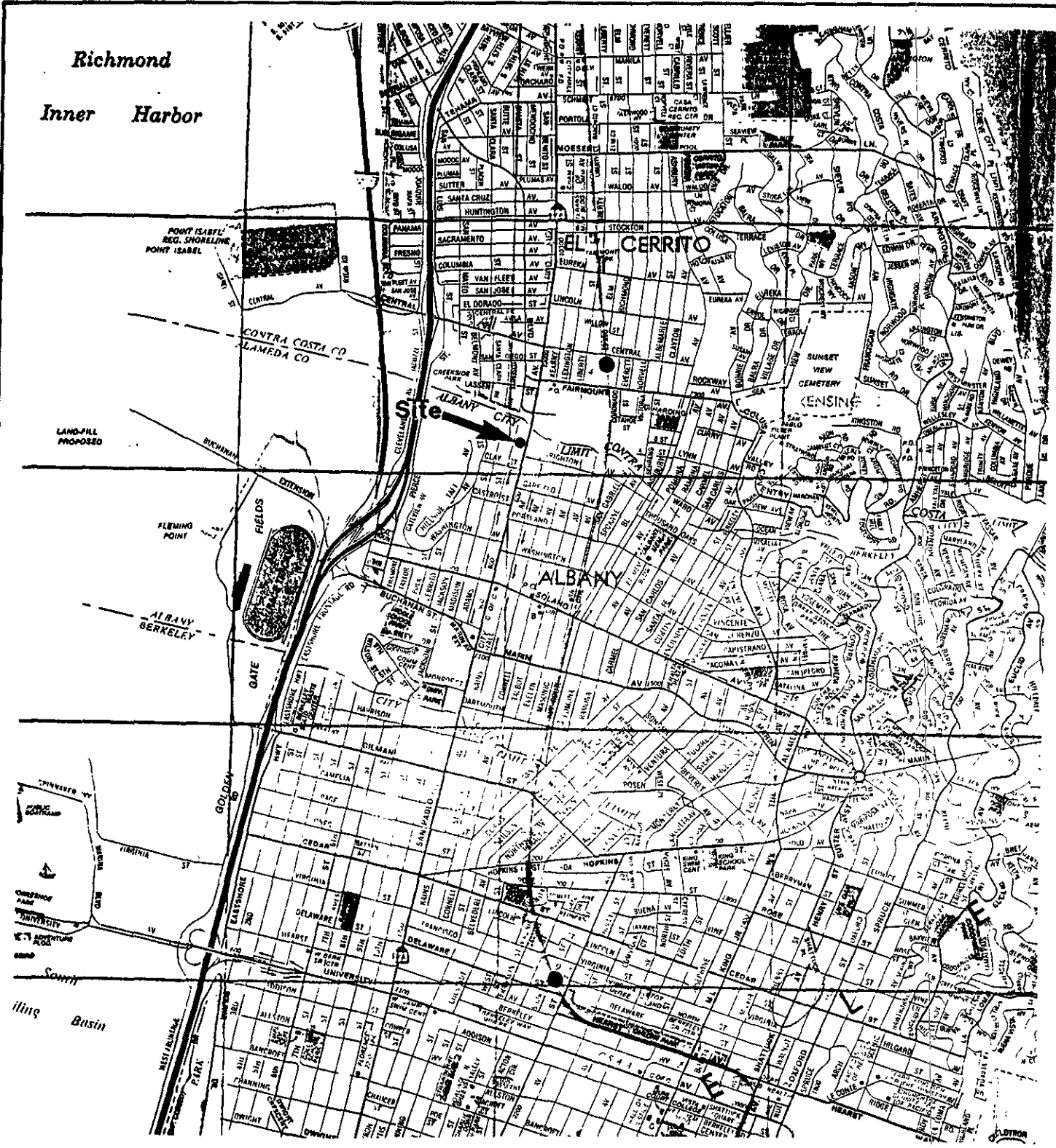
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Attachments

ATTACHMENT A

Plates

Richmond
Inner Harbor



0 1/2 1 mile
SCALE



Property Location Map

ATT Aqua Terra Technologies
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Albany Bowl Properties

JOB NUMBER

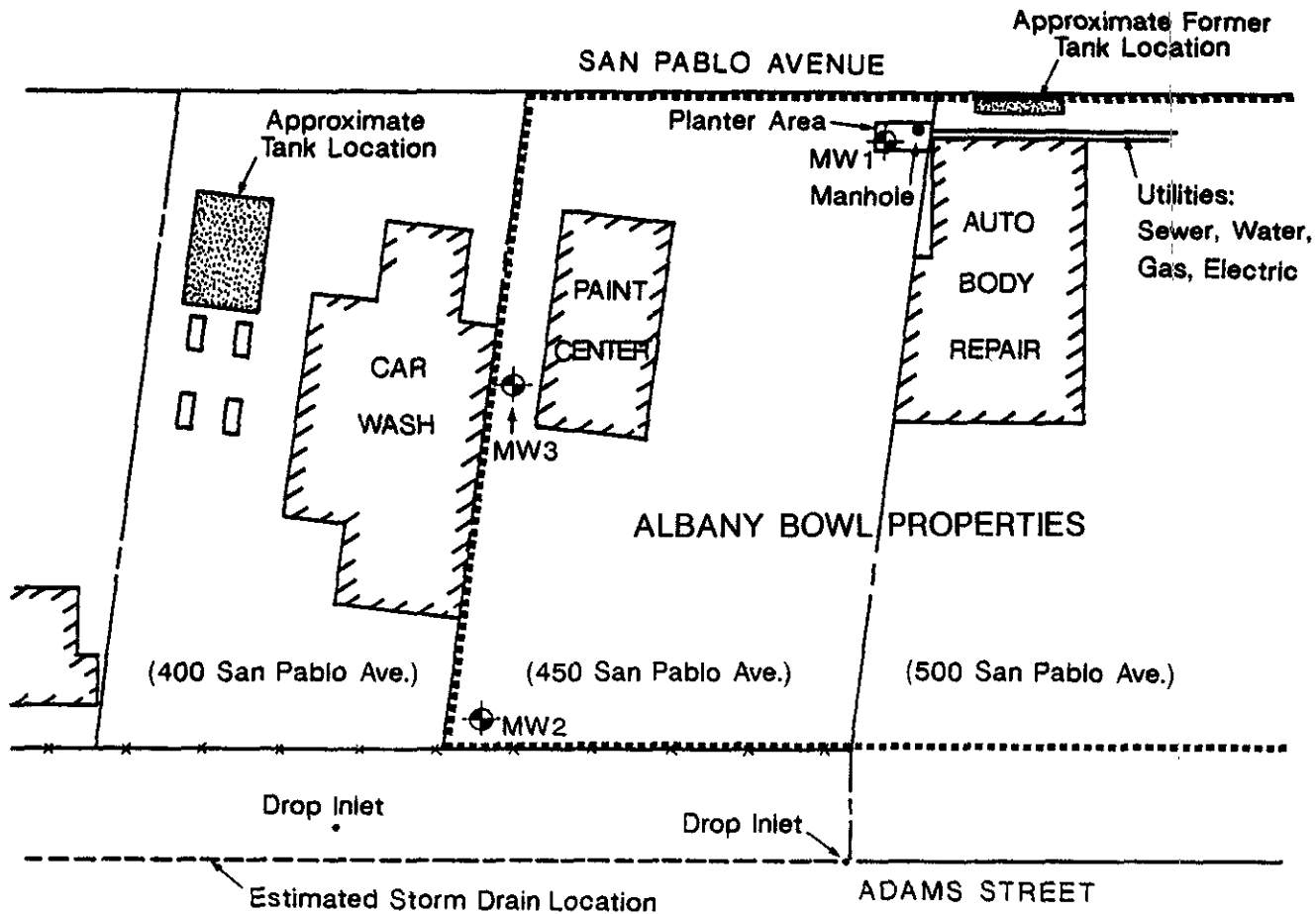
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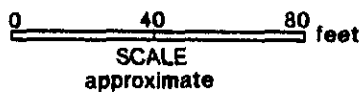
PLATE

1



LEGEND

- ⊕ Monitoring Well Location (approximate)
- - - Property Line
- *-* Fence
- ▨ Existing Structure



Site Plan

Albany Bowl Properties

PLATE

JOB NUMBER

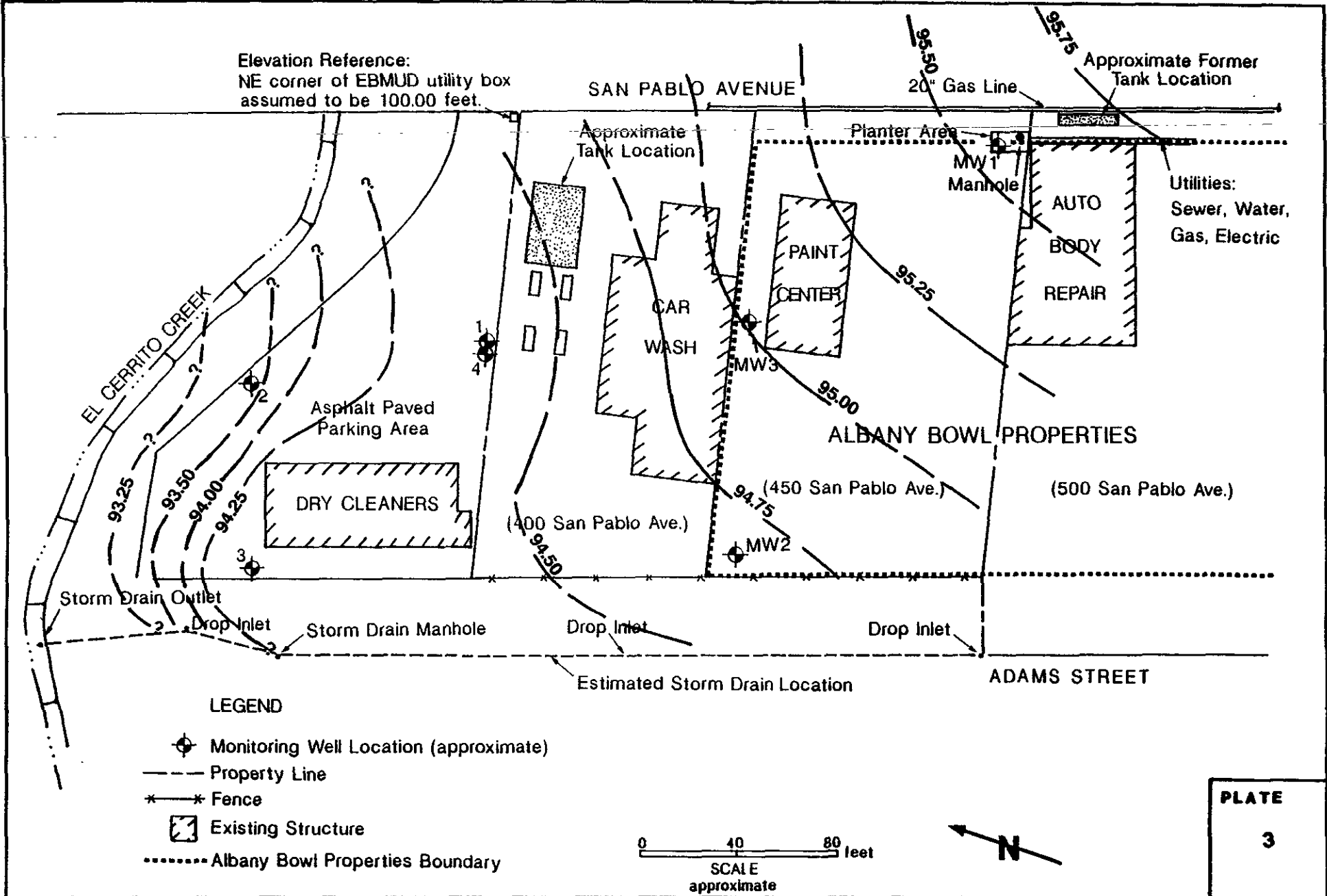
DATE

2

9064

10/90

ATT Aqua Terra Technologies
Consulting Engineers
& Scientists



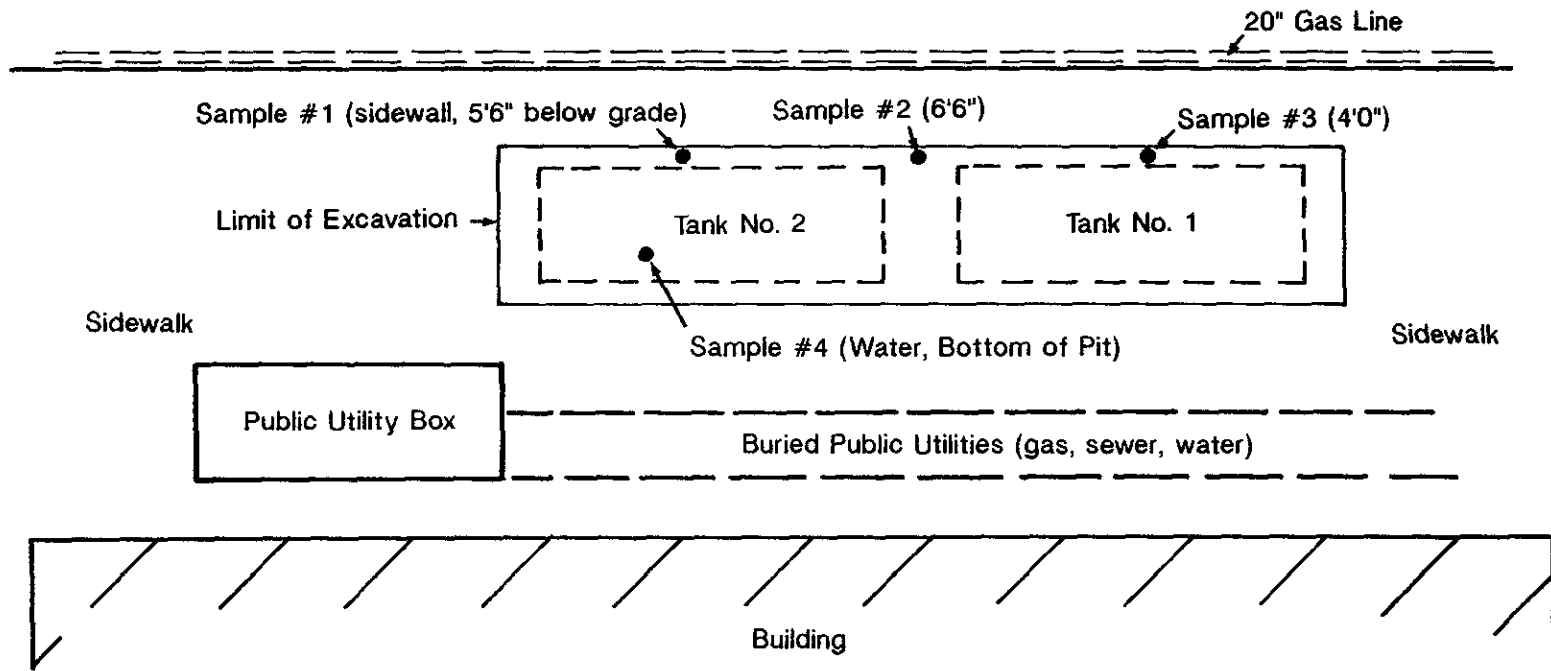
ATT Aqua Terra Technologies
Consulting Engineers
& Scientists

Shallow Groundwater Contour Map
9/6/90

Albany Bowl Properties

JOB NUMBER 9064	DATE 10/90
---------------------------	----------------------

San Pablo Avenue



0 1 2 3 4 5 feet
SCALE
(approximate)



PLATE

4

ATT

Aqua Terra Technologies
Consulting Engineers
& Scientists

Tank Excavation Sample Location Map

Albany Bowl Properties

JOB NUMBER
9064

DATE
10/90

ATTACHMENT B

ACHCSA Letter

#9064

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director



DEPARTMENT OF ENVIRONMENTAL HEALTH
Hazardous Materials Division
575 Broadway, Room 100
Oakland, California
94612

August 22, 1989

Mr. Jon L. Benjamin
Heller, Ehrman, White & McAuliffe
333 Bush St.
San Francisco, CA 94104-2878

Re: Underground tanks on Albany Bowl Properties, 500 San Pablo Ave., Albany

Dear Mr. Benjamin:

The Alameda County Department of Environmental Health, Hazardous Materials Division, has reviewed the report prepared by Aqua Terra Technologies regarding the underground tanks at 500 San Pablo Ave. in Albany. Based on the information presented, we concur that the two tanks do not appear to present an undue environmental risk, and that temporary measures to "close" the tanks in place until site redevelopment are satisfactory. Although temporary closure (as specified in Title 23, Chapter 3, Subchapter 16) applies to tanks anticipated to be placed back into operation, the intent of this section of code is to ensure that no degradation of the subsurface environment occurs while unused tanks remain in the ground. The steps outlined in the ATT letter of August 14 should accomplish this, and should therefore be implemented as soon as possible.

As you know, the investigation into the unleaded gasoline release at 400 San Pablo (Plaza Car Wash) is continuing. At this point, there appears to be no correlation between product sampled from El Cerrito Creek and from the two tanks on 500 San Pablo. However, should new information turn up that calls this dissimilarity into question, Albany Bowl Properties may be required to conduct further environmental investigations. Otherwise, the Division of Hazardous Materials is requiring that the two underground tanks be removed no later than August 22, 1991, exactly two years from now. The removal of the tanks and associated soil/groundwater remediation, if necessary, must be coordinated with this office; you should not expect any request for this deadline's extension to be granted, because the time limit for temporary closure in Title 23 is two years.

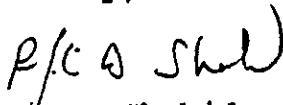
With regards to the 21 drums of liquid pumped from the tanks, the ATT letter indicated that the "most expeditious" disposal option consists of their removal to a hazardous waste treatment/disposal facility. Should Albany Bowl Properties select this disposal option, copies of manifests signed by the receiving facility will

Mr. Jon Benjamin
August 22, 1989
Page 2 of 2

need to be filed with this office. Please let us know if another disposal method is used.

If you have any questions concerning this matter, please contact Gil Wistar, Hazardous Materials Specialist, at 271-4320.

Sincerely,



Rafat A. Shahid, Chief
Hazardous Materials Division

RAS:GW:gw

cc: Mike Koepke, Albany FD
Howard Hatayama, DOHS
Lester Feldman, RWQCB

ATTACHMENT C

**Soil Boring Logs
Unified Soil Classification System**

AQUA TERRA TECHNOLOGIES INC.

Log of Exploratory Boring

Project: Albany Bowl Properties - Tank Closure Job No.: 9064

Location: 450 San Pablo Avenue, Albany, CA Date: 8-30-90

Boring No.: MW1 Driller: Exceltech Page 1 of 2

Geologist: Bruce Berman Proj. Mgr. Wm. E. Motzer Surface Elev. : _____

Penetration (Blows/ 6")	Depth	U.S.C.S. Soil Class.	Field Description	Remarks
	0	Fill	0'-1' Silty soil, dark brown, fill material	
	1	CL/ML	1'-6' Silty clay to clayey silt; black (5Y 2.5/1); slightly damp to dry.	
	2			
	3			
	4			
	5			
	6	CL/SC	6'-14' Sandy clay to clayey sand; olive (5Y 5/4); 20% to 70% fine sand; minor iron staining; moist to wet.	7.5' Sample 8' First Water
6,8,10	7			
	8			
	9			
	10			
	11	SC	14'-19' Sand, clayey; olive (5Y 5/4); 60% to 90% fine sand; wet to saturated.	
	12			
	13			
	14			
	15			
	16			
	17			

Penetration (Blows/ 6")	Depth	U.S.C.S. Soil Class.	MW1 Field Description	Remarks
	17			
	18	SC	18' Color variations; olive gray (5Y 5/2)	
	19		18.5' lithified sand (clayey)	
	20	SW	19'-20' Sand; light olive brown (2.5Y 5/6); very dense; clean; iron staining; calciferous deposits (bands of white); moist to saturated	
	21		E.O.H. @ 20'	
	22			
	23			
	24			
	25			
	26			
	27			
	28			
	29			
	30			
	31			
	32			
	33			
	34			
	35			
	36			
	37			
	38			
	39			

AQUA TERRA TECHNOLOGIES INC.

Log of Exploratory Boring

Project: Albany Bowl Props.-Limited Phase II Site Assess. Job No.: 9203

Location: 450 San Pablo Avenue, Albany, CA Date: 8-30-90

Boring No.: MW2 Driller: Exceltech Page 1 of 2

Geologist: Bruce Berman Proj. Mgr. Wm. E. Motzer Surface Elev. :

Penetration (Blows/ 6")	Depth	U.S.C.S. Soil Class.	Field Description	Remarks
	0	<u>Asphalt</u>	0'-0.5' Asphalt	
	1	<u>Fill</u>	0.5'-3' Gravel base/fill material boulders/broken concrete @ 1.5'.	
	2			
	3	<u>CL</u>	3'-7.5' Silty clay; black (5Y 2.5/1); high plasticity; slightly damp.	
	4			
	5			
	6			
9, 12, 16	7	<u>CL</u>	7.5'-10' Sandy clay; olive (5Y 4/4); mottled with gray; 10% to 30% fine sand; minor component of fine to medium gravel; iron staining; slightly damp.	
9, 14, 20	8			
	9			
	10	<u>GC/SC-CL</u>	10'-17.5' Clayey gravel/sand to sandy/gravelly clay; dark yellowish brown (10YR 3/4); fine sand to medium gravel (up to 1/2 inch, vary- ing composition, mostly semi-round to well rounded); minor iron stain- ing, decreases with depth; sandy/ gravelly areas saturated below 10'.	9.5' Sample 10' First water
	11			
	12			
	13			
	14			
	15			
	16			
	17			

Field Drilling and Sampling Log

Job No: 9203

Page 2 of 2

Penetration (Blows/ 6")	Depth	U.S.C.S. Soil Class.	MW2 Field Description	Remarks
	17			
31,50 in	—		17.5'-20' Sand; light olive brown (2.5Y 5/4); fine to very fine sand; minor iron staining; very dense to lithified; moist.	20' Sample
—2"	18			
	—	SW		
	19			
	—			
	20		E.O.H. @ 20'	
150,0,0	—			
	21			
	—			
	22			
	—			
	23			
	—			
	24			
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	39			

AQUA TERRA TECHNOLOGIES INC.

Log of Exploratory Boring

Project: Albany Bowl Props-Limited Phase II Site Assess. Job No.: 9203

Location: 450 San Pablo Avenue, Albany, CA Date: 8-30-90

Boring No.: MW3 Driller: Exceltech Page 1 of 2

Geologist: Bruce Berman Proj. Mgr. Wm. E. Motzer Surface Elev. : _____

Penetration (Blows/ 6")	Depth	U.S.C.S. Soil Class.	Field Description	Remarks
	0	<u>Asphalt</u>	0'-0.3' Asphalt	
	1	<u>Fill</u>	0.3'-1' Gravel base/fill	
	2	CL	1'-7.5' Silty clay; black (5Y 2.5/1); high plasticity; slightly damp.	
	3			
	4			
	5			
	6			
7,10,14	7	CL	7.5'-11.5' Sandy clay; olive (5Y 4/4) mottled with gray; 10% to 30% fine sand; minor component of fine to medium gravel; iron staining; slightly damp.	
9,12,19	8			
	9			
9,14,18	10	GC/SC-CL	11.5'-19' Clayey gravel/sand to sandy/gravelly clay; dark yellowish brown (10YR 3/4); fine sand to medium gravel in clay matrix; minor iron staining decreasing with depth; moist to saturated.	10' odor
	11			11' Sample
	12			11.5' First
	13			water
	14			
	15			
	16			
	17			

Penetration (Blows/ 6")	Depth	U.S.C.S. Soil Class.	Field Description	Remarks
	17			
	18	GC/SC-CL	19'-20' Sand; light olive brown (2.5Y 5/4) fine to very fine sand; clean; minor iron staining; very dense to lithified; moist. E.O.H @ 19.5'.	19' very difficult drilling 19.5' sample
250,0,0	19	SW		
	20	SW		
	21			
	22			
	23			
	24			
	25			
	26			
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	35			
	36			
	37			
	38			
	39			

UNIFIED SOIL CLASSIFICATION SYSTEM (USCS)

ATT

Field/Laboratory Identification Divisions		Criteria For Visual Identification			Group Symbol	Typical Names
COARSE-GRAINED SOILS	GRAVELS > 50% of coarse fraction is larger than No. 4 sieve size (about 1/4 inch)	Clean Gravels (<5% of material smaller than No. 200 sieve size)	Wide range in grain size and substantial amounts of all intermediate particle sizes		GW	Well graded gravels, gravel-sand mixtures, little or no fines.
		Gravels with Fines (>12% of material smaller than No. 200 sieve size*)	Predominantly one size (uniformly graded) or a range of sizes with some intermediate sizes missing (gap graded)		GP	Poorly graded gravels, gravel-sand mixtures, little or no fines.
			Non-plastic fines or fines of low plasticity (see ML below for identification procedures)	GM	Silty gravels, poorly graded gravel-sand-silt mixtures.*	
	SANDS > 50% of coarse fraction is smaller than No. 4 sieve size (about 1/4 inch)	Clean Sands (<5% of material smaller than No. 200 sieve size)	Wide range in grain sizes and substantial amounts of all intermediate particle sizes		SW	Well graded sands, gravelly sands, little or no fines.*
			Predominantly one size (uniformly graded) or a range of sizes with some intermediate sizes missing (gap graded)		SP	Poorly graded sands and gravelly sands, little or no fines.*
		Sands with Fines (>12% of material, smaller than No. 200 sieve size)*	Non-plastic fines or fines of low plasticity (see ML below for identification procedures)	SM	Silty sands, poorly graded sand-silt mixtures.	
Plastic fines (see CL below for identification procedures)	SC		Clayey sands, poorly graded sand-clay mixtures.			
Field/ Lab Divisions	Dry Strength	Dilatancy	Toughness	Group Symbol	Typical Names (Fraction < No. 40 Sieve)	
FINE-GRAINED SOILS	SILTS AND CLAYS (Liquid Limit <50%)	None to slight	Quick to slow	None to slight	ML	Inorganic silts, very fine sands, silty or clayey fine sands with slight plasticity, and rock flour.
		Medium to high	None to very slow	Medium	CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.
			Slow	Slight	OL	Organic silts and organic silt-clays of low plasticity.
	SILTS AND CLAYS (Liquid Limit >50%)	Slight to medium	Slow to none	Slight to medium	MH	Inorganic silts, micaceous or diatomaceous fine sands or silts, elastic silts.
		High to very high	None	High	CH	Inorganic clays of high plasticity, fat clays.
			None to very slow	Slight to medium	OH	Organic clays of medium to high plasticity.
HIGHLY ORGANIC SOILS	Identified by color, odor, spongy feel, and frequently by fibrous texture			Pt	Peat, muck, and other highly organic soils.	

* Materials with 5 to 12 percent smaller than No. 200 sieve are borderline cases, designated: GW-GM, SW-SC, etc.

ATTACHMENT D

Tables

**Table 1. Summary of Groundwater Elevation Data
Albany Bowl Properties
450 and 500 San Pablo Avenue
Albany, CA**

Monitoring Well No.	TOC Elevation^a (feet)	Date	Groundwater Depth (feet)	Groundwater Elevation (feet)
MW-1 ^b	100.87	9/6/90	5.32	95.55
MW-2 ^b	99.25	9/6/90	4.54	94.71
MW-3 ^b	100.2	9/6/90	5.20	95.00
1 ^c	100.12	9/6/90	5.76	94.36
2 ^c	98.37	9/6/90	4.91	93.46
3 ^c	98.76	9/6/90	5.18	93.58
4 ^c	99.97	9/6/90	5.64	94.33

- a. Elevation from the top of the monitoring well casing (TOC) is relative to an assumed elevation datum of 100 feet for the northeast corner of East Bay Municipal District (EBMUD) utility box.
- b. Monitoring wells with MW designation are located on Albany Bowl Properties, 450 San Pablo Avenue.
- c. Monitoring wells with numerical designation are located on "Dry Cleaners" (Plaza Car Wash) property.

Table 2. Summary of Analytical Results
 Tank Excavation Soils and Groundwater
 Albany Bowl Properties
 500 San Pablo Avenue
 Albany, CA

Sample Identification	TOG	TPH-G	B	T	E	X	B/TEX	Pb
Soil Samples:								
#1-550-GE 5'6"	<20	560	<0.150	<0.150	0.590	3.600	---	<0.05
#2-Midtanks 6'6"	660	490	<0.150	<0.150	0.580	3.000	---	0.41
#3-550 Waste Oil 4'	150	21	<0.003	<0.003	0.022	0.140	---	<0.05
CS	---	3.0	<0.003	24	0.014	0.099	---	---
Water Sample:								
#4-Pit H ₂ O	---	2.2	0.026	<0.003	0.100	0.260	4.27	---

Soil samples analysis reported in mg/Kg; water sample analysis reported as mg/L.
 TOG = total oil and grease concentrations in mg/Kg; method detection limit = 20 mg/Kg in soils.
 TPH-G = total petroleum hydrocarbons as gasoline in mg/Kg for soils and in mg/L for water; method detection limit = 1 mg/Kg for soils and 0.05 mg/L for water.
 B = benzene, T = toluene, E = ethylbenzene and X = total xylenes. BTEX method detection limit = 0.003 mg/Kg for soils and 0.003 mg/L for water.
 B/TEX = Ratio of benzene (B) concentration multiplied by percent benzene in gasoline divided by the mean or average concentration of TEX multiplied by their respective average percents in gasoline as per LUFT (1989).
 Pb = tetraethyl (organic) lead; method detection limit = 0.05.

Table 3. Summary of Analytical Results
 Groundwater Monitoring Well Installation - Soil Samples
 Albany Bowl Properties
 450 San Pablo Avenue
 Albany, CA

Monitoring Well Number	Sample Depth (feet)	TOG	TPH-G	B	T	E	X	Pb
MW-1	7.5	<30	<0.5	<0.005	<0.005	<0.005	<0.005	<0.08
MW-2	9.5	<30	<0.5	<0.005	<0.005	<0.005	<0.005	<0.08
MW-3	11.0	<30	<0.5	<0.005	<0.005	<0.005	<0.005	<0.08

Soil sample analysis reported in mg/Kg

TOG: total oil and grease; method detection limit = 30 mg/Kg

TPH-G: total petroleum hydrocarbons as gasoline; method detection limit = 0.5 mg/Kg

B = benzene, T = toluene, E = ethylbenzene, X = total xylenes; method detection limit = 0.005 mg/Kg

Pb = total organic lead in mg/Kg, method detection limit = 0.08 mg/Kg

**Table 4. Summary of Analytical Results
Groundwater Monitoring Well Samples
Albany Bowl Properties
450 San Pablo Avenue
Albany, CA**

Monitoring Well Number	TOG	TPH-G	B	T	E	X	B/TEX	Pb
MW-1	<5	<0.050	<0.0005	<0.0005	<0.0005	<0.0005	---	<0.040
MW-2	<5	<0.050	<0.0005	<0.0005	<0.0005	<0.0005	---	<0.040
MW-3	<5	0.140	0.026	0.015	0.002	0.014	0.644	<0.040

Groundwater sample analyses reported in mg/L.

TOG = total oil and grease; method detection limit = 5 mg/L.

TPH-G = total petroleum hydrocarbons as gasoline; method detection limit = 0.050 mg/L.

B = benzene, T = toluene, E = ethylbenzene, X = total xylenes; method detection limit = 0.0005 mg/L.

B/TEX = Ratio of benzene (B) concentration multiplied by percent benzene in gasoline divided by the mean or average concentration of TEX multiplied by their respective average percents in gasoline as per LUFT (1989).

Pb = tetraethyl (organic) lead, method detection limit = 0.040 mg/L.

Table 5. Summary of Analytical Results
 Groundwater Monitoring Well Samples
 Plaza Car Wash Property
 440 San Pablo Avenue
 Albany, CA

Sampling Event	Monitoring Well Designation	TPH-G	B	T	E	X	B/TEX
8/3/89	1	16.0	1.8	1.8	1.2	0.21	0.396
	2	80.0	9.1	12.0	7.1	0.46	0.306
	3	71.0	20.0	21.0	7.9	0.58	0.397
	4	14.0	2.0	1.5	1.0	ND	0.180
4/06/90	1	ND	2.1	3.5	ND	ND	---
	2	39.0	11.0	13.0	1.1	5.7	0.113
	3	NA	NA	NA	NA	NA	---
	4	NA	NA	NA	NA	NA	---

Groundwater sample analyses reported in mg/L.

TPH-G = total petroleum hydrocarbons as gasoline, B = benzene, T = toluene, E = ethylbenzene, and X = total xylenes.

B/TEX = Ratio of benzene (B) concentration multiplied by percent benzene in gasoline divided by the mean or average concentration of TEX multiplied by their respective average percents in gasoline as per LUFT (1989).

NA = Not analyzed; no sample collected because of the presence of free product.

ND = Not detected; sample below method detection limit.

Source of data: International Technology Corporation (ITC), 1990.

Table 6. Physical/Chemical Characteristics for Some Monocyclic Aromatic Hydrocarbons

Compound	Aqueous Solubility (mg/L)	Sorption			Volatilization K_H (dimensionless)	Ionization pK_A	K_a (L/mole/hr)	Hydrolysis		Biodegradation K_{b1} L/hr	
		K_{oc}	K_{ow}	K_d				K_n (L/hr)	K_b (L/mole/hr)	Soil	Water
Benzene	1,791	31.7-143	134.9	0.16-0.72	0.227	<15	0	0	0	—	0.004-0.0046
Toluene	523.8	37-178	537.0	0.19-0.89	0.243	<15	0	0	0	—	<0.068
Ethylbenzene	161	164 & 871	1,412.5	0.82-4.35	0.370	<15	0	0	0	—	—
O-Xylene	175	48-68	1,318.3	0.24-0.34	0.219	<15	—	—	—	—	0.000048
M-Xylene	146	166	1,584.9	0.83	0.314	<15	—	—	—	—	—
P-Xylene	156	25.4	1,412.5	0.13	0.314	<15	—	—	—	—	—

K_{oc} = Organic carbon sorption coefficient

K_{ow} = Octanol-water partition coefficient

K_d = Soil sorption partition, K_d s calculated using a soil organic carbon (OC) content of 0.5% or an $f_{oc} = 0.05/100 = 0.005$ where $K_d = K_{oc} \times f_{oc}$

K_H = Henry's Constant

pK_A = Acid dissociation constant where $pK_A = -\log_{10}K_A$; the smaller the pK_A value, the more readily the chemical dissociates in water.

K_a = Acid catalyzed hydrolysis rate constant

K_n = Neutral hydrolysis rate constant

K_b = Base catalyzed hydrolysis rate constant

K_{b1} = Specific biotransformation rate constant

Sources: Howard (1989 and 1990); EPRI (1989)

Table 7. Groundwater Monitoring Schedule for Monitoring Well MW-1.
 Albany Bowl Properties
 450 San Pablo Avenue
 Albany, CA

Report			
Monitoring Period	Frequency	Parameters ^a	Submitted ^b
Year 1	Quarterly	TPH-G, BTEX, Organic Pb, Elevations	Quarterly
Year 2	Assessment for first year sampling results		Annual

- a. Groundwater samples will be collected and analyzed for total petroleum hydrocarbons as gasoline (TPH-G), benzene, toluene, ethylbenzene, and total xylenes (BTEX) and tetraethyl lead (organic Pb)
- b. Reports will be prepared for submittal to the San Francisco Bay Region of the California Regional Water Quality Control board (RWQCB)

ATTACHMENT E

**ATT Workplan for Monitoring Well Installation
ACFCWCD Zone 7 Monitoring Well Permits**



0111

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.

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).

9064/LS082790.PRO

Aqua Terra Technologies
Consulting Engineers
& Scientists

2950 Buskirk Avenue
Suite 120
Walnut Creek, CA
94596
415 934-4884

Mr. Lawrence Seto
Alameda County Health Care Services Agency
August 27, 1990
Page 2

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.

Mr. Lawrence Seto
Alameda County Health Care Services Agency
August 27, 1990
Page 3

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)

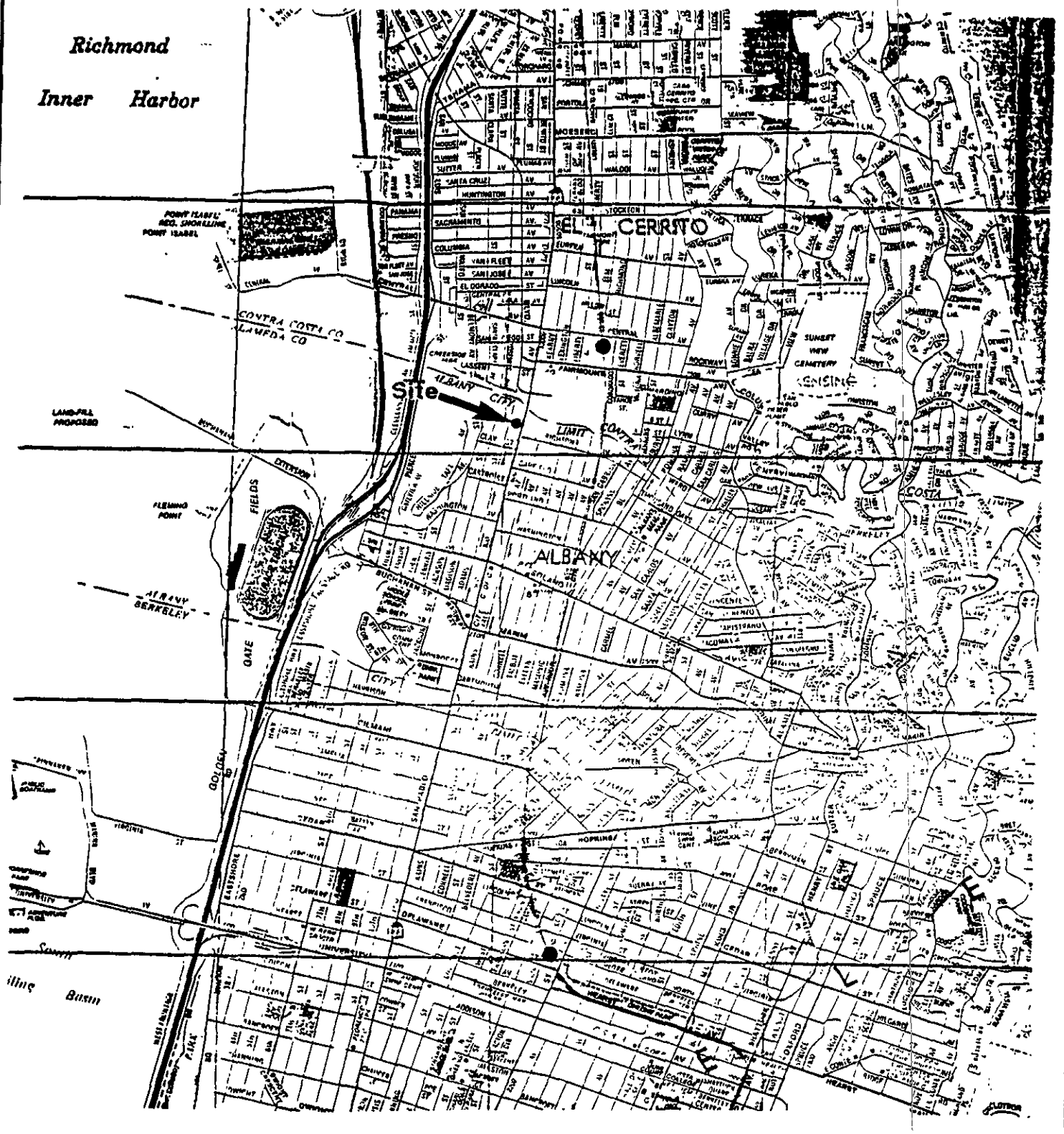
BB/WEM:sd

cc: Mr. Ken Freidman
Mr. Jon Benjamin

Attachment A
Plates

Richmond

Inner Harbor



0 1/2 1
 SCALE mile



Property Location Map

ATT

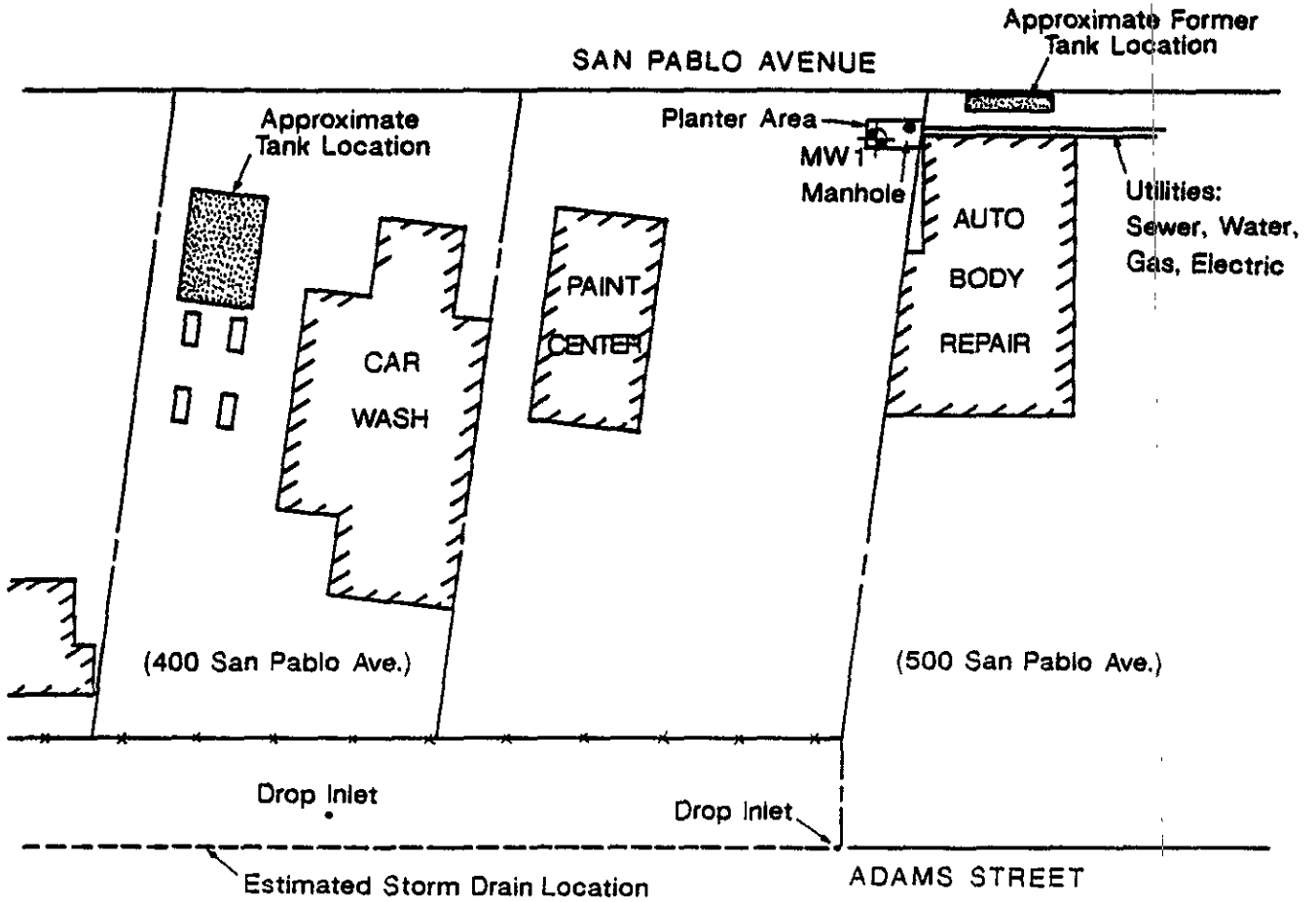
Aqua Terra Technologies
 Consulting Engineers
 & Scientists

Albany Bowl Properties

JOB NUMBER	DATE
9064	8/90

PLATE

1



LEGEND

- ⊕ Monitoring Well Location (approximate)
- - - Property Line
- *-* Fence
- ▨ Existing Structure

0 40 80 feet
SCALE
approximate



Site Plan

Albany Bowl Properties

PLATE

JOB NUMBER
9064

DATE
8/90

2

ATT Aqua Terra Technologies
Consulting Engineers
& Scientists

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 borehole 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 PLEASANTON, CALIFORNIA 94566 (415) 484-2600

GROUNDWATER PROTECTION ORDINANCE PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

FOR OFFICE USE

(1) LOCATION OF PROJECT 500 San Pablo Avenue, Albany, California

PERMIT NUMBER _____
LOCATION NUMBER _____

(2) CLIENT
Name Albany Soul Properties
Address 5401 San Pablo Phone 526-8818
City Albany Zip 94706

Approved _____ Date _____

(3) APPLICANT
Name Aqua Terra Technologies
Address 2950 Buskirk Phone 934-4884
City Walnut Creek Zip 94596

PERMIT CONDITIONS

Circled Permit Requirements Apply

(4) DESCRIPTION OF PROJECT
Water Well Construction Geotechnical _____
Cathodic Protection _____ Well Destruction _____

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. Notify this office (484-2600) at least one day prior to starting work on permitted work and before placing well seals.
- 3. 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 bore hole logs 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 90 days of approval date.

(5) PROPOSED WATER WELL USE
Domestic _____ Industrial _____ Irrigator _____
Municipal _____ Monitoring Other _____

B. WATER WELLS, INCLUDING PIEZOMETERS

- 1. Minimum surface seal thickness is two inches of cement grout placed by tremie, or equivalent.
- 2. Minimum seal depth is 50 feet for municipal and industrial wells or 20 feet for domestic, irrigation, and monitoring wells unless a lesser depth is specially approved.

(6) PROPOSED CONSTRUCTION
Drilling Method:
Mud Rotary _____ Air Rotary _____ Auger
Cable _____ Other _____

C. GEOTECHNICAL. Backfill bore hole with compacted cuttings or heavy bentonite and upper two feet with compacted material.

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

E. WELL DESTRUCTION. See attached.

WELL PROJECTS
Drill Hole Diameter 8 in. Depth(s) 20 ft.
Casing Diameter 2 in. Number _____
Surface Seal Depth 8 ft. of Wells 1 (MW1)
Driller's License No. 596545
Excetech Drilling

GEOTECHNICAL PROJECTS
Number _____
Diameter _____ in. Maximum Depth _____ ft.

(7) ESTIMATED STARTING DATE 8-30-90
ESTIMATED COMPLETION DATE 8-30-90

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

APPLICANT'S SIGNATURE Bill Ben Date 8-27-90

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:

- o 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:

Volatile: X Toxic: Reactive: Unknown: Other(name):

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:

AQUA TERRA TECHNOLOGIES SITE SAFETY PLAN (continued)

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

C. HAZARD EVALUATION

Parameter:	TLV (ppm)	IDLH (ppm)	LEL (%)	HEALTH 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:

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

Equipment: 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

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:

<u>Team Member</u>	<u>Responsibility</u>
William E. Motzer	Project Hydrogeologist
Bruce Berman	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:

<u>Name:</u>	<u>Phone:</u>
Mr. Ken Friedman	1-415-383-6798
Mr. Terrance E. Carter Senior Environmental Engineer Aqua Terra Technologies, Inc.	1-415-934-4884

Emergency Routes:

Hospital: 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.

ATTACHMENT F

Uniform Hazardous Waste Manifest - Petroleum Rinsate
Uniform Hazardous Waste Manifest - USTs



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

FOR OFFICE USE

(1) LOCATION OF PROJECT 450 San Pablo Avenue, Albany, California

PERMIT NUMBER _____
LOCATION NUMBER _____

(2) CLIENT
Name Albany Bowl Properties
Address 5401 San Pablo Phone 526-8818
City Albany Zip 94706

Approved _____ Date _____

(3) APPLICANT
Name Agua Terra Technologies
Address 2950 Rustick Phone 934-4884
City Walnut Creek Zip 94596

PERMIT CONDITIONS

Circled Permit Requirements Apply

(4) DESCRIPTION OF PROJECT
Water Well Construction _____ Geotechnical _____
Cathodic Protection _____ Well Destruction _____

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. Notify this office (484-2600) at least one day prior to starting work on permitted work and before placing well seals.
3. 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 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 90 days of approval date.

(5) PROPOSED WATER WELL USE
Domestic _____ Industrial _____ Irrigation _____
Municipal _____ Monitoring Other _____

B. WATER WELLS, INCLUDING PIEZOMETERS

1. Minimum surface seal thickness is two inches of cement grout placed by tremie, or equivalent.
2. Minimum seal depth is 50 feet for municipal and industrial wells or 20 feet for domestic, irrigation, and monitoring wells unless a lesser depth is specially approved.

(6) PROPOSED CONSTRUCTION
Drilling Method:
Mud Rotary _____ Air Rotary _____ Auger
Cable _____ Other _____

WELL PROJECTS

Drill Hole Diameter 8 in. Depth(s) 20 ft.
Casing Diameter 2 in. Number _____
Surface Seal Depth 2 ft. of Wells 2 (MW2 & MW3)
Driller's License No. 596545

GEOTECHNICAL PROJECTS

Number _____
Diameter _____ in. Maximum Depth _____ ft.

- C. GEOTECHNICAL. Backfill bore hole with compacted cuttings or heavy bentonite and upper two feet with compacted material.
- D. CATHODIC. Fill hole above anode zone with concrete placed by tremie, or equivalent.
- E. WELL DESTRUCTION. See attached.

(7) ESTIMATED STARTING DATE 8-30-90
ESTIMATED COMPLETION DATE 8-30-90

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

APPLICANT'S SIGNATURE Bruce Ben Date 8-27-90



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

FOR OFFICE USE

(1) LOCATION OF PROJECT 450 500 San Pablo Avenue, Albany, California

PERMIT NUMBER 90522 LOCATION NUMBER

PERMIT CONDITIONS

Circled Permit Requirements Apply

(2) CLIENT Name Albany Soil Properties Address 5401 San Pablo Phone 526-8818 City Albany Zip 94706

(3) APPLICANT Name Aqua Terra Technologies Address 2950 Buskirk Phone 934-4884 City Walnut Creek Zip 94596

(4) DESCRIPTION OF PROJECT Water Well Construction [X] Geotechnical [] Cathodic Protection [] Well Destruction []

(5) PROPOSED WATER WELL USE Domestic [] Industrial [] Irrigation [] Municipal [] Monitoring [X] Other []

(6) PROPOSED CONSTRUCTION Drilling Method: Mud Rotary [] Air Rotary [] Auger [X] Cable [] Other []

WELL PROJECTS * Drill Hole Diameter 8 in. Depth(s) 20 ft. Casing Diameter 3 in. Number Surface Seal Depth 5 ft. of Wells 1 (MW1) Driller's License No. 576578 Excotech Drilling

GEOTECHNICAL PROJECTS Number Diameter [] in. Maximum Depth [] ft.

(7) ESTIMATED STARTING DATE 8-30-90 ESTIMATED COMPLETION DATE 8-30-90

(8) I hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 73-66.

APPLICANT'S SIGNATURE [Signature] Date 8-27-90

Approved [Signature] Date 29 Aug 90 Todd N. Wendler

- (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 log 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 practical 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. * Project to include two additional wells, MW2 and MW3, of identical construction. Information from supplemental permit application, 29 August 1990.

Please print or type. (Form designed for use on elite (12-pitch typewriter).)

89496153

IN CASE OF AN EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA CALL 1-800-852-7550

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. CA10002011580001	Manifest Document No.	2. Page 1 of	Information in the shaded areas is not required by Federal law.
3. Generator's Name and Mailing Address ALBANY LOW PROPERTIES 500 SAN PABLO AVE ALBANY, CA 94706			A. State Manifest Document Number 89496153		
4. Generator's Phone (415) 934-4884			B. State Generator's ID LA1103603218915		
5. Transporter 1 Company Name Universal Engineering		6. US EPA ID Number CA10113469	C. State Transporter's ID 20334		
7. Transporter 2 Company Name		8. US EPA ID Number	D. Transporter's Phone 707-746-6699		
9. Designated Facility Name and Site Address GIBSON OIL REFINING COMMERCIAL DRIVE BARKSFIELD, CA 95308		10. US EPA ID Number CA1098104911117	E. State Transporter's ID		
			F. Transporter's Phone		
			G. State Facility's ID		
			H. Facility's Phone 905-333-2175		
11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)		12. Containers No.	13. Total Quantity	14. Unit Wt/Vol	Waste No.
a. CALIFORNIA REGULATED WASTE ONLY					State EPA/Other
b.					State EPA/Other
c.					State EPA/Other
d.					State EPA/Other
J. Additional Descriptions for Materials Listed Above PETROLEUM RESIDUE			K. Handling Codes for Wastes Listed Above		
15. Special Handling Instructions and Additional Information # RELEASE 11/79 9269-1					
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations. If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.					
Printed/Typed Name Albany Petroleum HENRIK J. FRIEDMAN		Signature		Month Day Year 10 9 77 89	
17. Transporter 1 Acknowledgement of Receipt of Materials		Printed/Typed Name Tim Wallis		Signature Tim Wallis	
18. Transporter 2 Acknowledgement of Receipt of Materials		Printed/Typed Name		Signature	
19. Discrepancy Indication Space					
20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.					
Printed/Typed Name		Signature		Month Day Year	

Do Not Write Below This Line

Please print or type. (Form designed for use on elite (12-pitch typewriter).

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. CAC 0100206V589015V15	Manifest Document No. 15	2. Page 1 of 1	Information in the shaded areas is not required by Federal law.	
3. Generator's Name and Mailing Address Ken ALBANY Bowl Props 115 590 SAN PABLO AVE			A. State Manifest Document Number 88119759		B. State Generator's ID	
4. Generator's Phone (415) 536-8818 ALBANY, CA 94706			C. State Transporter's ID		D. Transporter's Phone (415) 235-1393	
5. Transporter 1 Company Name Erickson Trucking, Inc.			US EPA ID Number CAL00009666302		E. State Transporter's ID 106495	
7. Transporter 2 Company Name JACK PARKER TRUCKING			US EPA ID Number CAL00002770A		F. Transporter's Phone (415) 237-2212	
9. Designated Facility Name and Site Address Erickson, Inc. 255 Parr Blvd. 551 Richmond, CA 94801			US EPA ID Number CAL00009666302		G. State Facility's ID	
			H. Facility's Phone (415) 235-1393			
11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)		12. Containers No.	13. Total Quantity	14. Unit Wt/Vol	Waste No.	
a. Waste empty storage tank Non-RCRA Hazardous Waste Solid		0	0	0	State 512 EPA/Other None	
b.					State EPA/Other	
c.					State EPA/Other	
d.					State EPA/Other	
J. Additional Descriptions for Materials Listed Above 2-550 gallon waste storage tanks iced with soft dry ice each			K. Handling Codes for Wastes Listed Above a. b. c. d.			
15. Special Handling Instructions and Additional Information Keep away from sources of ignition. Always wear hardhats when working around U.S.T.'s						
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations. If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimize the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.						
Printed/Typed Name KEV FRIEDMAN GP ALBANY BOWL			Signature		Month Day Year 1 18 1990	
17. Transporter 1 Acknowledgement of Receipt of Materials			Signature		Month Day Year	
Printed/Typed Name TRANSPORTER DID NOT HAUL			Signature		Month Day Year	
18. Transporter 2 Acknowledgement of Receipt of Materials			Signature		Month Day Year	
Printed/Typed Name STEVE DITO			Signature Steve DITO		Month Day Year 1 18 1990	
19. Discrepancy Indication Space						
20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.						
Printed/Typed Name			Signature		Month Day Year	

IN CASE OF AN EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA CALL 1-800-952-7359

Do Not Write Below This Line Blue: GENERATOR SENDS THIS COPY TO DOHS WITHIN 30 DAYS
To: P.O. Box 400, Sacramento, CA 95812-0400

ATTACHMENT G

**Drilling Procedures & Groundwater
Monitoring Well Construction/Design**

**Soil & Groundwater Sample
Collection & Handling Protocol**

Well Construction and Development Details

ATTACHMENT C**DRILLING PROCEDURES & GROUNDWATER
MONITORING WELL CONSTRUCTION/DESIGN****DRILLING AND SAMPLING PROCEDURES**

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

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

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

All down hole sampling, drilling, and well construction equipment and materials, including augers, casing, and screens were steam cleaned prior to their initial use. The sampling equipment was 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 were steam cleaned at each boring location.

MONITORING WELL CONSTRUCTION

Monitoring wells were constructed in accordance with applicable local water district or California Department of Water Resources guidelines. The specific completion details for each well were 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 is used. The screened sections are machine slotted with either 0.010-inch (0.255 mm) 0.020-inch (0.51 mm) openings. The smaller slot size was used where the wells are screened within fine-grained sandy soils, and the larger slots were used where coarse sand or gravels are encountered. The slotted sections were fitted with a slip-on cap and placed opposite the water-bearing strata in the boring. The blank pipe was connected to the perforated pipe and extends to just below the ground surface.

The annulus between the side of the borehole and the slotted section was filled with a clean sand pack to variable depths, but not less than one or two feet above the perforated pipe. The annulus was 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 was placed above the sand pack to reduce the risk of grout penetration into the sand. The bentonite pellets were hydrated with distilled water to form a tight plug. A cement/bentonite grout was placed above the bentonite plug to a depth of approximately two feet below the ground surface. The grout was pumped into the boreholes using a tremie pipe. Concrete was 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 was selected for use in wells. The 0.010-inch and 0.020-inch slot sizes were selected to retain 100 percent of the filter material.

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

After the wells had been completed, they were 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 was used for development. A minimum of 10 well casing volumes of water was removed during development; however, development continued until water flowed clear and pH, temperature, and conductivity had stabilized. All development equipment was steam cleaned prior to its initial use in each well. A well development log was maintained which included 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 were wrapped in plastic sheeting, and water generated during well development was retained in secured 55-gallon drums until chemical analytical data from samples were received.

ATTACHMENT C

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
- ° Representative of the materials(s) at the desired location and depth
- ° Uncontaminated by container and sampling equipment

The following sampling protocol was designed to be a guide to the sampling and handling procedures for soil and groundwater samples. 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 were purged by bailing until pH, conductivity, and temperature levels stabilize. Wells were purged and groundwater samples were obtained using a Teflon bailer and nylon rope. New nylon rope is used for each well.

The appropriate number of sample containers and type were used for each sample collected, in accordance with the analytical laboratory requirements and EPA protocol. The bottles were filled using the bailer. All sample bottles were 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 was 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 was 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 is retained for laboratory analysis was sealed with Teflon sheeting, covered with plastic end caps, and sealed with PVC tape. All sample containers (tubes and end caps) were steamed cleaned and air dried prior to use. The soil sample recovered in the ring just above the sample retained for chemical analysis was examined in the field for visual and olfactory indications of chemical contamination and used for lithologic description.

The Unified Soil Classification System (USCS) was used to log and describe the soil by the onsite geologist. These logs 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

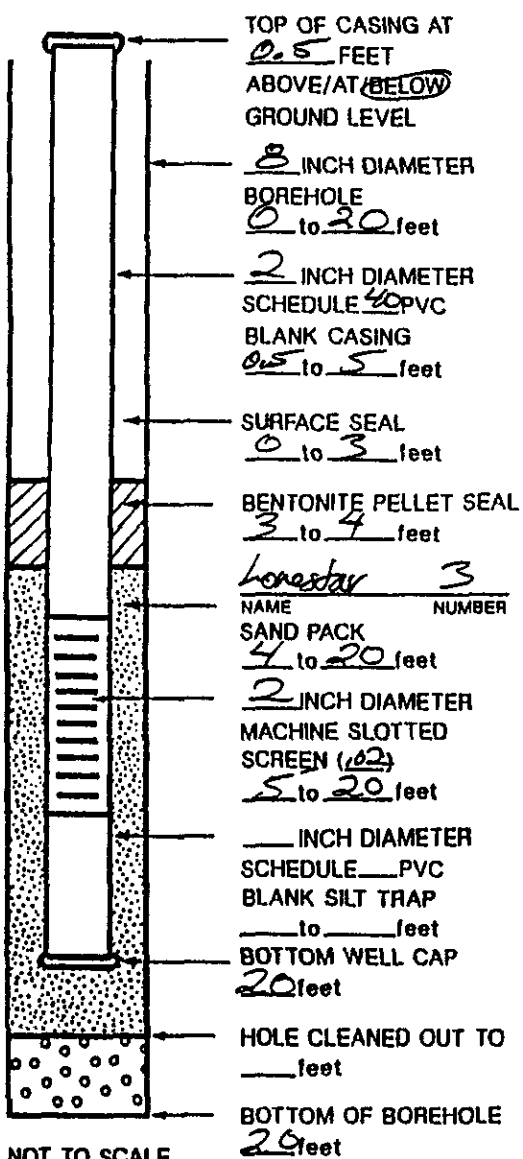
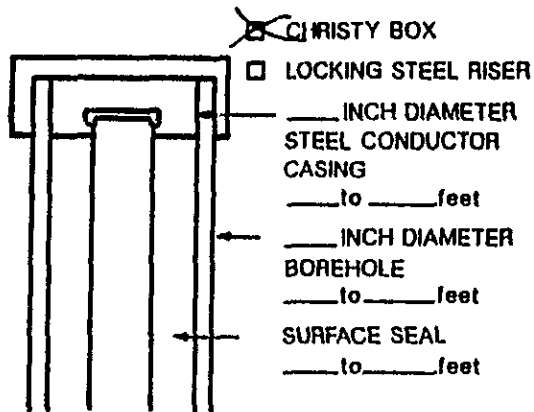
One field/travel blank consisting of one sample bottle filled with distilled water accompanied soil and groundwater sample containers at all times, including during transport to and from the site. Distilled water field/travel blanks were analyzed according to the appropriate EPA Methods corresponding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

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

Soil and groundwater samples collected were 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 accompanied all analytical reports generated by the laboratory.

The samples were placed in an ice cooler immediately following collection, and remained in the ice cooler until refrigerated at the analytical laboratory. The samples were delivered to the laboratory direct by courier or overnight freight within 48 hours of time of collection. Appropriate chain of custody forms were used for all samples.

WELL CONSTRUCTION AND DEVELOPMENT DETAILS



NOT TO SCALE

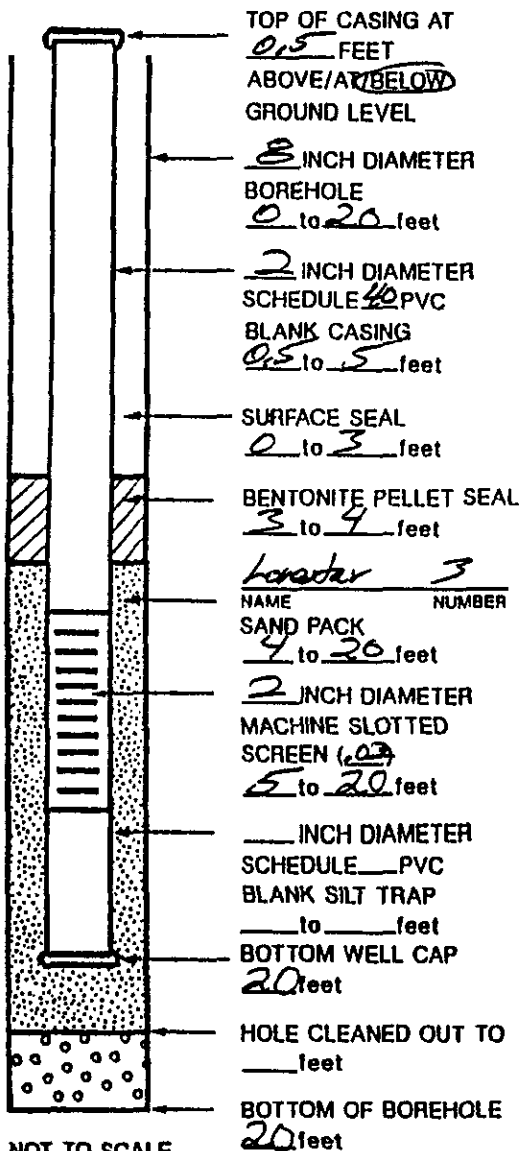
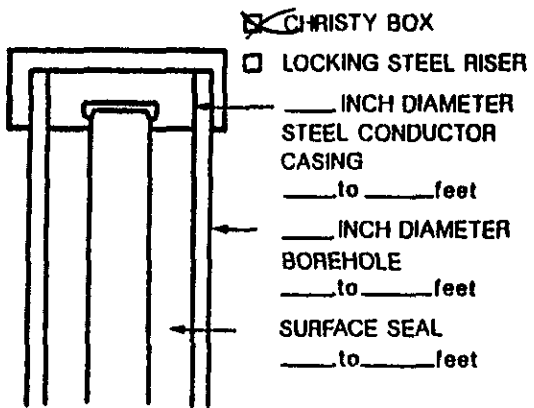
ADDITIONAL INFORMATION:

JOB NAME Albany Bowl Properties (Tank closure)
 JOB NUMBER 9064 PROJECT MANAGER WEM
 LOGGED BY BB EDITED BY _____
 WELL DESIGNATION MW1 DATE 8-30-90
 DRILLING COMPANY Exceltech
 EQUIPMENT: INCH ROTARY WASH
 8 INCH HOLLOW STEM AUGER DRILLER Frank
 INCH DUAL TUBE HOURS DRILLED _____
 VOLUME OF WATER USED DURING DRILLING: _____ GALLONS
 METHOD OF DECONTAMINATION PRIOR TO DRILLING: Steam cleaning

DEVELOPMENT
 METHOD OF DEVELOPMENT: hand pump
 DEVELOPMENT BEGAN: DATE 9-4-90 TIME 12:50
 YIELD: 4.5 GPM TIME: 12:50 FROM 12:52 TO DATE: 9-4-90
 YIELD: 3.6 GPM TIME: 12:57 FROM 13:02 TO DATE: 9-4-90
 DEVELOPMENT ENDED: DATE 9-4-90 TIME 13:02
 TOTAL WATER REMOVED DURING DEVELOPMENT: 27 GALLONS
 DESCRIPTION OF TURBIDITY AT END OF DEVELOPMENT: CLEAR SLIGHTLY CLOUDY
 MOD. TURBID VERY MUDDY
 ODOR OF WATER: 0
 WATER DISCHARGED TO: GROUND SURFACE STORM SEWERS
 TANK TRUCK STORAGE TANK
 DRUMS OTHER
 DEPTH TO WATER AFTER DEVELOPMENT 5.54 FEET

MATERIALS USED
 _____ SACKS OF _____ SAND
 _____ SACKS OF _____ CEMENT
 _____ GALLONS OF GROUT USED
 _____ SACKS OF POWERED BENTONITE
 _____ POUNDS OF BENTONITE PELLETS
 _____ FEET OF _____ INCH PVC BLANK CASING
 _____ FEET OF _____ INCH PVC SLOTTED SCREEN
 _____ FEET OF _____ INCH STEEL CONDUCTOR CASING
 GROUT PUMP USED? YES NO
 TREMIE PIPE USED? YES NO
 WELL COVER USED LOCKING STEEL COVER
 CHRISTY BOX
 OTHER _____
 SILT TRAP USED? YES NO

WELL CONSTRUCTION AND DEVELOPMENT DETAILS

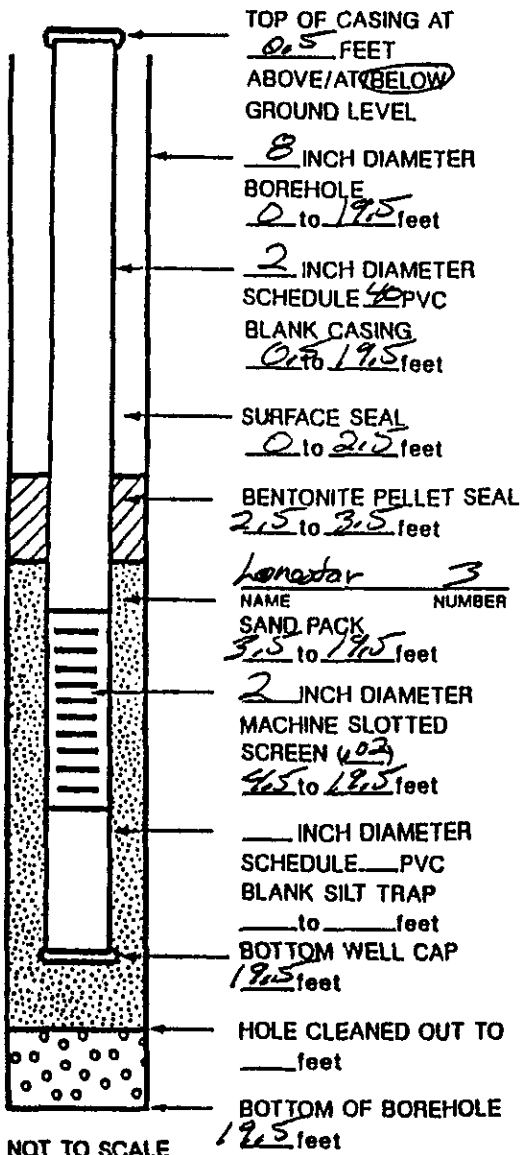
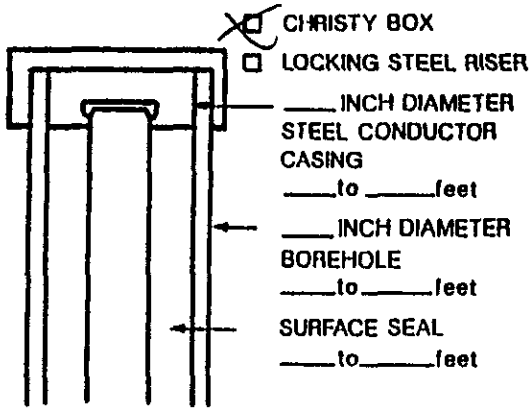


NOT TO SCALE

ADDITIONAL INFORMATION:

JOB NAME <u>Albany Bowl Properties (limited Phase II)</u>	
JOB NUMBER <u>9203</u>	PROJECT MANAGER <u>WEM</u>
LOGGED BY <u>RS</u>	EDITED BY
WELL DESIGNATION <u>MW 2</u>	DATE <u>8-30-90</u>
DRILLING COMPANY <u>Exceltech</u>	
EQUIPMENT: <input type="checkbox"/> INCH ROTARY WASH	DRILLER <u>Frank</u>
<input checked="" type="checkbox"/> 8 INCH HOLLOW STEM AUGER	HOURS DRILLED
<input type="checkbox"/> INCH DUAL TUBE	
VOLUME OF WATER USED DURING DRILLING:	GALLONS
METHOD OF DECONTAMINATION PRIOR TO DRILLING: <u>Steam Cleaning</u>	
DEVELOPMENT	
METHOD OF DEVELOPMENT: <u>Hand Pump</u>	
DEVELOPMENT BEGAN: DATE <u>9-4-90</u> TIME <u>13:29</u>	
YIELD: <u>3</u> GPM	TIME: <u>13:29</u> FROM TO <u>13:31</u> DATE: <u>9-4-90</u>
YIELD: <u>4.5</u> GPM	TIME: <u>13:32</u> FROM TO <u>13:36</u> DATE: <u>9-4-90</u>
DEVELOPMENT ENDED: DATE <u>9-4-90</u> TIME <u>13:36</u>	
TOTAL WATER REMOVED DURING DEVELOPMENT: <u>27</u> GALLONS	
DESCRIPTION OF TURBIDITY AT END OF DEVELOPMENT: <input type="checkbox"/> CLEAR <input type="checkbox"/> SLIGHTLY CLOUDY <input type="checkbox"/> MOD. TURBID <input checked="" type="checkbox"/> VERY MUDDY	
ODOR OF WATER: <u>0</u>	
WATER DISCHARGED TO: <input type="checkbox"/> GROUND SURFACE <input type="checkbox"/> TANK TRUCK <input checked="" type="checkbox"/> DRUMS <input type="checkbox"/> STORM SEWERS <input type="checkbox"/> STORAGE TANK <input type="checkbox"/> OTHER	
DEPTH TO WATER AFTER DEVELOPMENT <u>4.65</u> FEET	
MATERIALS USED	
_____ SACKS OF _____	SAND
_____ SACKS OF _____	CEMENT
_____ GALLONS OF GROUT USED	
_____ SACKS OF POWERED BENTONITE	
_____ POUNDS OF BENTONITE PELLETS	
_____ FEET OF _____ INCH PVC BLANK CASING	
_____ FEET OF _____ INCH PVC SLOTTED SCREEN	
_____ FEET OF _____ INCH STEEL CONDUCTOR CASING	
GROUT PUMP USED? <input type="checkbox"/> YES <input type="checkbox"/> NO	
TREMIE PIPE USED? <input type="checkbox"/> YES <input type="checkbox"/> NO	
WELL COVER USED <input type="checkbox"/> LOCKING STEEL COVER <input type="checkbox"/> CHRISTY BOX <input type="checkbox"/> OTHER _____	
SILT TRAP USED? <input type="checkbox"/> YES <input type="checkbox"/> NO	

WELL CONSTRUCTION AND DEVELOPMENT DETAILS



NOT TO SCALE

ADDITIONAL INFORMATION:

JOB NAME Albany Bowl Properties (limited Phase II)

JOB NUMBER 9203 PROJECT MANAGER WEM

LOGGED BY RB EDITED BY _____

WELL DESIGNATION MW 3 DATE 8-30-90

DRILLING COMPANY Exceldech

EQUIPMENT: _____ INCH ROTARY WASH
 8 INCH HOLLOW STEM AUGER DRILLER Frank
 _____ INCH DUAL TUBE HOURS DRILLED _____

VOLUME OF WATER USED DURING DRILLING: _____ GALLONS

METHOD OF DECONTAMINATION PRIOR TO DRILLING: Steam Cleaning

DEVELOPMENT

METHOD OF DEVELOPMENT: Hand Pump

DEVELOPMENT BEGAN: DATE 9-4-90 TIME 14:09

YIELD: <u>9</u> GPM	TIME: <u>14:09</u> FROM <u>14:10</u> TO	DATE: <u>9-4-90</u>
YIELD: <u>4.5</u> GPM	TIME: <u>14:16</u> FROM <u>14:20</u> TO	DATE: <u>9-4-90</u>

DEVELOPMENT ENDED: DATE 9-4-90 TIME 14:23

TOTAL WATER REMOVED DURING DEVELOPMENT: 27 GALLONS

DESCRIPTION OF TURBIDITY AT END OF DEVELOPMENT: CLEAR SLIGHTLY CLOUDY
 MOD. TURBID VERY MUDDY

ODOR OF WATER: NO ?

WATER DISCHARGED TO: GROUND SURFACE STORM SEWERS
 TANK TRUCK STORAGE TANK
 DRUMS OTHER

DEPTH TO WATER AFTER DEVELOPMENT _____ FEET

MATERIALS USED

_____ SACKS OF _____ SAND

_____ SACKS OF _____ CEMENT

_____ GALLONS OF GROUT USED

_____ SACKS OF POWERED BENTONITE

_____ POUNDS OF BENTONITE PELLETS

_____ FEET OF _____ INCH PVC BLANK CASING

_____ FEET OF _____ INCH PVC SLOTTED SCREEN

_____ FEET OF _____ INCH STEEL CONDUCTOR CASING

GROUT PUMP USED? YES NO

TREMIE PIPE USED? YES NO

WELL COVER USED LOCKING STEEL COVER
 CHRISTY BOX
 OTHER _____

SILT TRAP USED? YES NO

ATTACHMENT H

**DHS Certified Laboratory Analytical Data
Sample Collection Records
Chain of Custody Records**

SUPERIOR ANALYTICAL LABORATORIES, INC.

825 ARNOLD, STE. 114 • MARTINEZ, CALIFORNIA 94553 • (415) 229-1512

DOHS #319
DOHS #220

C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 81377
CLIENT: SEMCO
CLIENT JOB NO.: FRIEDMAN

DATE RECEIVED: 08/15/90
DATE REPORTED: 08/15/90

ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS
by Modified EPA SW-846 Method 5030 and 8015

LAB #	Sample Identification	Concentration (mg/Kg) Gasoline Range
1	#1-550-GE 5'6"	560
2	#2-MidTanks 6'6"	190
3	#3-550 Waste Oil 4'	21
4	#4-Pit H2O	0.2 mg/L

mg/kg - parts per million (ppm)

Method Detection Limit for Gasoline in Soil: 1 mg/Kg
Method Detection Limit for Gasoline in Water: 0.05 mg/L

QA/QC Summary:

Carb. Standard run at 2mg/L. RPD Gasoline = 0
MS/WCD Average Recovery = 84%; Duplicate RPD = 1

Richard Orma, Ph.D.

Armed Salinas
Laboratory Manager

OUTSTANDING QUALITY AND SERVICE

SUPERIOR ANALYTICAL LABORATORIES, INC.

825 ARNOLD, STE. 114 • MARTINEZ, CALIFORNIA 94553 • (415) 229-1512

DOHS #319
DOHS #220

C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 81377
CLIENT: SEMCC
CLIENT JOB NO.: FRIEDMAN

DATE RECEIVED: 03/14/90
DATE REPORTED: 03/16/90

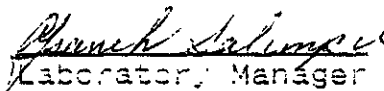
ANALYSIS FOR TOTAL ORGANIC LEAD by DHS Method (LUFT Manual)

LAB #	Sample Identification	Concentration (mg/Kg)
1	#1-550-GE 5'6"	ND<0.05
2	#2-MidTanks 3'6"	0.44
3	#3-550 Waste Oil 4'	ND<0.05

mg/kg - parts per million (ppm)

Method Detection Limit for Organic Lead in Soil: 0.05 mg/kg

Richard Srna, Ph.D.


Laboratory Manager

OUTSTANDING QUALITY AND SERVICE

SUPERIOR ANALYTICAL LABORATORIES, INC.

825 ARNOLD, STE. 114 • MARTINEZ, CALIFORNIA 94553 • (415) 229-1512

DOHS #319
DOHS #220

C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 81377
CLIENT: SEMCC
CLIENT JOB NO.: FRIEDMAN

DATE RECEIVED: 08/15/90
DATE REPORTED: 08/15/90

ANALYSIS FOR TOTAL OIL AND GREASE by Method 503E

LAB #	Sample Identification	Concentration (mg/Kg) Oil & Grease
1	#1-550-GE 5'6"	ND.20
2	#2-MidTanks 5'6"	660
3	#3-550 Waste Oil 4'	130

mg/kg - parts per million (ppm)

Method Detection Limit for Oil and Grease in Soil: 20mg/Kg

QA/QC Summary: Duplicate RFD : 0

Richard Orna, Ph.D.

Chaneh Salinas
Laboratory Manager

OUTSTANDING QUALITY AND SERVICE

SUPERIOR ANALYTICAL LABORATORIES, INC.

825 ARNOLD, STE. 114 • MARTINEZ, CALIFORNIA 94553 • (415) 229-1512

DOHS #319
DOHS #220

C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 81377
CLIENT: SEMCC
CLIENT JOB NO.: FRIEDMAN

DATE RECEIVED: 08/15/90
DATE REPORTED: 08/16/90

ANALYSIS FOR BENZENE, TOLUENE, ETHYL BENZENE & XYLENES
by EPA SW-846 Methods 8000 and 8020

LAB #	Sample Identification	Concentration(ug/Kg, ug/L*)			
		Benzene	Toluene	Ethyl Benzene	Xylenes
1	#1-380-3E 5'6"	ND 100	ND 100	300	3600
2	#2-116 Tanks 5'6"	ND 100	ND 100	300	3000
3	#3-300 Waste Oil 4'	ND 10	ND 3	22	140
4	#4-Pit H2O	28*	ND 10*	100*	260*

ug/Kg = parts per billion (ppb)

Method Detection Limit in Soil: 3 ug/Kg
Method Detection Limit in Water: 0.3 ug/L

QA/QC Summary:

Daily Standard run at 20ug/L: RPD = 115%
MS/MSD Average Recovery = 94 %: Duplicate RPD = 0

Richard Srna, Ph.D.

Richard Srna
Laborator, Manager

ANAMETRIX INC

Environmental & Analytical Chemistry
 1961 Concourse Drive, Suite E, San Jose, CA 95131
 (408) 432-8192 • Fax (408) 432-8198

**REPORT**

BRUCE BERMAN
 AQUA TERRA TECHNOLOGIES
 2950 BUSKIRK AVENUE SUITE 120
 WALNUT CREEK, CA 94596

Workorder # : 9008348
 Date Received : 08/31/90
 Project ID : 9064
 Purchase Order: N/A

The following samples were received at Anamatrix, Inc. for analysis :

ANAMETRIX ID	CLIENT SAMPLE ID
9008348- 1	MW1-7.5

This report is paginated for your convenience and ease of review. It contains 10 pages excluding the cover letter. The report is organized into sections. Each section contains all analytical results and quality assurance data related to a specific group or section within Anamatrix. The Report Summary that precedes each section will help you determine which group at Anamatrix generated the data. The Report Summary will contain the signatures of the department supervisor and a chemist, both of whom reviewed the analytical data. Please refer all questions to the department supervisor that signed the form.

If you have any further questions or comments on this report, please give us a call as soon as possible. Thank you for using Anamatrix.

Burt Sutherland

Burt Sutherland
 Laboratory Director

09-12-90

Date

REPORT SUMMARY
ANAMETRIX, INC. (408)432-8192

BRUCE BERMAN
AQUA TERRA TECHNOLOGIES
2950 BUSKIRK AVENUE SUITE 120
WALNUT CREEK, CA 94596

Workorder # : 9008348
Date Received : 08/31/90
Project ID : 9064
Purchase Order: N/A
Department : GC
Sub-Department: TPH

SAMPLE INFORMATION:

ANAMETRIX SAMPLE ID	CLIENT SAMPLE ID	MATRIX	DATE SAMPLED	METHOD
9008348- 1	MW1-7.5	SOIL	08/30/90	TPHg/BTEX

REPORT SUMMARY
ANAMETRIX, INC. (408)432-8192

BRUCE BERMAN
AQUA TERRA TECHNOLOGIES
2950 BUSKIRK AVENUE SUITE 120
WALNUT CREEK, CA 94596

Workorder # : 9008348
Date Received : 08/31/90
Project ID : 9064
Purchase Order: N/A
Department : GC
Sub-Department: TPH

QA/QC SUMMARY :

- No QA/QC problems encountered for this sample.

Cheryl Palmer 9/12/90
Department Supervisor Date

Harsh Vajr 9/12/90
Chemist Date

ANALYSIS DATA SHEET - TOTAL PETROLEUM HYDROCARBONS
(GASOLINE WITH BTEX)
ANAMETRIX, INC. - (408) 432-8192

Anamatrix W.O.: 9008348
Matrix : SOIL
Date Sampled : 08/30/90

Project Number : 9064
Date Released : 09/12/90

COMPOUNDS	Reporting Limit (mg/Kg)	Sample I.D.# MW1-7.5	Sample I.D.# 04B0910A
Benzene	0.005	ND	ND
Toluene	0.005	ND	ND
Ethylbenzene	0.005	ND	ND
Total Xylenes	0.005	ND	ND
TPH as Gasoline	0.5	ND	ND
% Surrogate Recovery		103%	89%
Instrument I.D.		HP4	HP4
Date Analyzed		09/10/90	09/10/90
RLMF		1	1

- ND - Not detected at or above the practical quantitation limit for the method.
 TPHg - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using EPA Method 5030.
 BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.
 RLMF - Reporting Limit Multiplication Factor.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

Leah V. V. V. V. 9/12/90
Analyst Date

Cheryl Balmer 9/12/90
Supervisor Date

REPORT SUMMARY
ANAMETRIX, INC. (408)432-8192

BRUCE BERMAN
AQUA TERRA TECHNOLOGIES
2950 BUSKIRK AVENUE SUITE 120
WALNUT CREEK, CA 94596

Workorder # : 9008348
Date Received : 08/31/90
Project ID : 9064
Purchase Order: N/A
Department : PREP
Sub-Department: PREP

SAMPLE INFORMATION:

ANAMETRIX SAMPLE ID	CLIENT SAMPLE ID	MATRIX	DATE SAMPLED	METHOD
9008348- 1	MW1-7.5	SOIL	08/30/90	503E

REPORT SUMMARY
ANAMETRIX, INC. (408)432-8192

BRUCE BERMAN
AQUA TERRA TECHNOLOGIES
2950 BUSKIRK AVENUE SUITE 120
WALNUT CREEK, CA 94596

Workorder # : 9008348
Date Received : 08/31/90
Project ID : 9064
Purchase Order: N/A
Department : PREP
Sub-Department: PREP

QA/QC SUMMARY :

- No QA/QC problems encountered for samples.

L.B. Peltel
Department Supervisor Sept, 12th 1996.
Date

Mario E. Guerrero 9-12-90
Chemist Date

ANALYSIS DATA SHEET - TOTAL OIL AND GREASE
ANAMETRIX, INC. (408) 432-8192

Project # : 9046
 Matrix : SOIL
 Date sampled : 08/30/90
 Date ext. TOG: 09/10/90
 Date anl. TOG: 09/10/90

Anamatrix I.D. : 9008348
 Analyst : mg
 Supervisor : MP
 Date released : 09/12/90

Workorder #	Sample I.D.	Reporting Limit (ug/Kg)	Amount Found (mg/Kg)
9008348-01	MW1-7.5	30	ND
GSBL091090	METHOD BLANK	30	ND

ND - Not detected at or above the practical quantitation limit for the method.

TOG - Total Oil & Grease is determined by Standard Method 503E.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

REPORT SUMMARY
ANAMETRIX, INC. (408)432-8192

BRUCE BERMAN
AQUA TERRA TECHNOLOGIES
2950 BUSKIRK AVENUE SUITE 120
WALNUT CREEK, CA 94596

Workorder # : 9008348
Date Received : 08/31/90
Project ID : 9064
Purchase Order: N/A
Department : METALS
Sub-Department: METALS

SAMPLE INFORMATION:

ANAMETRIX SAMPLE ID	CLIENT SAMPLE ID	MATRIX	DATE SAMPLED	METHOD
9008348- 1	MW1-7.5	SOIL	08/30/90	ORG Pb

REPORT SUMMARY
ANAMETRIX, INC. (408)432-8192

BRUCE BERMAN
AQUA TERRA TECHNOLOGIES
2950 BUSKIRK AVENUE SUITE 120
WALNUT CREEK, CA 94596

Workorder # : 9008348
Date Received : 08/31/90
Project ID : 9064
Purchase Order: N/A
Department : METALS
Sub-Department: METALS

QA/QC SUMMARY :

- No QA/QC problems encountered for samples.

M. ... 9/7/90
Department Supervisor Date

G. ... 9/7/90
Chemist Date

ANAMETRIX, INC.
1961 CONCOURSE DRIVE, SUITE E
SAN JOSE, CA 95131, (408) 432-8192

ORGANIC LEAD MATRIX SPIKE REPORT

Spike I.D. : 9008348-01MS,MD
Assoc. WO # : 9008348
Date Analyzed: 09/06/90
Conc. Units : mg/Kg

Inst. ID: AA1
Date : 09/07/90
Matrix : SOIL

ELEMENTS	METHOD	SPIKE AMOUNT	SAMPLE CONC.	M S CONC.	% REC	M S D CONC.	% REC	R P D
Pb	LUFT	0.51	0.03	0.52	97.8	0.56	105.7	7.8

=====

COMMENT: Quality control limits for percent recovery are 75-125%
and 25% for RPD.

A. Sokołowicz 9/7/90
Analyst Date

W. H. Hansen 9/7/90
Analyst Date

CHAIN OF SAMPLE CUSTODY RECORD
 (original document, please return)

Sampled By: Bruce Berman

Date Sampled: 8 130 190

Signature: Bruce Ben

Job Number: 9064

Results To Be Sent To: Bruce Berman

Laboratory Name: Anamatrix

Results Needed By: 9-17-90

Contact: Jennifer

Sampling Location: _____

Phone #: (408) 432-8192

Sample Identification						Analysis/EPA Method No.								
Sample Collection			Number of Containers	Preserved	Containers			TPH	Gasoline	BTEX	Total Oil & Grease	Organic	Lead	Remarks
Sample ID	Time (24 hr)	Matrix												
MW1-7.5	8:15	Soil	1	✓	✓		X	X	X	X				
	:													
	:													
	:													
	:													
	:													
	:													
	:													
	:													

Notes: EPA 8015, 8020, 503E, and DHS (LUFT) Method. Please FAX results as soon as they are available.

Relinquished By	Date	Time
<u>Bruce Ben</u>	<u>8/31/90</u>	<u>11:35</u>
<u>Benny L. Carrizosa</u>	<u>8/31/90</u>	<u>12:30</u>

Received By	Date	Time
<u>Benny L. Carrizosa</u>	<u>8/31/90</u>	<u>11:35</u>
<u>Colvin Robinson</u>	<u>8/31/90</u>	<u>12:30</u>

ANAMETRIX INC

Environmental & Analytical Chemistry
1961 Concourse Drive, Suite E, San Jose, CA 95131
(408) 432-8192 • Fax (408) 432-8198

**REPORT**

BRUCE BERMAN
AQUA TERRA TECHNOLOGIES
2950 BUSKIRK AVENUE SUITE 120
WALNUT CREEK, CA 94596

Workorder # : 9008347
Date Received : 08/31/90
Project ID : 9203
Purchase Order: N/A

The following samples were received at Anamatrix, Inc. for analysis :

ANAMETRIX ID	CLIENT SAMPLE ID
9008347- 1	MW2-9.5
9008347- 2	MW2-20
9008347- 3	MW3-11
9008347- 4	MW3-19.5

This report is paginated for your convenience and ease of review. It contains 10 pages excluding the cover letter. The report is organized into sections. Each section contains all analytical results and quality assurance data related to a specific group or section within Anamatrix. The Report Summary that precedes each section will help you determine which group at Anamatrix generated the data. The Report Summary will contain the signatures of the department supervisor and a chemist, both of whom reviewed the analytical data. Please refer all questions to the department supervisor that signed the form.

If you have any further questions or comments on this report, please give us a call as soon as possible. Thank you for using Anamatrix.

Burt Sutherland
Burt Sutherland
Laboratory Director

09-12-90
Date

REPORT SUMMARY
ANAMETRIX, INC. (408)432-8192

BRUCE BERMAN
AQUA TERRA TECHNOLOGIES
2950 BUSKIRK AVENUE SUITE 120
WALNUT CREEK, CA 94596

Workorder # : 9008347
Date Received : 08/31/90
Project ID : 9203
Purchase Order: N/A
Department : GC
Sub-Department: TPH

SAMPLE INFORMATION:

ANAMETRIX SAMPLE ID	CLIENT SAMPLE ID	MATRIX	DATE SAMPLED	METHOD
9008347- 1	MW2-9.5	SOIL	08/30/90	TPHg/BTEX
9008347- 3	MW3-11	SOIL	08/30/90	TPHg/BTEX

REPORT SUMMARY
ANAMETRIX, INC. (408)432-8192

BRUCE BERMAN
AQUA TERRA TECHNOLOGIES
2950 BUSKIRK AVENUE SUITE 120
WALNUT CREEK, CA 94596

Workorder # : 9008347
Date Received : 08/31/90
Project ID : 9203
Purchase Order: N/A
Department : GC
Sub-Department: TPH

QA/QC SUMMARY :

- No QA/QC problems encountered for samples.

Cheryl Balmer 9/12/90
Department Supervisor Date

Lucie Jursian 9-12-90
Chemist Date

ANALYSIS DATA SHEET - TOTAL PETROLEUM HYDROCARBONS
(GASOLINE WITH BTEX)
ANAMETRIX, INC. - (408) 432-8192

Anamatrix W.O.#: 9008347
Matrix : SOIL
Date Sampled : 08/30/90

Project Number : 9203
Date Released : 09/12/90

Reporting Limit	Sample I.D.# MW2-9.5	Sample I.D.# MW3-11	Sample I.D.# 04B0910A
COMPOUNDS (mg/Kg)	-01	-02	BLANK
Benzene	ND	ND	ND
Toluene	ND	ND	ND
Ethylbenzene	ND	ND	ND
Total Xylenes	ND	ND	ND
TPH as Gasoline	0.5	ND	ND
% Surrogate Rec.	124%	96%	89%
Instrument #	HP4	HP4	HP4
Date Analyzed	09/10/90	09/10/90	09/10/90
RLMF	1	1	1

- ND - Not detected at or above the practical quantitation limit for the method.
 TPHg - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using EPA Method 5030.
 BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.
 RLMF - Reporting Limit Multiplication Factor.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

James Yurison 9-12-90
Analyst Date

Cheryl Baerner 9/12/90
Supervisor Date

REPORT SUMMARY
ANAMETRIX, INC. (408)432-8192

BRUCE BERMAN
AQUA TERRA TECHNOLOGIES
2950 BUSKIRK AVENUE SUITE 120
WALNUT CREEK, CA 94596


Workorder # : 9008347
Date Received : 08/31/90
Project ID : 9203
Purchase Order: N/A
Department : PREP
Sub-Department: PREP

SAMPLE INFORMATION:

ANAMETRIX SAMPLE ID	CLIENT SAMPLE ID	MATRIX	DATE SAMPLED	METHOD
9008347- 1	MW2-9.5	SOIL	08/30/90	503E
9008347- 3	MW3-11	SOIL	08/30/90	503E

ANALYSIS DATA SHEET - TOTAL OIL AND GREASE
ANAMETRIX, INC. (408) 432-8192

Project # : 9203
 Matrix : SOIL
 Date sampled : 08/30/90
 Date ext. TOG: 09/10/90
 Date anl. TOG: 09/10/90

Anamatrix I.D. : 9008347
 Analyst : AC
 Supervisor : 
 Date released : 09/12/90

Workorder #	Sample I.D.	Reporting Limit (mg/Kg)	Amount Found (mg/Kg)
9008347-01	MW2-9.5	30	ND
9008347-03	MW3-11	30	ND
GSDL091090	METHOD BLANK	30	ND


ND - Not detected at or above the practical quantitation limit for the method.

TOG - Total Oil & Grease is determined by Standard Method 503E.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

TOTAL OIL AND GREASE MATRIX SPIKE
 STANDARD METHOD 503E
 ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 9203 MW2-9.5
 Matrix : SOIL
 Date Sampled : 08/30/90
 Date extracted: 09/10/90
 Date analyzed : 09/10/90

Anametrix I.D. : 9008347-01
 Analyst : AO
 Supervisor : 
 Date Released : 09/12/90

COMPOUND	SPIKE AMT. (mg/Kg)	MS (mg/Kg)	%REC MS	MSD (mg/Kg)	%REC MSD	RPD	%REC LIMITS
Motor Oil	300	270	90%	260	87%	4%	45-115%

REPORT SUMMARY
ANAMETRIX, INC. (408)432-8192

BRUCE BERMAN
AQUA TERRA TECHNOLOGIES
2950 BUSKIRK AVENUE SUITE 120
WALNUT CREEK, CA 94596

Workorder # : 9008347
Date Received : 08/31/90
Project ID : 9203
Purchase Order: N/A
Department : METALS
Sub-Department: METALS

SAMPLE INFORMATION:

ANAMETRIX SAMPLE ID	CLIENT SAMPLE ID	MATRIX	DATE SAMPLED	METHOD
9008347- 1	MW2-9.5	SOIL	08/30/90	ORG Pb
9008347- 3	MW3-11	SOIL	08/30/90	ORG Pb

REPORT SUMMARY
ANAMETRIX, INC. (408)432-8192

BRUCE BERMAN
AQUA TERRA TECHNOLOGIES
2950 BUSKIRK AVENUE SUITE 120
WALNUT CREEK, CA 94596

Workorder # : 9008347
Date Received : 08/31/90
Project ID : 9203
Purchase Order: N/A
Department : METALS
Sub-Department: METALS

QA/QC SUMMARY :

- No QA/QC problems encountered for samples.

Marianne FGR 9/7/90
Department Supervisor Date

A. Skolover 9/7/90
Chemist Date

9005347

(2)
 10/29
 ATT
 Page 1 of 1

CHAIN OF SAMPLE CUSTODY RECORD
 (original document, please return)

Sampled By: Bruce Berman
 Signature: [Signature]
 Results To Be Sent To: Bruce Berman
 Results Needed By: 9-17-90
 Sampling Location: _____

Date Sampled: 8 / 30 / 90
 Job Number: 9203
 Laboratory Name: Anamatrix
 Contact: Jennifer
 Phone #: (408) 452-8192

Sample Identification						Analysis/EPA Method No.						
Sample Collection			Number of Containers	Preserved	Containers			TPH-Gasoline	BTEX	Total Oil & Grease	Organic Lead	Remarks
Sample ID	Time (24 hr)	Matrix										
MW2-9.5	11:00	Soil	1	ice	✓		X	X	X	X		
MW2-20	12:00	"	1	"	✓						Hold	
MW3-11	14:25	"	1	"	✓		X	X	X	X		
MW3-19.5	15:00	"	1	"	✓						Hold	
:	:	:	:	:	:							
:	:	:	:	:	:							
:	:	:	:	:	:							
:	:	:	:	:	:							
:	:	:	:	:	:							
:	:	:	:	:	:							

Notes: EPA 8015, 8020, SOBE, and DHS (LUFT) Method. Please hold indicated samples until further notice. Please FAX results as soon as they are available.

Relinquished By	Date	Time
<u>[Signature]</u>	<u>8/31/90</u>	<u>11:35</u>
<u>[Signature]</u>	<u>8/31/90</u>	<u>12:30</u>
:	:	:

Received By	Date	Time
<u>[Signature]</u>	<u>8/31/90</u>	<u>11:35</u>
<u>[Signature]</u>	<u>8-31-90</u>	<u>12:30</u>
:	:	:

ANAMETRIX INCEnvironmental & Analytical Chemistry
1964 Concourse Drive, Suite E, San Jose, CA 95131
(408) 432-8192 • Fax (408) 432-8198**REPORT**MR. BRUCE BERMAN
AQUA TERRA TECHNOLOGIES
2950 BUSKIRK AVENUE SUITE 120
WALNUT CREEK, CA 94596Workorder # : 9009053
Date Received : 09/07/90
Project ID : 9064
Purchase Order: N/A

The following samples were received at Anamatrix, Inc. for analysis :

ANAMETRIX ID	CLIENT SAMPLE ID
9009053- 1	MW1
9009053- 2	TB
9009053- 3	FB

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If you have any further questions or comments on this report, please give us a call as soon as possible. Thank you for using Anamatrix.



Burt Sutherland
Laboratory Director

91.7/90

Date

REPORT SUMMARY
ANAMETRIX, INC. (408)432-8192

MR. BRUCE BERMAN
AQUA TERRA TECHNOLOGIES
2950 BUSKIRK AVENUE SUITE 120
WALNUT CREEK, CA 94596

Workorder # : 9009053
Date Received : 09/07/90
Project ID : 9064
Purchase Order: N/A
Department : GC
Sub-Department: TPH

SAMPLE INFORMATION:

ANAMETRIX SAMPLE ID	CLIENT SAMPLE ID	MATRIX	DATE SAMPLED	METHOD
9009053- 1	MW1	H2O	09/06/90	TPHg/BTEX
9009053- 2	TB	H2O	09/06/90	TPHg/BTEX
9009053- 3	FB	H2O	09/06/90	TPHg/BTEX

REPORT SUMMARY
ANAMETRIX, INC. (408)432-8192

MR. BRUCE BERMAN
AQUA TERRA TECHNOLOGIES
2950 BUSKIRK AVENUE SUITE 120
WALNUT CREEK, CA 94596

Workorder # : 9009053
Date Received : 09/07/90
Project ID : 9064
Purchase Order: N/A
Department : GC
Sub-Department: TPH

QA/QC SUMMARY :

-Both the trip blank and field blank contained reportable amounts of
BTEX and gasoline.

Cheryl Balmer 9/17/90
Department Supervisor Date

CC Fe 9.17.90
Chemist Date

ANALYSIS DATA SHEET - TOTAL PETROLEUM HYDROCARBONS
(GASOLINE WITH BTEX)
ANAMETRIX, INC. - (408) 432-8192

Anamatrix W.O.: 9009053
Matrix : WATER
Date Sampled : 09/06/90

Project Number : 9064
Date Released : 09/14/90

COMPOUNDS	Reporting Limit (ug/L)	Sample I.D.# MW1	Sample I.D.# TB	Sample I.D.# FB	Sample I.D.# 12B0913A
Benzene	0.5	ND	0.8	0.8	ND
Toluene	0.5	ND	6.3	5.2	ND
Ethylbenzene	0.5	ND	2.5	2.0	ND
Total Xylenes	0.5	ND	17	14	ND
TPH as Gasoline	50	ND	47 J	52	ND
% Surrogate Recovery		91%	79%	105%	93%
Instrument I.D.		HP12	HP12	HP12	HP12
Date Analyzed		09/13/90	09/13/90	09/13/90	09/13/90
RLMF		1	1	1	1

Note - ID numbers were checked and samples run twice to verify results.
 ND - Not detected at or above the practical quantitation limit for the method.
 TPHg - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using EPA Method 5030.
 BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.
 RLMF - Reporting Limit Multiplication Factor.
 J - estimated values below reporting limit.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

Scott Vogt 9/14/90
Analyst Date

Chris Balmer 9/14/90
Supervisor Date

REPORT SUMMARY
ANAMETRIX, INC. (408)432-8192

MR. BRUCE BERMAN
AQUA TERRA TECHNOLOGIES
2950 BUSKIRK AVENUE SUITE 120
WALNUT CREEK, CA 94596

Workorder # : 9009053
Date Received : 09/07/90
Project ID : 9064
Purchase Order: N/A
Department : PREP
Sub-Department: PREP

SAMPLE INFORMATION:

ANAMETRIX SAMPLE ID	CLIENT SAMPLE ID	MATRIX	DATE SAMPLED	METHOD
9009053- 1	MW1	H2O	09/06/90	503E

REPORT SUMMARY
ANAMETRIX, INC. (408)432-8192

MR. BRUCE BERMAN
AQUA TERRA TECHNOLOGIES
2950 BUSKIRK AVENUE SUITE 120
WALNUT CREEK, CA 94596

Workorder # : 9009053
Date Received : 09/07/90
Project ID : 9064
Purchase Order: N/A
Department : PREP
Sub-Department: PREP

QA/QC SUMMARY :

- No QA/QC problems encountered for samples.

Bruce Berman
Department Supervisor Sept, 17th 1990.
Date

Azela Ojima Sept. 17 1990
Chemist Date

ANALYSIS DATA SHEET - TOTAL OIL AND GREASE
ANAMETRIX, INC. (408) 432-8192

Project # : 9064
 Matrix : WATER
 Date sampled : 09/06/90
 Date ext. TOG: 09/10/90
 Date anl. TOG: 09/10/90

Anamatrix I.D. : 9009053
 Analyst : AO
 Supervisor : (AP)
 Date released : 09/14/90

Workorder #	Sample I.D.	Reporting Limit (mg/L)	Amount Found (mg/L)
9009053-01	MW1	5	ND

ND - Not detected at or above the practical quantitation limit for the method.

TOG - Total Oil & Grease is determined by Standard Method 503E.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

REPORT SUMMARY
ANAMETRIX, INC. (408)432-8192

MR. BRUCE BERMAN
AQUA TERRA TECHNOLOGIES
2950 BUSKIRK AVENUE SUITE 120
WALNUT CREEK, CA 94596

Workorder # : 9009053
Date Received : 09/07/90
Project ID : 9064
Purchase Order: N/A
Department : METALS
Sub-Department: METALS

SAMPLE INFORMATION:

ANAMETRIX SAMPLE ID	CLIENT SAMPLE ID	MATRIX	DATE SAMPLED	METHOD
9009053- 1	MW1	H2O	09/06/90	ORG Pb

REPORT SUMMARY
ANAMETRIX, INC. (408)432-8192

MR. BRUCE BERMAN
AQUA TERRA TECHNOLOGIES
2950 BUSKIRK AVENUE SUITE 120
WALNUT CREEK, CA 94596

Workorder # : 9009053
Date Received : 09/07/90
Project ID : 9064
Purchase Order: N/A
Department : METALS
Sub-Department: METALS

QA/QC SUMMARY :

- No QA/QC problems encountered for samples.

Manuel Aguirre for 9/10/90
Department Supervisor Date

A. Johnson 9/14/90
Chemist Date

ANALYSIS DATA SHEET - ORGANIC LEAD
 ANAMETRIX, INC. - (408) 432-8192

Anamatrix W.O.: 9009053
 Matrix : WATER
 Date Sampled : 09/06/90
 Project Number: 9064

Date Prepared : 09/13/90
 Date Analyzed : 09/13/90
 Date Released : 09/14/90
 Instrument I.D.: AA1

ELEMENTS		Organic Lead
EPA METHOD		LUFT
REPORTING LIMIT		40.0
ANAMETRIX ID	CLIENT ID	(ug/L)
9009053-01	MW1	ND
OMB0913W	METHOD BLANK	ND

ND : Not detected at or above the practical quantitation limit for the method.

Organic Lead by Leaking Underground Fuel Tank (LUFT) Manual, 1987
 California State Water Resources Control Board.

M. M. [Signature] 9/10/90
 Chemist Date

[Signature] 9/14/90
 Chemist Date

ANAMETRIX, INC.
1961 CONCOURSE DRIVE, SUITE E
SAN JOSE, CA 95131, (408) 432-8192

ORGANIC LEAD MATRIX SPIKE REPORT

Spike I.D. : 9009053-01MS,MD
Assoc. WO # : 9009053
Date Analyzed: 09/13/90
Conc. Units : ug/L

Inst. ID: AAL
Date : 09/14/90
Matrix : WATER

ELEMENTS	METHOD	SPIKE AMOUNT	SAMPLE CONC.	M S CONC.	% REC	M S D CONC.	% REC	R P D
Pb	LUFT	510	0.0	415	81.4	384	75.3	7.8

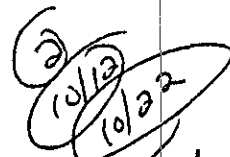
=====

COMMENT: Quality control limits for percent recovery are 75-125% and 25% for RPD.

Manny Reguerra 9/14/90
Chemist Date

A. Sobel 9/14/90
Chemist Date

9009053



ATT

CHAIN OF SAMPLE CUSTODY RECORD
 (original document, please return)

Page 1 of 1

Sampled By: Layne Williams

Date Sampled: 9, 6, 90

Signature: Layne Williams

Job Number: 9064

Results To Be Sent To: Bruce Berman

Laboratory Name: Anamatrix

Results Needed By: 9/21/90 9-14-90

Contact: Jennifer

Sampling Location: PER BRUCE 9-7-90

Phone #: _____

- ①
- ②
- ③

Sample Identification						Analysis/EPA Method No.				Remarks		
Sample Collection			Number of Containers	Preserved	Containers			TPA Gr.	BTEX		THP TOG	Organics
Sample ID	Time (24 hr)	Matrix			40's	12.5/15	12.5/15			12.5/15		
MW1	13:15	Water	7	*	3	4						OK
TB	11:00	"	3	*	3							J
FB	12:45	"	3	*	3							J
:	:											
:	:											
:	:											
:	:											
:	:											
:	:											

Notes: * with ice, 40's with Hez. Normal Turnaround

Relinquished By	Date	Time
<u>Layne Williams</u>	9/7/90	13:35
		:
		:

Received By	Date	Time
<u>No. [Signature]</u>	09/07/90	13:35
		:
		:

ANAMETRIX INC

Environmental & Analytical Chemistry
 1961 Concourse Drive, Suite E, San Jose, CA 95131
 (408) 432-8192 • Fax (408) 432-8198

**REPORT**

MR. BRUCE BERMAN
 AQUA TERRA TECHNOLOGIES
 2950 BUSKIRK AVENUE SUITE 120
 WALNUT CREEK, CA 94596

Workorder # : 9009052
 Date Received : 09/07/90
 Project ID : 9203
 Purchase Order: N/A

The following samples were received at Anamatrix, Inc. for analysis :

ANAMETRIX ID	CLIENT SAMPLE ID
9009052- 1	MW2
9009052- 2	MW3

This report is paginated for your convenience and ease of review. It contains 10 pages excluding the cover letter. The report is organized into sections. Each section contains all analytical results and quality assurance data related to a specific group or section within Anamatrix. The Report Summary that precedes each section will help you determine which group at Anamatrix generated the data. The Report Summary will contain the signatures of the department supervisor and a chemist, both of whom reviewed the analytical data. Please refer all questions to the department supervisor that signed the form.

If you have any further questions or comments on this report, please give us a call as soon as possible. Thank you for using Anamatrix.

Burt Sutherland

 Burt Sutherland
 Laboratory Director

09/07/90

 Date

REPORT SUMMARY
ANAMETRIX, INC. (408)432-8192

MR. BRUCE BERMAN
AQUA TERRA TECHNOLOGIES
2950 BUSKIRK AVENUE SUITE 120
WALNUT CREEK, CA 94596

Workorder # : 9009052
Date Received : 09/07/90
Project ID : 9203
Purchase Order: N/A
Department : GC
Sub-Department: TPH

SAMPLE INFORMATION:

ANAMETRIX SAMPLE ID	CLIENT SAMPLE ID	MATRIX	DATE SAMPLED	METHOD
9009052- 1	MW2	H2O	09/06/90	TPHg/BTEX
9009052- 2	MW3	H2O	09/06/90	TPHg/BTEX

REPORT SUMMARY
ANAMETRIX, INC. (408)432-8192

MR. BRUCE BERMAN
AQUA TERRA TECHNOLOGIES
2950 BUSKIRK AVENUE SUITE 120
WALNUT CREEK, CA 94596

Workorder # : 9009052
Date Received : 09/07/90
Project ID : 9203
Purchase Order: N/A
Department : GC
Sub-Department: TPH

QA/QC SUMMARY :

- No QA/QC problems encountered for samples.

Cheryl Belmer
Department Supervisor

9/17/90
Date

Heath Vogt
Chemist

9/17/90
Date

ANALYSIS DATA SHEET - TOTAL PETROLEUM HYDROCARBONS
(GASOLINE WITH BTEX)
ANAMETRIX, INC. - (408) 432-8192

Anamatrix W.O.: 9009052
Matrix : WATER
Date Sampled : 09/06/90

Project Number : 9203
Date Released : 09/17/90

COMPOUNDS	Reporting Limit (ug/L)	Sample I.D.# MW2	Sample I.D.# MW3	Sample I.D.# 12B0911A
Benzene	0.5	ND	26	ND
Toluene	0.5	ND	15	ND
Ethylbenzene	0.5	ND	2.0	ND
Total Xylenes	0.5	ND	14	ND
TPH as Gasoline	50	ND	140	ND
% Surrogate Recovery		103%	124%	77%
Instrument I.D.		HP12	HP12	HP12
Date Analyzed		09/11/90	09/11/90	09/11/90
RLMF		1	1	1

ND - Not detected at or above the practical quantitation limit for the method.
TPHg - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using EPA Method 5030.
BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.
RLMF - Reporting Limit Multiplication Factor.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

Garth Vogt 9/17/90
Analyst Date

Cheyl Balmer 9/17/90
Supervisor Date

REPORT SUMMARY
ANAMETRIX, INC. (408)432-8192

MR. BRUCE BERMAN
AQUA TERRA TECHNOLOGIES
2950 BUSKIRK AVENUE SUITE 120
WALNUT CREEK, CA 94596

Workorder # : 9009052
Date Received : 09/07/90
Project ID : 9203
Purchase Order: N/A
Department : PREP
Sub-Department: PREP

SAMPLE INFORMATION:

ANAMETRIX SAMPLE ID	CLIENT SAMPLE ID	MATRIX	DATE SAMPLED	METHOD
9009052- 1	MW2	H2O	09/06/90	503E
9009052- 2	MW3	H2O	09/06/90	503E

REPORT SUMMARY
ANAMETRIX, INC. (408)432-8192

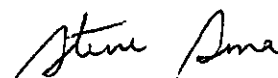
MR. BRUCE BERMAN
AQUA TERRA TECHNOLOGIES
2950 BUSKIRK AVENUE SUITE 120
WALNUT CREEK, CA 94596

Workorder # : 9009052
Date Received : 09/07/90
Project ID : 9203
Purchase Order: N/A
Department : PREP
Sub-Department: PREP

QA/QC SUMMARY :

- No QA/QC problems encountered for samples.


Department Supervisor Sept, 17th 1990 Date


Chemist 9/18/90 Date

ANALYSIS DATA SHEET - TOTAL OIL AND GREASE
ANAMETRIX, INC. (408) 432-8192

Project # : 9203
 Matrix : WATER
 Date sampled : 09/06/90
 Date ext. TOG: 09/10/90
 Date anl. TOG: 09/10/90

Anamatrix I.D. : 9009052
 Analyst : *JS*
 Supervisor : *(EP)*
 Date released : 09/17/90

Workorder #	Sample I.D.	Reporting Limit (mg/L)	Amount Found (mg/L)
9009052-01	MW2	5	ND
9009052-02	MW3	5	ND
GWBL091090	METHOD BLANK	5	ND

ND - Not detected at or above the practical quantitation limit for the method.

TOG - Total Oil & Grease is determined by Standard Method 503E.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

REPORT SUMMARY
ANAMETRIX, INC. (408)432-8192

MR. BRUCE BERMAN
AQUA TERRA TECHNOLOGIES
2950 BUSKIRK AVENUE SUITE 120
WALNUT CREEK, CA 94596

Workorder # : 9009052
Date Received : 09/07/90
Project ID : 9203
Purchase Order: N/A
Department : METALS
Sub-Department: METALS

SAMPLE INFORMATION:

ANAMETRIX SAMPLE ID	CLIENT SAMPLE ID	MATRIX	DATE SAMPLED	METHOD
9009052- 1	MW2	H2O	09/06/90	ORG Pb
9009052- 2	MW3	H2O	09/06/90	ORG Pb

REPORT SUMMARY
ANAMETRIX, INC. (408)432-8192

MR. BRUCE BERMAN
AQUA TERRA TECHNOLOGIES
2950 BUSKIRK AVENUE SUITE 120
WALNUT CREEK, CA 94596

Workorder # : 9009052
Date Received : 09/07/90
Project ID : 9203
Purchase Order: N/A
Department : METALS
Sub-Department: METALS

QA/QC SUMMARY :

- No QA/QC problems encountered for samples.

W. J. ... for 9/14/90
Department Supervisor Date

A. ... 9/14/90
Chemist Date

ANALYSIS DATA SHEET - ORGANIC LEAD
 ANAMETRIX, INC. - (408) 432-8192

Anamatrix W.O.: 9009052
 Matrix : WATER
 Date Sampled : 09/06/90
 Project Number: 9203

Date Prepared : 09/13/90
 Date Analyzed : 09/13/90
 Date Released : 09/14/90
 Instrument I.D.: AA1

ELEMENTS		Organic Lead
EPA METHOD		LUFT
REPORTING LIMIT		40.0
ANAMETRIX ID	CLIENT ID	(ug/L)
9009052-01	MW2	ND
9009052-02	MW3	ND
OMB0913W	METHOD BLANK	ND

ND : Not detected at or above the practical quantitation limit for the method.

Organic Lead by Leaking Underground Fuel Tank (LUFT) Manual, 1987
 California State Water Resources Control Board.

Manu Nguyen 9/10/90
 Chemist/ Date

A. Johnson 9/14/90
 Chemist Date

9009052

2
 10/22
 10/12
 ATT

CHAIN OF SAMPLE CUSTODY RECORD
 (original document, please return)

Page 1 of 1

Sampled By: Layne William

Date Sampled: 9, 6, 90

Signature: Layne William

Job Number: 9203

Results To Be Sent To: Bruce Berman

Laboratory Name: Anametric

Results Needed By: 9/21/90 9:45-90

Contact: Jennifer

Sampling Location: DEL BEUCE 9-7-90

Phone #: _____

Sample Identification						Analysis/EPA Method No.					Remarks	
Sample Collection			Number of Containers	Preserved	Containers			TPH/Gas	BTEX	TOG		Organic Lead
Sample ID	Time (24 hr)	Matrix			40's	12.5 gal	6 pack					
① MW2	13:45	Water	7	*	3	4						OK
② MW3	14:05	"	7	*	3	4						OK
:	:	:	:	:	:	:						
:	:	:	:	:	:	:						
:	:	:	:	:	:	:						
:	:	:	:	:	:	:						
:	:	:	:	:	:	:						
:	:	:	:	:	:	:						
:	:	:	:	:	:	:						

Notes: * with ice, 40's with HCl. Normal Turnaround.

Relinquished By	Date	Time
<u>Layne William</u>	<u>9/7/90</u>	<u>13:35</u>
		:
		:

Received By	Date	Time
<u>Nu Jh</u>	<u>09/07/90</u>	<u>13:35</u>
		:
		:

ANAMETRIX INC

Environmental & Analytical Chemistry
1961 Concourse Drive, Suite E, San Jose, CA 95131
(408) 432-8192 • Fax (408) 432-8198

**REPORT**

MR. BRUCE BERMAN
AQUA TERRA TECHNOLOGIES
2950 BUSKIRK AVENUE SUITE 120
WALNUT CREEK, CA 94596


Workorder # : 9009149
Date Received : 09/17/90
Project ID : 9064
Purchase Order: N/A

The following samples were received at Anamatrix, Inc. for analysis :

ANAMETRIX ID	CLIENT SAMPLE ID
9009149- 1	MWIR
9009149- 2	TBR
9009149- 3	FBR

This report is paginated for your convenience and ease of review. It contains 10 pages excluding the cover letter. The report is organized into sections. Each section contains all analytical results and quality assurance data related to a specific group or section within Anamatrix. The Report Summary that precedes each section will help you determine which group at Anamatrix generated the data. The Report Summary will contain the signatures of the department supervisor and a chemist, both of whom reviewed the analytical data. Please refer all questions to the department supervisor that signed the form.

If you have any further questions or comments on this report, please give us a call as soon as possible. Thank you for using Anamatrix.



Burt Sutherland
Laboratory Director

9/19/90

Date

REPORT SUMMARY
ANAMETRIX, INC. (408)432-8192

MR. BRUCE BERMAN
AQUA TERRA TECHNOLOGIES
2950 BUSKIRK AVENUE SUITE 120
WALNUT CREEK, CA 94596

Workorder # : 9009149
Date Received : 09/17/90
Project ID : 9064
Purchase Order: N/A
Department : GC
Sub-Department: TPH

SAMPLE INFORMATION:

ANAMETRIX SAMPLE ID	CLIENT SAMPLE ID	MATRIX	DATE SAMPLED	METHOD
9009149- 1	MW1R	H2O	09/17/90	TPHg/BTEX
9009149- 2	TBR	H2O	09/17/90	TPHg/BTEX
9009149- 3	FBR	H2O	09/17/90	TPHg/BTEX

REPORT SUMMARY
ANAMETRIX, INC. (408)432-8192

MR. BRUCE BERMAN
AQUA TERRA TECHNOLOGIES
2950 BUSKIRK AVENUE SUITE 120
WALNUT CREEK, CA 94596

Workorder # : 9009149
Date Received : 09/17/90
Project ID : 9064
Purchase Order: N/A
Department : GC
Sub-Department: TPH

QA/QC SUMMARY :

- No QA/QC problems encountered for samples.

Charles Berman 9/19/90
Department Supervisor Date

Garth Vogt 9/19/90
Chemist Date

ANALYSIS DATA SHEET - TOTAL PETROLEUM HYDROCARBONS
(GASOLINE WITH BTEX)
ANAMETRIX, INC. - (408) 432-8192

Anametrix W.O.: 9009149
Matrix : WATER
Date Sampled : 09/17/90

Project Number : 9064
Date Released : 09/19/90

COMPOUNDS	Reporting Limit (ug/L)	Sample I.D.# MW1R	Sample I.D.# TBR	Sample I.D.# FBR	Sample I.D.# 12B0917A
Benzene	0.5	ND	ND	ND	ND
Toluene	0.5	ND	ND	ND	ND
Ethylbenzene	0.5	ND	ND	ND	ND
Total Xylenes	0.5	ND	0.8	0.6	ND
TPH as Gasoline	50	ND	ND	ND	ND
% Surrogate Recovery		101%	87%	95%	83%
Instrument I.D.		HP12	HP12	HP12	HP12
Date Analyzed		09/17/90	09/17/90	09/17/90	09/17/90
RLMF		1	1	1	1

ND - Not detected at or above the practical quantitation limit for the method.
TPHg - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using EPA Method 5030.
BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.
RLMF - Reporting Limit Multiplication Factor.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

Carol Vogt 9/19/90
Analyst Date

Carol Balman 9/19/90
Supervisor Date

REPORT SUMMARY
ANAMETRIX, INC. (408)432-8192

MR. BRUCE BERMAN
AQUA TERRA TECHNOLOGIES
2950 BUSKIRK AVENUE SUITE 120
WALNUT CREEK, CA 94596

Workorder # : 9009149
Date Received : 09/17/90
Project ID : 9064
Purchase Order: N/A
Department : PREP
Sub-Department: PREP

SAMPLE INFORMATION:

ANAMETRIX SAMPLE ID	CLIENT SAMPLE ID	MATRIX	DATE SAMPLED	METHOD
9009149- 1	MW1R	H2O	09/17/90	503E

REPORT SUMMARY
ANAMETRIX, INC. (408)432-8192

MR. BRUCE BERMAN
AQUA TERRA TECHNOLOGIES
2950 BUSKIRK AVENUE SUITE 120
WALNUT CREEK, CA 94596

Workorder # : 9009149
Date Received : 09/17/90
Project ID : 9064
Purchase Order: N/A
Department : PREP
Sub-Department: PREP

QA/QC SUMMARY :

- No QA/QC problems encountered for samples.

2130 P. Desai

Department Supervisor

Sept, 15th 1990.

Date

P. P. Desai

Chemist

9/19/90

Date

ANALYSIS DATA SHEET - TOTAL OIL AND GREASE
ANAMETRIX, INC. (408) 432-8192

Project # : 9064
 Matrix : WATER
 Date sampled : 09/17/90
 Date ext. TOG: 09/17/90
 Date anl. TOG: 09/17/90

Anamatrix I.D. : 9009149
 Analyst : PD
 Supervisor : MP
 Date released : 09/19/90

Workorder #	Sample I.D.	Reporting Limit (ug/L)	Amount Found (ug/L)
9009149-01	MWLR	5000	ND
GWBL091790	METHOD BLANK	5000	ND

ND - Not detected at or above the practical quantitation limit for the method.

TOG - Total Oil & Grease is determined by Standard Method 503E.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

REPORT SUMMARY
ANAMETRIX, INC. (408)432-8192

MR. BRUCE BERMAN
AQUA TERRA TECHNOLOGIES
2950 BUSKIRK AVENUE SUITE 120
WALNUT CREEK, CA 94596

Workorder # : 9009149
Date Received : 09/17/90
Project ID : 9064
Purchase Order: N/A
Department : METALS
Sub-Department: METALS

SAMPLE INFORMATION:

ANAMETRIX SAMPLE ID	CLIENT SAMPLE ID	MATRIX	DATE SAMPLED	METHOD
9009149- 1	MW1R	H2O	09/17/90	ORG Pb

REPORT SUMMARY
ANAMETRIX, INC. (408)432-8192

MR. BRUCE BERMAN
AQUA TERRA TECHNOLOGIES
2950 BUSKIRK AVENUE SUITE 120
WALNUT CREEK, CA 94596

Workorder # : 9009149
Date Received : 09/17/90
Project ID : 9064
Purchase Order: N/A
Department : METALS
Sub-Department: METALS

QA/QC SUMMARY :

- No QA/QC problems encountered for samples.

Burt Sutherland 9/19/90
Department Supervisor Date

Fizza I Naghwanke 9/19/90
Chemist Date

ANALYSIS DATA SHEET - ORGANIC LEAD
 ANAMETRIX, INC. - (408) 432-8192

Anametrix W.O.: 9009149
 Matrix : WATER
 Date Sampled : 09/17/90
 Project Number: 9064

Date Prepared : 09/18/90
 Date Analyzed : 09/18/90
 Date Released : 09/18/90
 Instrument I.D.: AA1

ELEMENTS		Organic Lead
EPA METHOD		LUFT
REPORTING LIMIT		40.0
ANAMETRIX ID	CLIENT ID	(ug/L)
9009149-01	MW1R	ND
OMB0918W	METHOD BLANK	ND

ND : Not detected at or above the practical quantitation limit for the method.

Organic Lead by Leaking Underground Fuel Tank (LUFT) Manual, 1987
 California State Water Resources Control Board.

Maury G. Lopez 9/19/90
 Chemist Date

Clay G. Hancock 09-19-90
 Chemist Date

ANAMETRIX, INC.
 1961 CONCOURSE DRIVE, SUITE E
 SAN JOSE, CA 95131, (408) 432-8192

 ORGANIC LEAD MATRIX SPIKE REPORT

Spike I.D. : 9009149-01MS,MD
 Assoc. WO # : 9009149
 Date Analyzed: 09/18/90
 Conc. Units : ug/L

Inst. ID: AA1
 Date : 09/18/90
 Matrix : WATER

ELEMENTS	METHOD	SPIKE AMOUNT	SAMPLE CONC.	M S CONC.	% REC	M S D CONC.	% REC	R P D
Pb	LUFT	510	0.0	479	93.9	427	83.7	11.5

=====

COMMENT: Quality control limits for percent recovery are 75-125% and 25% for RPD.

Manuel Garcia 9/19/90
 Chemist Date

Clay Kunkel 09-19-90
 Chemist Date

9009149

2 10/12
 10/22

ATT

CHAIN OF SAMPLE CUSTODY RECORD
 (original document, please return)

Page 1 of 1

Sampled By: DAVID BEARDSLEY

Date Sampled: 9 / 17 / 90

Signature: *David Beardsley*

Job Number: 9064

Results To Be Sent To: BRUCE BERMAN

Laboratory Name: ANAMETRIX

Results Needed By: 9-18-90

Contact: DIANE

Sampling Location: _____

Phone #: _____

Sample Identification						Analysis/EPA Method No.				Remarks		
Sample Collection			Number of Containers	Preserved	Containers			TPH GAS	BTEX		TOG	CYANIDE
Sample ID	Time (24 hr)	Matrix			40 mL VOA	1 L GLASS						
MWIR	:	WATER	1	*	3	4		*	*	*	*	OK WS
TB R	10:26	-	3	*	3			*	*			↓
FB R	:	-	3	*	3			*	*			↓
:	:											
:	:											
:	:											
:	:											
:	:											
:	:											
:	:											

Notes: * PRES. CN ICE 40ML PRES. W/ HCl

Relinquished By	Date	Time
<i>David Beardsley</i>	9/17/90	13:59
		:
		:

Received By	Date	Time
<i>Diane</i>	09/17/90	13:59
		:
		:

Date: 9-6-90 Sample I.D.: MW1 Job No.: 9064

Site Location: Albany Bowl - East Bay Paint Center

No. of Containers : 7 / (check one): Well Samples;
 ___ Duplicates from well _____; ___ Travel Blanks;
 ___ Field Blanks; ___ Other (explain) / _____

W.L. (1/100'): 5.32' Time : 1226 B.O.W. (1/2'): 19.5'

Method: Electric Well Sounder; ___ Other / _____

Con./pH meter calibrated: / N Well Loc. Map: / N

Calculated Purge Volume (4 casing volumes): 9 gallons

Purging Method: Disposable Bailer; ___ Teflon Bailer;
 ___ Other / _____

Time Start Purging (24 hr): 1253, Product: Y / N
 Sheen: Y / N, Odor: Y / N, Vapor: ___ ppm / %LEL

Turbidity: N, Color: Slight brownish

Time Stop Purging (24 hr): 1305, Product: Y / N
 Sheen: Y / N, Odor: Y / N, Vapor: ___ ppm / %LEL

Turbidity: Light, Color: Brown

	Temp.	pH	Cond.	Purge Vol.	Time
First :	<u>20°C</u>	<u>6.70</u>	<u>0590</u>	<u>3</u>	<u>1257</u>
Second:	<u>20°C</u>	<u>7.02</u>	<u>0570</u>	<u>6</u>	<u>1301</u>
Final :	<u>20°C</u>	<u>7.12</u>	<u>0570</u>	<u>9</u>	<u>1305</u>

Sample Collection Time (24 hr): 1315

Notes: Very slight odor at end.

Collected By (signature): [Signature]

SAMPLE COLLECTION RECORD - MONITOR WELL

ATT

Date: 9-6-90 Sample I.D.: TB Job No.: 9064

Site Location: Albany Bowl, East Bay Paint Center

No. of Containers : 3 / (check one): Well Samples;
 Duplicates from well _____; Travel Blanks;
 Field Blanks; Other (explain) / _____

W.L. (1/100'): _____ Time : _____ B.O.W. (1/2'): _____

Method: Electric Well Sounder; Other / _____

Con./pH meter calibrated: Y / N Well Loc. Map: Y / N

Calculated Purge Volume (4 casing volumes): _____ gallons

Purging Method: Disposable Bailer; Teflon Bailer;
 Other / _____

Time Start Purging (24 hr): _____, Product: Y / N
 Sheen: Y / N, Odor: Y / N, Vapor: _____ ppm / %LEL

Turbidity: _____, Color: _____

Time Stop Purging (24 hr): _____, Product: Y / N
 Sheen: Y / N, Odor: Y / N, Vapor: _____ ppm / %LEL

Turbidity: _____, Color: _____

	<u>Temp.</u>	<u>pH</u>	<u>Cond.</u>	<u>Purge Vol.</u>	<u>Time</u>
First :	_____	_____	_____	_____	_____
Second:	_____	_____	_____	_____	_____
Final :	_____	_____	_____	_____	_____

Sample Collection Time (24 hr): 110

Notes: _____

Collected By (signature): *Raymond Williams*

SAMPLE COLLECTION RECORD - MONITOR WELL

ATT

Date: 9-6-90 Sample I.D.: FB Job No.: 9064

Site Location: Albany Bowl, East Bay Point Center

No. of Containers : 3 / (check one): Well Samples;
 Duplicates from well _____; Travel Blanks;
 Field Blanks; Other (explain) / _____

W.L. (1/100'): _____ Time : _____ B.O.W. (1/2'): _____

Method: Electric Well Sounder; Other / _____

Con./pH meter calibrated: Y / N Well Loc. Map: Y / N

Calculated Purge Volume (4 casing volumes): _____ gallons

Purging Method: Disposable Bailer; Teflon Bailer;
 Other / _____

Time Start Purging (24 hr): _____, Product: Y / N
 Sheen: Y / N , Odor: Y / N , Vapor: _____ ppm / %LEL

Turbidity: _____, Color: _____

Time Stop Purging (24 hr): _____, Product: Y / N
 Sheen: Y / N , Odor: Y / N , Vapor: _____ ppm / %LEL

Turbidity: _____, Color: _____

	<u>Temp.</u>	<u>pH</u>	<u>Cond.</u>	<u>Purge Vol.</u>	<u>Time</u>
First :	_____	_____	_____	_____	_____
Second:	_____	_____	_____	_____	_____
Final :	_____	_____	_____	_____	_____

Sample Collection Time (24 hr): 1245

Notes: _____

Collected By (signature): *Leanne Williams*

SAMPLE COLLECTION RECORD - MONITOR WELL

AT

Date: 9-6-90 Sample I.D.: MW2 Job No.: 9203

Site Location: Albany Blvd, East Bay Paint Center

No. of Containers: 7 / (check one): Well Samples;

Duplicates from well _____; Travel Blanks;

Field Blanks; Other (explain) / _____

W.L. (1/100'): 4.54' Time: 1237 B.O.W. (1/2'): 19'

Method: Electric Well Sounder; Other / _____

Con./pH meter calibrated: / N Well Loc. Map: ~~(N)~~

Calculated Purge Volume (4 casing volumes): 100 gallons

Purging Method: Disposable Bailer; Teflon Bailer;

Other / _____

Time Start Purging (24 hr): 1331, Product: Y / N
 Sheen: Y / N, Odor: Y / N, Vapor: _____ ppm / %LEL

Turbidity: Med., Color: Brown

Time Stop Purging (24 hr): 1341, Product: Y / N
 Sheen: Y / N, Odor: Y / N, Vapor: _____ ppm / %LEL

Turbidity: Med., Color: Brown

	Temp.	pH	Cond.	Purge Vol.	Time
First :	<u>22°C</u>	<u>7.05</u>	<u>0640_{µs}</u>	<u>3.5</u>	<u>1335</u>
Second:	<u>21.5°C</u>	<u>7.20</u>	<u>0630</u>	<u>7</u>	<u>1338</u>
Final :	<u>22°</u>	<u>7.24</u>	<u>0630</u>	<u>10</u>	<u>1341</u>

Sample Collection Time (24 hr): 1345

Notes: _____

Collected By (signature): [Signature]

SAMPLE COLLECTION RECORD - MONITOR WELL

AT

MW3

Date: 9-6-90 Sample I.D.: ~~403~~ Job No.: 9203

Site Location: Albany Bowl, East Bay Paint Center

No. of Containers : 7 / (check one): Well Samples;
 Duplicates from well _____; Travel Blanks;
 Field Blanks; Other (explain)/ _____

W.L. (1/100'): 5.20' Time : 1247 B.O.W. (1/2'): 19'

Method: Electric Well Sounder; Other/ _____

Con./pH meter calibrated: / N Well Loc. Map: / N

Calculated Purge Volume (4 casing volumes): 9 gallons

Purging Method: Disposable Bailer; Teflon Bailer;
 Other/ _____

Time Start Purging (24 hr): 1352, Product: Y / N
 Sheen: Y / N Odor: Y / N, Vapor: _____ ppm / %LEL

Turbidity: Hazy, Color: light brown

Time Stop Purging (24 hr): 14:02, Product: Y / N
 Sheen: Y / N, Odor: Y / N, Vapor: AL ppm / %LEL

Turbidity: MEDIUM, color: BROWN

	Temp.	pH	Cond.	Purge Vol.	Time
First :	21°C 21°C	7.05	0590 _{us}	3	13:55
Second:	21°C	7.14	0590	6	13:59
Final :	20°C	7.07	0590	9	14:02

Sample Collection Time (24 hr): 1405

Notes: _____

Collected By (signature): [Signature]

RECORD OF GROUNDWATER LEVEL MEASUREMENTS

Page 1 of 1

Date Measured: 9 - 6 - 90 ATT Job No.: 9203/9064

Site Location: ALBANY BOWL PROPERTIES

Well location map attached? Yes No

Method of Measurement: Electric well sounder,

Other: _____

Weather/Visibility: SUNNY CLR

Notes: _____

Well I.D.	Time (24 hr)	G.W.L. (1/100 ft)	G.W.L. 3x's?	B.O.W. (1/2ft)	Remarks
MW1	12:26	5.32'	X	19.5'	
MW2	12:37	4.54	X	19.0'	
MW3	12:47	5.20'	X	19.0	
MW1	13:10	5.76	X		
MW2	13:02	5.18 4.91	X		SMELL OVER
MW3	12:51	5.18	X		SMELL OVER
MW4	13:08	5.64'	X		PRODUCT SMELL OVER
		5.76			

Prior to 9/6/90

By clean up

Measured by (Signature): *[Signature]*

Date: 9-17-90 Sample I.D.: MW1 R Job No.: 9064

Site Location: ALBANY BOWL PROP.

No. of Containers : 7 / (check one): Well Samples;

Duplicates from well _____; Travel Blanks;

Field Blanks; Other (explain)/ _____

W.L. (1/100'): 5.26' Time : 11:24 B.O.W. (1/2'): 19.0'

Method: Electric Well Sounder; Other/ _____

Con./pH meter calibrated: / N Well Loc. Map: / N

Calculated Purge Volume (4 casing volumes): 18 gallons

Purging Method: Disposable Bailer; Teflon Bailer;

Other/ _____

Time Start Purging (24 hr): 11:47, Product: Y / N

Sheen: Y / N, Odor: Y / N, Vapor: ppm / %LEL

Turbidity: LIGHT, Color: Brown

Time Stop Purging (24 hr): 12:21, Product: Y / N

Sheen: Y / N, Odor: Y / N, Vapor: _____ ppm / %LEL

Turbidity: MED - HEAVY, Color: Brown

	Temp.	pH	Cond.	Purge Vol.	Time
First :	<u>21°C</u>	<u>6.90</u>	<u>0630</u>	<u>7</u>	<u>11:57</u>
Second:	<u>20°C</u>	<u>7.17</u>	<u>0620</u>	<u>14</u>	<u>12:13</u>
Final :	<u>19°C</u>	<u>7.14</u>	<u>0620</u>	<u>18</u>	<u>12:21</u>

Sample Collection Time (24 hr): 12:37

Notes: _____

Collected By (signature): *Jim Peckham*

Date: 9-17-90 Sample I.D.: FBR Job No.: 9064
 Site Location: ALBANY BOWLING RECP.
 No. of Containers : 3 / (check one): Well Samples;
Duplicates from well _____; Travel Blanks;
 Field Blanks; Other (explain) / _____

W.L. (1/100'): _____ Time : 11:32 B.O.W. (1/2'): _____
 Method: Electric Well Sounder; Other / _____
 Con./pH meter calibrated: Y / N Well Loc. Map: Y / N
 Calculated Purge Volume (4 casing volumes): _____ gallons
 Purging Method: Disposable Bailer; Teflon Bailer;
Other / _____

Time Start Purging (24 hr): _____, Product: Y / N
 Sheen: Y / N , Odor: Y / N , Vapor: _____ ppm / %LEL
 Turbidity: _____, Color: _____

Time Stop Purging (24 hr): _____, Product: Y / N
 Sheen: Y / N , Odor: Y / N , Vapor: _____ ppm / %LEL
 Turbidity: _____, Color: _____

	<u>Temp.</u>	<u>pH</u>	<u>Cond.</u>	<u>Purge Vol.</u>	<u>Time</u>
First :	_____	_____	_____	_____	_____
Second:	_____	_____	_____	_____	_____
Final :	_____	_____	_____	_____	_____

Sample Collection Time (24 hr): 11:32

Notes: _____

Collected By (signature): *J.M. [Signature]*

SAMPLE COLLECTION RECORD - MONITOR WELL

ATT

Date: 9-17-90 Sample I.D.: TBR Job No.: 9064

Site Location: ALBANY BOUL PREP

No. of Containers : 3 / (check one): Well Samples;
 Duplicates from well _____; Travel Blanks;
 Field Blanks; Other (explain)/ _____

W.L. (1/100'): _____ Time : _____ B.O.W. (1/2'): _____

Method: Electric Well Sounder; Other/ _____

Con./pH meter calibrated: Y / N Well Loc. Map: Y / N

Calculated Purge Volume (4 casing volumes): _____ gallons

Purging Method: Disposable Bailer; Teflon Bailer;
 Other/ _____

Time Start Purging (24 hr): _____, Product: Y / N
 Sheen: Y / N , Odor: Y / N , Vapor: _____ ppm / %LEL

Turbidity: _____, Color: _____

Time Stop Purging (24 hr): _____, Product: Y / N
 Sheen: Y / N , Odor: Y / N , Vapor: _____ ppm / %LEL

Turbidity: _____, Color: _____

	Temp.	pH	Cond.	Purge Vol.	Time
First :	_____	_____	_____	_____	_____
Second:	_____	_____	_____	_____	_____
Final :	_____	_____	_____	_____	_____

Sample Collection Time (24 hr): 10:26

Notes: _____

Collected By (signature): *J. Beatty*

RECORD OF GROUNDWATER LEVEL MEASUREMENTS

Page 1 of 1

Date Measured: 9 - 17 - 90 ATT Job No.: 9064

Site Location: ALBANY FOUNDRY RECP.

Well location map attached? Yes No

Method of Measurement: Electric well sounder,
Other: _____

Weather/Visibility: SEMI CLEAR

Notes: _____

Well I.D.	Time (24 hr)	G.W.L. (1/100 ft)	G.W.L. 3x's?	B.O.W. (1/2ft)	Remarks
MW1	11:24	5.26'	✓	19.0'	

Measured by (Signature): *JM Peaslee*

ATTACHMENT I

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ATTACHMENT I**References Cited**

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