

ENVIRONMENTAL  
PROTECTION

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Letter of Transmittal

7950 Dublin Boulevard / Suite 203 / Dublin, California 94568  
510-551-7774 / (Facsimile 510-551-7776)

Date: 9/3/96

To: Mr. Dale Klettke  
~~ALAMEDA~~ ~~Contra Costa County~~  
Alameda CA 94502

Job No: 20596-001-01  
Subject: Report

We are sending you:  Attached  Under Separate Cover

via:  Mail  Overnight  Courier

Facsimile (\_\_\_ total pages including this sheet)

No. Date Description

1 8/30/96 Report of Phase II Site Characterization for Hooshi's Auto Service

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Please contact me if you have any questions or need additional information.

Copies to: Naomi English, Patrick Wheeler, UST Clean Up Fund

CENTURY WEST ENGINEERING

By Matt [Signature]

If enclosures are not as noted, kindly notify us at once.

**REPORT OF PHASE II SITE  
CHARACTERIZATION  
Hooshi's Auto Service  
1499 MacArthur Boulevard  
Oakland, California**

STD  
~~3597~~

*Aug 30, 96*

CWEC 20596-001-01

Prepared for:

Ms. Naomi English  
1545 Scenic View Drive  
San Leandro, California 94577

Prepared by:

Century West Engineering Corporation  
7950 Dublin Boulevard, Suite 203  
Dublin, California 94568

August 30, 1996



**centurywest**  
ENGINEERING CORPORATION

August 30, 1996

Ms. Naomi English  
1545 Scenic View Drive  
San Leandro, California 94577

**SUBJECT: Report of Phase II Site Characterization, 1499 MacArthur Boulevard,  
Oakland, California**

Dear Ms. English:

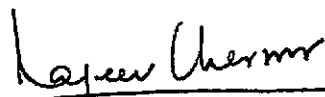
The enclosed report addresses the recent work performed by Century West Engineering Corporation regarding the subject site. On the basis of data collected, we have prepared a Corrective Action Plan (section 6.0) for mitigation of environmental concerns associated with the former leaking underground storage tanks at the property.

In the Corrective Action Plan, we have included plans and specifications for application of vapor extraction remediation, monitoring, and reporting. It is our opinion that application of this technology will result in effective mitigation of environmental concerns associated with hydrocarbons in soil and groundwater at the site.


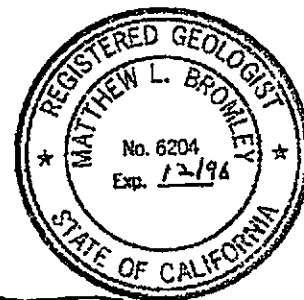
We appreciate the opportunity to be of service to you. If you have any questions, please call us at (510) 551-7774.

Sincerely,

Century West Engineering Corporation



Rajeev Chervoo  
Project Engineer



Matthew L. Bromley, R.G.  
Senior Geologist/Division Manager

cc: Mr. Dale Klettke, Contra Costa County  
Mr. Patrick Wheeler, State Water Resources Control Board, UST Cleanup Fund



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## 1.0 INTRODUCTION

Century West Engineering Corporation (CWEC) has prepared this report on behalf of Ms. Naomi English of San Leandro, California. This report presents the scope of work and results of soil and groundwater assessment performed by CWEC at 1499 MacArthur Boulevard, Oakland, California (subject site) during June and July of 1996.

The purpose of the Phase II Site Characterization is to collect the data necessary to prepare a feasible Corrective Action Plan. The Corrective Action Plan is presented in Section 6.0 of this report.

The generalized scope of work performed by CWEC for this project consisted of the following:

- Characterize the extent and magnitude of hydrocarbon impacts to soil and groundwater at the site;
- Evaluate the feasibility of groundwater pumping and treatment as a potential corrective action alternative;
- Evaluate the feasibility of soil vapor extraction as a potential corrective action alternative;
- Prepare a Corrective Action Plan to mitigate environmental impacts pursuant to regulatory site closure;

A detailed description of the scope of field work is presented in section 2.0. The scope of laboratory analytical work is presented in section 3.0.

### 1.1 Project Background

The site is located at 1499 MacArthur Boulevard in Oakland, California as shown on Figure 1. The site is the location of a former gasoline dispensing facility, and is currently being operated as an

automobile service center. Existing structures on the site include an auto repair service building and a canopy as shown on Figure 2.

Three underground storage tanks (USTs) were removed from the site by others in October 1990, after which subsurface soil sampling was performed. Additionally, a subsurface assessment was conducted by others in 1993, during which three groundwater monitoring wells (MW-1, MW-2, and MW-3) were installed at the site. Results of these assessments indicate that soil and groundwater beneath the site are impacted by petroleum hydrocarbon compounds that may have leaked from the former UST's.

During middle 1995, Alameda County Health Agency (ACHA) indicated that additional soil and groundwater assessment should be performed to evaluate possible remedial options. On June 3, 1996, CWEC presented a *Work Plan for Phase II Site Characterization Program...* for the project. This Work Plan was approved by ACHA in June 1996, following which CWEC performed the work described in this report.

## **2.0 SCOPE OF FIELD WORK**

### **2.1 Mobilization**

Following Pre-field activities were performed:

- A permit for the installation of three groundwater monitoring wells was obtained from Alameda County Zone 7 Water Agency and is included as Appendix A.
- Underground Services Alert was requested to perform utility location and identification in the immediate vicinity of site.
- An private underground utility survey was conducted.
- A Site Safety Plan was prepared.

### **2.2 Geoprobe Soil Borings**

On June 24, 1996, a CWEC geologist observed Kvilhaug Well Drilling and Pump Company Inc. (KWDC) of Concord, California install twelve Geoprobe borings (G-1A through G-9). Field work was performed in accordance with the approved Work Plan, and applicable guidelines and regulations. Soil boring locations are shown in Figure 2. Logs of boring are included in Appendix B.

Soil borings were drilled using hydraulically-driven Geoprobe drilling equipment to the depths ranging from approximately 7-feet below ground surface (bgs) to approximately 20-feet bgs. Geoprobe equipment allowed for the retrieval of continuous subsurface soil samples. Continuous samples were collected in four-foot intervals starting from the surface. Each sample was collected

in a clear plastic acetate tube, placed inside a stainless steel core sampler. After the samples were raised to the surface, the acetate tube filled with soil was exposed for visual examination, and soil types were logged according to the Unified Soil Classification System. Samples were collected by cutting approximately six-inch sections from the acetate plastic tubing, and sealing each end of the cut section with aluminum foil and plastic caps. Soil samples were labeled and taken to the on-site mobile analytical laboratory and logged on a chain of custody form. Selected soil samples were chosen for chemical analyses, and remaining soil samples were placed on hold with the mobile laboratory for possible future analytical requirements.

Additionally, two grab groundwater samples were collected from Geoprobe borings G-4 and G-7. Groundwater samples were collected using disposable PVC bailers and 40-ml vials. Vials were sealed with teflon lined lids. Sealed vials were labeled and taken to the on-site mobile analytical laboratory, logged on chain of custody, and selected samples were identified for chemical analysis. Geoprobe boring logs are included as Appendix B.

### **2.3 Groundwater Monitoring Well Installation**

On June 27, 1996, a CWEC geologist observed KWDC install three groundwater monitoring wells (MW-4, MW-5, and MW-6) at the site. Well installation was performed in accordance with the approved Work Plan, and applicable guidelines and regulations. Monitoring well construction specifications are described in section 2.3.2. Well locations are shown on Figure 2.



### 2.3.1 Drilling and Sampling of Well Borings

Soil borings for each monitoring well were drilled using hollowstem auger equipment. Each boring was drilled to a depth of approximately 20-feet bgs. Soil samples were collected at 5-foot intervals starting from a depth of 5-feet bgs. Soil samples were collected by driving a two-inch inside diameter California-style split spoon sampler lined with brass sleeves into undisturbed soil ahead of the drill bit. Once the sample was raised to the surface the sampler was opened and the brass sleeves were exposed. Brass sleeves containing the most undisturbed soils was sealed at each end with aluminum foil and plastic caps. Soils from remaining brass tubes were used for field logging. Soils were logged according to the Unified Soil Classification System. Soil samples were then labeled and placed in a cooler with crushed ice for transport to the analytical laboratory under chain-of-custody. Logs of well borings are included in Appendix B.

Sampling equipment was cleaned and decontaminated between each sample collection by triple rinsing with water, then with dilute tri-sodium phosphate solution, and finally with distilled water. Steam cleaned downhole drilling equipment, including auger and drill bit were used for drilling of each soil boring. Soil cuttings from each soil boring and steam cleaning rinsate were stored in 55-gallon capacity drums on-site pending analytical results and appropriate disposal.

### 2.3.2 Monitoring Well Construction

Each monitoring well was constructed using two-inch diameter Schedule 40 PVC casing according to the following specifications. Approximately 15-feet of 0.020-inch slotted casing was placed at the bottom of each soil boring, and blank casing was used to complete each monitoring well to grade. Sand was placed around the casing up to a depth of approximately 3.5-feet bgs in each well, and a one-foot thick bentonite seal was placed above the sand in each well. The remaining annulus was grouted with cement to approximate grade. The top of each well was enclosed in a traffic-rated locking box set in concrete slightly above existing grade. Well completion logs for the three monitoring wells are included in Appendix B.

### 2.4 Monitoring Well Purging and Sampling

On July 3, 1996, depth to groundwater was measured in monitoring wells MW-1, MW-2, MW-3, MW-4, and MW-5. Groundwater was not encountered in MW-6. Approximately three well casing volumes of groundwater were purged from monitoring wells MW-1 through MW-5. During purging, groundwater was periodically monitored for presence of floating product, pH, specific conductance, temperature, and visible clarity. Following purging, groundwater samples were collected from MW-1, MW-2, and MW-4. Groundwater samples were not collected from MW-3 and MW-5 due to the presence of floating product. Depth to groundwater was measured, and a groundwater sample was collected from MW-6 on July 11, 1996 during subsequent project activities at the subject site.

Groundwater samples were collected in appropriate containers using disposable PVC bailers. Each container was labeled and placed in a cooler with crushed ice and transported to the analytical laboratory under chain-of-custody. Purge water generated during the purging and sampling activities was stored on site in 55-gallon capacity drums pending analytical results and appropriate disposal.

### 2.5 Soil Vapor Extraction Pilot Test

July 3, 1996, a letter was forwarded to Bay Area Air Quality Management District, providing details regarding the soil vapor extraction pilot test. On July 10, and 11, 1996, CWEC observed EnviroSupply and Service of Pleasanton, California perform a soil vapor extraction pilot test at three monitoring wells (MW-1, MW-2 and MW-5) at the site. A 200-cubic feet per minute (cfm) capacity internal combustion engine was used to perform the pilot test. The pilot test included applying vacuum at each of the three monitoring wells to extract subsurface vapors for approximately three hours.

During vapor extraction testing at each monitoring well, vacuum applied, flow rate of extracted gas and vapors, percent oxygen in extracted gas, volatile organic compound concentrations and lower explosive limit were monitored and recorded. Two air samples, one in the beginning and one at the end of each three-hour pilot test, were collected in Tedlar bags for chemical analyses. Radius of influence created by extracting subsurface vapors at each monitoring well was estimated

by measuring vacuum at surrounding monitoring wells. This was accomplished by equipping each surrounding monitoring well with magnahelic gauges, and vacuum readings were measured at these wells at approximate ten-minute intervals.

## 2.6 Hydraulic Testing

On July 15, 1996, a CWEC geologist performed slug tests at two monitoring wells (MW-1 and MW-3). This test was performed by instantaneously dewatering each monitoring well (to the extent practical) with a centrifugal pump. After each monitoring well was dewatered, the rate of groundwater recharge in each monitoring well was measured and recorded at one-minute intervals for approximately 15- minutes, using a water level measurement probe.

### 3.0 LABORATORY ANALYSIS OF SOIL AND GROUNDWATER SAMPLES

On June 24, 1996, thirteen soil samples and two ground water samples were collected for chemical analysis during Geoprobe drilling. Samples were analyzed on-site by Mobile Chem Inc. of Martinez, California. Each soil and groundwater sample was analyzed for total petroleum hydrocarbons quantified as gasoline (TPH-G) by E.P.A. Method 8015 Modified, and for benzene, toluene, ethylbenzene and xylenes (BTEX) by E.P.A. Method 8020. Laboratory analytical reports are included in Appendix C.

On June 26, 1996, three soil samples were collected during the installation of monitoring wells. Samples were analyzed by National Environmental Testing (NET) of Santa Rosa, California. Each soil sample was analyzed for TPH-G and BTEX.

On July 3, 1996, four groundwater samples were collected from the monitoring wells. Each sample was analyzed by NET for TPH-G, BTEX and methyl tert butyl ether (MTBE).

On July 10 and 11, 1996, during the soil vapor extraction pilot test, six subsurface soil vapor samples were collected in Tedlar bags from the monitoring wells. Samples were analyzed by Columbia Analytical Services of San Jose, California for TPH-G and BTEX.

## 4.0 RESULTS

### 4.1 Soil Types and Stratigraphy

Logs of borings are included in Appendix B. Based on the results of this subsurface assessment, soils beneath the subject site can be divided into three general units. The first unit encountered was fill material, consisting of poorly graded sands, gravels, and clays. This unit occupies the upper 4 to 6 feet of the subsurface. The second unit encountered was clay ranging from 4 to 5 feet in thickness on the west side of the property to 8 feet on the east side of the property. The clay was found to be underlain by clayey sand, extending to a depth greater than or equal to the total depth of the borings.

### 4.2 Physical Groundwater Conditions

On July 3, 1996, depth to water was measured in monitoring wells MW-1, MW-2, MW-3, MW-4 and MW-5, and on July 11, 1996 depth to water was measured in MW-6. Groundwater was measured in these monitoring wells at depths of 14.11-feet, 12.61-feet, 13.20-feet, 17.03-feet, 13.62-feet and 18.53-feet bgs respectively. Based on these depth to groundwater measurements and surveyed well elevations, water table elevation contours for the site were prepared, and are shown on Figure 3. The water table elevation gradient beneath the site appears to be in a south southeasterly direction at a gradient of approximately 0.31 feet/foot in the southern portion of the property. Groundwater appears to be mounding in the location of former USTs.

The field slug test measurements were used to calculate estimates of saturated hydraulic conductivity (K) of aquifer materials at locations MW-1 and MW-3 by the Bouwer and Rice method. Results indicated a K value of  $1.5 \times 10^{-5}$  cm/sec at MW-1 and a K value  $2.6 \times 10^{-5}$  cm/sec at MW-3.

#### 4.3 Soil and Groundwater Hydrocarbon Concentrations

The chemical analytical results of soil samples collected on June 24 and June 25, 1996, are included in Table 1. Analytical results indicate that low to non-detectable concentrations of TPH-G and BTEX were reported in most of the soil samples, with the exception of soil samples collected from geoprobe boring G-9 which indicated the presence of relatively high concentrations of TPH-G and BTEX.

Chemical analytical results of groundwater samples collected on June 24, June 27 and July 10, 1996 are shown on Table 2. Moderate to high concentrations of TPH-G and BTEX and MTBE were detected in MW-1, MW-3 and MW-4. Free phase hydrocarbons were observed in wells MW-2 and MW-5 as indicated on Table 2. In grab groundwater samples collected from Geoprobe borings G-4 and G-7, only low concentrations of toluene and total xylenes were reported. No target analytes were detected in well MW-6.

#### 4.4 Soil Vapor Extraction Pilot Test Results

Field and laboratory results of the soil vapor extraction pilot test performed on wells MW-5, MW-1 and MW-2 are summarized in Table 3. Laboratory reports are included in Appendix C.

The results of the pilot test performed at MW-5 indicated that upon applying a vacuum of approximately 150 inches of water, a vapor extraction rate of approximately 20 cubic feet per minute (cfm) was achieved. Significant vacuum influence was measured in surrounding monitoring wells MW-1, MW-2 and MW-3. Vacuum influence was not observed at MW-4 and MW-6 (as shown in Table 3). High concentrations of volatile organic compounds were measured in vapors extracted from MW-5 in the field. Laboratory results of vapor samples collected at the beginning and at the end of the pilot test at MW-5 indicated the presence of high concentrations of TPH-G and BTEX (as shown in Table 3).

The results of the pilot test performed at MW-1 indicated that upon applying a vacuum of approximately 110 inches of water, a vapor extraction rate of approximately 11 cfm was achieved. Significant vacuum influence was measured in surrounding monitoring wells MW-2, MW-3 and MW-5. Vacuum influence was not observed at MW-4 and MW-6 (as shown in Table 3). High concentrations of volatile organic compounds were measured in vapors extracted from MW-1 in the field. Laboratory results of vapor samples collected at the beginning and at the end of the



pilot test at MW-1 indicated the presence of high concentrations of TPH-G and BTEX (as shown in Table 3).

The results of the pilot test performed at MW-2 indicated that upon applying a vacuum of approximately 125 inches of water, a vapor extraction rate of approximately 2.7 cfm was achieved. Vacuum influence was detected in wells MW-1, MW-3 and MW-5. No vacuum influence was observed at MW-4 and MW-6 (as shown in Table 3). High concentrations of volatile organic compounds were measured in vapors extracted from MW-2 in the field. Laboratory results of vapor samples collected at the beginning and at the end of the pilot test at MW-2 indicated the presence of high concentrations of TPH-G and BTEX.

## 5.0 SUMMARY AND CONCLUSIONS

The following data summary and conclusions are derived from the analysis of the data:

### *Soil Stratigraphy*

- Based on the results of this subsurface assessment, soils beneath the subject site can be divided into three general units. The first unit encountered was fill material, consisting of poorly graded sands, gravels, and clays. This unit occupies the upper 4 to 6 feet of the subsurface. The second unit encountered was clay ranging from 4 to 5 feet in thickness on the west side of the property to 8 feet on the east side of the property. The clay was found to be underlain by clayey sand, extending to a depth greater than or equal to the total depth of the borings.

### *Physical Groundwater Conditions*

- The water table elevation gradient beneath the site appears to be in a south southeasterly direction at a gradient of approximately 0.31 feet/foot in the southern portion of the property. Groundwater appears to be mounding in the location of former USTs. On the basis of the low permeability of soils at the site, and other well known problems with pump and treat remediation technology, it is our opinion that pumping and treatment of groundwater would not be a technically or economically feasible remedial alternative.

### *Distribution of Hydrocarbons in Soils*

- No hydrocarbons were detected in most of the soil samples which were collected and analyzed. High concentrations of hydrocarbons were reported in samples collected from boring G-9 (in the immediate vicinity of the UST excavation). Low to moderate concentrations of hydrocarbons were reported in samples from borings G-2, G-3, and MW-5 (at fifteen feet bgs). This evidence indicates that high concentrations of hydrocarbons in soils are probably limited to the UST excavation vicinity.

### *Distribution of Hydrocarbons in Groundwater*

- Moderate to high concentrations of TPH-G and BTEX and MTBE were detected in MW-1, MW-3, and MW-4. Free phase hydrocarbons were observed in monitoring wells MW-2 and MW-5. In grab groundwater samples collected from Geoprobe borings G-4 and G-7, only low concentrations of toluene and total xylenes were reported. Hydrocarbons were not detected in well MW-6. **This evidence indicates that high concentrations of hydrocarbons and free phase hydrocarbons on the water table are probably limited to the immediate vicinity of the UST excavation.**

### *Vapor Extraction Pilot Test Results*

- The results of pilot test performed at MW-5 and MW-1 indicated that upon applying a vacuum of approximately 150 inches of water and 110 inches of water respectively, vapor extraction rates of approximately 20 cfm and 11 cfm were achieved. Significant vacuum influence was measured in surrounding monitoring wells, and high concentrations of volatile organic compounds were detected in extracted vapors in the field and samples analyzed in the laboratory. The results of pilot test performed at MW-2 indicated that upon applying a vacuum of approximately 125 inches of water, low vapor extraction rate and vacuum influence were achieved. However, high concentrations of volatile organic compounds were detected in extracted vapors in the field and samples analyzed in the laboratory. **These results indicate that vapor extraction will probably be effective in removing hydrocarbons from the highly impacted vicinity of the UST excavation.**



## 6.0 CORRECTIVE ACTION PLAN

The results of Century West Engineering Corporation's investigation of the subject site support the application of vapor extraction remediation. Due to the limited extent of high concentrations of hydrocarbons in soil and groundwater, it is difficult to accurately estimate the mass of hydrocarbons in soils and groundwater. On the basis of what we consider to be reasonable assumptions, we estimate that roughly 300 to 1,500 pounds of hydrocarbons may present in the immediate vicinity of the UST excavation. *be*

We estimate that initial vapor extraction rates of between five and fifteen pounds of hydrocarbons per day may be achievable. As remediation progresses, hydrocarbon removal rates will decrease until remediation is complete. Based on the information available to us at this time, we estimate that the application of vapor extraction remediation may result in substantial site clean-up in a period of four to six months.

### 6.1 Remediation System Design Specifications

The remediation system design specifications are summarized in Table 4. The location of remediation system, joint trenches, and piping manifold are shown on Figure 4. Appropriate environmental permits will be obtained prior to installation of the remediation system. The remediation system will be installed by state licenced contractor in accordance with appropriate regulations and guidelines.

Monitoring wells MW-1, MW-2 and MW-5 will be used for vapor extraction, and each vapor extraction well will be connected to the remediation system via a horizontal vapor extraction conduit. Remediation of extracted vapors will be performed by a 150 cfm capacity all electric catalytic oxidizer. The remediation system will be equipped with necessary safety interlocks and emergency shutoff devices. The remediation system will be placed at the southwest corner of the Auto Repair Building as shown on Figure 4, and a temporary chain link fence will be installed on the north, west and south sides of the remediation system. A manifold will be constructed inside the remediation compound to connect underground vapor extraction conduit to the remediation system, and to install necessary valves, gauges, and sampling ports. A temporary electric connection will be installed at the site for the operation of the remediation system.

## 6.2 Operation and Maintenance

The vapor extraction system will be operated until such a time that significant quantities of vapors cease to be extracted from the subsurface. At this time we assume that the system will operate for a six month period. The system will be operated and maintained in such a manner to extract the maximum amount of hydrocarbons, and to collect the data necessary to quantify the removal mass. The necessary data will be collected to evaluate the effectiveness of each well in contributing to hydrocarbon removal. The system will be shut down and removed from the site when the remediation is complete, regardless of the amount of time the system is in operation.

### 6.3 Testing and Documentation

During operation of the remediation system, the following parameters shall be monitored on at least a weekly basis:

- Cumulative hours of system operation;
- Rate of gas extracted in cubic feet per minute;
- System Vacuum.

Tedlar bag gas samples will be collected by appropriate protocol to evaluate vapor concentrations in extracted gas on a weekly basis for the first three weeks of operation, and at least monthly thereafter. Samples will be analyzed for TPH-G and BTEX.

Groundwater will be sampled from each well, unless free phase hydrocarbons are observed. Site monitoring will be performed on a quarterly basis for the duration of the remediation (assumed to be six months-three sampling and analytical events). Groundwater samples will be analyzed for TPH-G, BTEX, and MTBE.

### 6.4 Reporting

At the conclusion of the remediation, or after six months, whichever comes first, a remediation report will be prepared and submitted to Alameda County. The report will include all of the data collected during the remediation. The scope of work will be described in detail. Daily hydrocarbon removal rates will be calculated and presented in tabular form. The total mass of hydrocarbons removed will be calculated and presented. Groundwater analytical results will be

presented and discussed. The report will include groundwater elevation contour drawings. The report will present conclusions and recommendation for continuation or cessation of vapor extraction. If appropriate, the report will present recommendations for site closure.

## 7.0 LIMITATIONS

Conclusions and recommendations presented in this report are based on a limited quantity of site data from specific locations. Conditions at locations other than those tested may vary. Conditions at tested locations may change over time. The accuracy of estimates based on extrapolation of data is limited. Conclusions and recommendations are based on reasonable assumptions on the basis of available site data. Actual conditions may vary. Conclusions reached in this report are made according to the generally accepted standard of environmental practice in California. There is no other warranty, expressed or implied.





**Table 1**  
**Summary of Soil Sampling Analytical Results**  
**Hooshi's Auto Service**  
**1499 MacArthur Boulevard**  
**Oakland, California**  
**August 1996**

*ppm.*

Soil Sample ID	Sampling Date	Sample Depth (feet-bgs)	Chemical Concentrations (mg/kg)				
			TPH-G	Benzene	Toulene	Ethyle-benzene	Total Xylenes
Analytical Laboratory Method Detection Limit			1	0.005	0.005	0.005	0.005
G-2-10	6/24/96	10'	ND	ND	ND	ND	ND
G-2-15	6/24/96	15'	ND	0.006	0.009	ND	0.025
G-3B-10	6/24/96	10'	ND	ND	ND	ND	ND
G-3B-14.5	6/24/96	14.5'	1.5	0.14	0.012	0.052	0.18
G-4-10	6/24/96	10'	ND	ND	ND	ND	ND
G-5-7	6/24/96	7'	ND	ND	ND	ND	ND
G-5-12	6/24/96	12'	ND	ND	ND	ND	ND
G-6-10	6/24/96	10'	ND	ND	ND	ND	ND
G-7B-5	6/24/96	5'	ND	ND	ND	ND	ND
G-7B-10	6/24/96	10'	ND	ND	ND	ND	ND
G-8-10	6/24/96	10'	ND	ND	ND	ND	ND
G-9-11.5	6/24/96	11.5'	98	0.079	0.064	1.3	4.2
G-9-12.5	6/24/96	12.5'	860	3.1	11	14	97
Analytical Laboratory Method Detection Limit			1	0.0025	0.0025	0.0025	0.0025
MW-4-10	6/26/96	10'	ND	ND	ND	ND	ND
MW-5-10	6/26/96	10'	ND	ND	ND	ND	ND
MW-5-15	6/26/96	15'	ND	0.049	0.094	0.022	0.13
MW-6-10	6/26/96	10'	ND	ND	ND	ND	ND

**NOTES**

feet bgs                    feet below ground surface  
 TPH-G                    total petroleum hydrocarbons quantified as Gasoline  
 mg/kg                    milligrams per kilogram  
 ND                        not detected above laboratory method detection limit  
 NA                        not analyzed or not available

**Table 2**  
**Summary of Groundwater Sampling Analytical Results**  
**Hooshi's Auto Service**  
**1499 MacArthur Boulevard**  
**Oakland, California**  
**August 1996**

(ppm)

G.W. Sample ID	Date of Sample	Depth to Groundwater (feet-bgs)	Ground- water Elev. (feet datum)	Free Product	Chemical Concentrations (mg/l)					
					TPH-G	Benzene	Toulene	Ethyle- benzene	Total Xylenes	MTBE
G-4-W	06/24/96	NA	NA	NA	ND	ND	0.001	ND	0.0012	NA
G-7-W	06/24/96	NA	NA	NA	ND	ND	0.0013	ND	0.0015	NA
MW-1	06/27/96	14.11	166.89	Not Present	3.3	0.260	0.034	0.059	0.170	0.080
MW-2	06/27/96	12.61	167.84	12"	NA	NA	NA	NA	NA	NA
MW-3	06/27/96	13.20	166.74	Not Present	2	0.022	0.0029	0.011	0.0074	0.056
MW-4	06/27/96	17.03	163.51	Not Present	0.72	0.002	0.0005	0.0025	0.023	0.0032
MW-5	06/27/96	13.62	166.61	2"	NA	NA	NA	NA	NA	NA
MW-6	07/10/96	18.55	161.48	Not Present	ND	ND	ND	ND	ND	NA

**NOTES**

- feet bgs      feet below ground surface
- feet datum      feet above arbitrary datum with assumed elevation of 10 ft.
- TPH-G      total petroleum hydrocarbons quantified as Gasoline
- mg/l      milligrams per liter
- ND      not detected above laboratory method detection limit
- NA      not analyzed or not available

**Table 3**  
**Summary of Soil Vapor Extraction Pilot Test Results**  
**Hooshi's Auto Service**  
**1499 MacArthur Boulevard**  
**Oakland, California**

Extraction Well #	Date	Time	Vacuum in Inches of Water	Flow cfm	Percent Oxygen	LEL	VOC Field Readings (ppm)	TPH-G Laboratory Results (ppmV)	Vacuum at Monitoring Wells (Inches of Water)				
									MW-1	MW-2	MW-3	MW-4	MW-5
MW-5	7/10/96	12:00	0	0	NM	NM	NM	NA	0.04	0	0.06	0	0
MW-5	7/10/96	12:10	100	9.8	5.5	49	> 10,000	NA	0.3	0.48	0.4	0	0
MW-5	7/10/96	12:12	100	9.8	NM	NM	NM	NA	0.5	0.5	0.55	0	0
MW-5	7/10/96	12:14	100	9.9	NM	NM	NM	NA	1.1	1.8	1.3	0	0
MW-5	7/10/96	12:16	100	10	NM	NM	NM	NA	1.3	1.8	1.8	0	0
MW-5	7/10/96	12:18	100	10.2	NM	NM	NM	NA	1.8	2.2	2.2	0	0
MW-5	7/10/96	12:20	100	10.4	5.2	50	> 10,000	NA	2.2	2.6	2.5	0	0.02
MW-5	7/10/96	12:30	150	16.1	7.7	48	> 10,000	2,300	2.5	4	3.6	0	0.04
MW-5	7/10/96	12:40	150	17.3	NM	NM	NM	NA	3.5	4.5	4	0	0.05
MW-5	7/10/96	12:50	150	17.3	NM	NM	NM	NA	3.5	4.6	4.1	0	0.05
MW-5	7/10/96	13:00	160	18.6	8.8	46	> 10,000	NA	4.5	4.8	4.2	0	0.04
MW-5	7/10/96	13:20	150	21.2	NM	NM	NM	NA	4.5	4.2	3.5	0	0.02
MW-5	7/10/96	13:40	150	21.6	NM	NM	NM	NA	4.3	4.2	3.5	0	0.02
MW-5	7/10/96	14:00	150	21	11	36	>10,000	NA	4.3	4.1	3.5	0	0.02
MW-5	7/10/96	14:20	160	21	NM	NM	NM	NA	4.3	4.5	3.8	0	0.03
MW-5	7/10/96	14:40	150	19.9	NM	NM	NM	NA	4.3	4.5	3.8	0	0.02
MW-5	7/10/96	15:00	150	20.2	13	26	>10,000	NA	4.3	4.5	3.8	0	0.01
MW-5	7/10/96	15:20	150	20.1	NM	NM	NM	NA	4.3	4.5	3.8	0	0.01
MW-5	7/10/96	15:30	150	20.3	NM	NM	NM	1,600	4.3	4.5	3.8	0	0.01
									MW-2	MW-3	MW-4	MW-5	MW-6
MW-1	7/11/96	9:15	0	0	NM	NM	NM	NA	0	0	0	0	0
MW-1	7/11/96	9:20	130	8.25	3.9	58	> 10,000	NA	4	2.2	0	2.4	0
MW-1	7/11/96	9:30	130	7.6	NM	NM	NM	NA	6	2.9	0	2.4	0
MW-1	7/11/96	9:40	100	10.7	NM	NM	NM	NA	5.5	2.6	0	2.1	0
MW-1	7/11/96	9:50	100	10.1	11.6	35	> 10,000	2,700	6	2.8	0	2.3	0
MW-1	7/11/96	10:00	100	10.3	NM	NM	NM	NA	6.5	3	0	2.4	0
MW-1	7/11/96	10:10	105	10.4	NM	NM	NM	NA	6.7	3.2	0	2.5	0
MW-1	7/11/96	10:20	110	10.5	4.6	38	> 10,000	NA	6.7	3.2	0	2.5	0
MW-1	7/11/96	10:30	160	14	9.9	40	> 10,000	NA	8.2	4.1	0	3.1	0
MW-1	7/11/96	10:40	110	11.6	NM	NM	NM	NA	7.5	3.8	0	2.9	0
MW-1	7/11/96	11:00	110	11.5	9.7	41	> 10,000	2,900	6.7	3.2	0	2.5	0

**Table 3 (Continued)**  
**Summary of Soil Vapor Extraction Pilot Test Results**  
**Hooshi's Auto Service**  
**1499 MacArthur Boulevard**  
**Oakland, California**

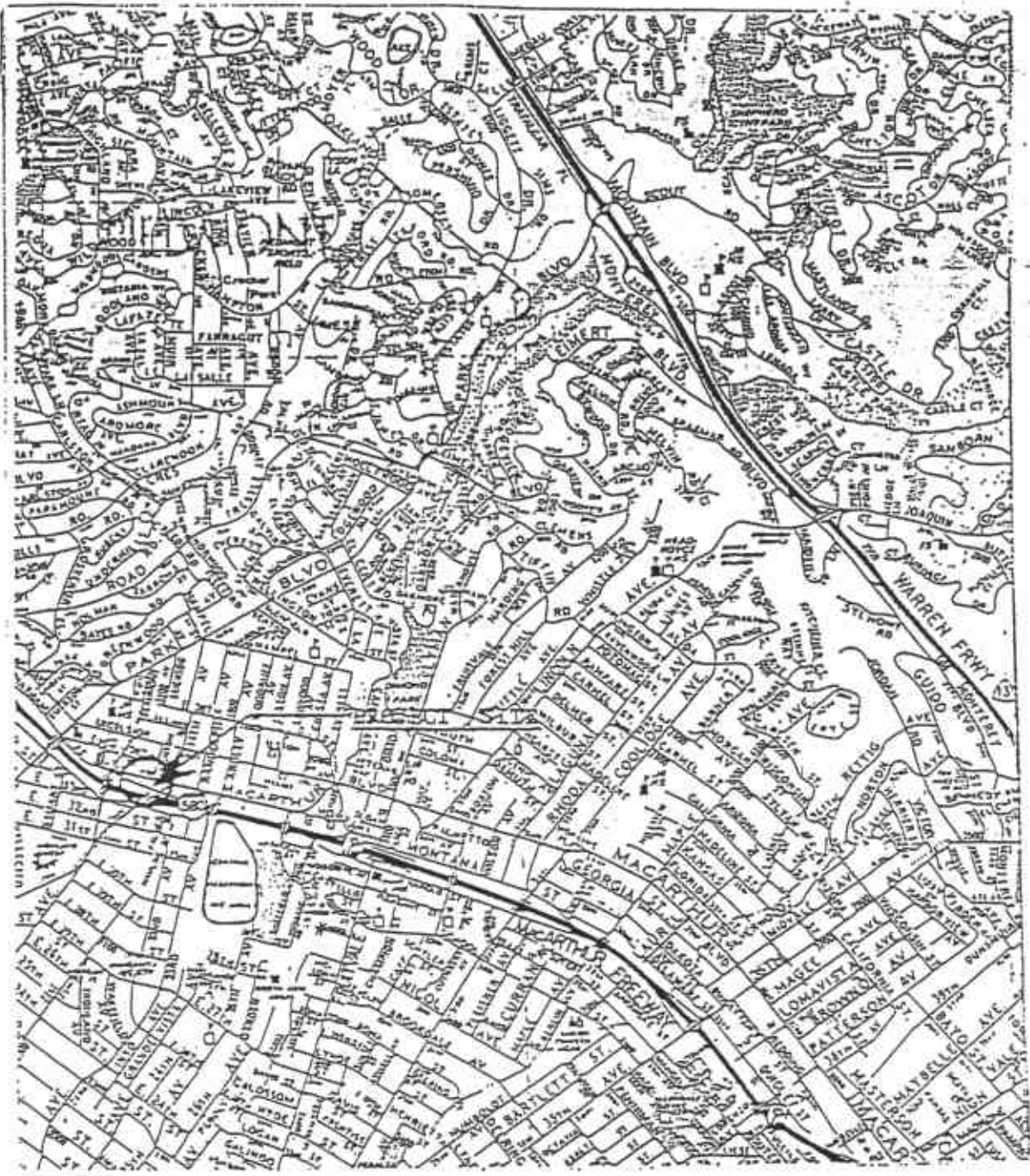
Extraction Well #	Date	Time	Vacuum In Inches of Water	Flow cfm	Percent Oxygen	LEL	VOC Field Readings (ppm)	TPH-G Laboratory Results (ppmV)	Vacuum at Monitoring Wells (Inches of Water)				
									MW-1	MW-3	MW-4	MW-5	MW-6
MW-2	7/11/96	11:20	90	2.9	10.4	86	> 10,000	NA	1.8	0.7	0	0.9	0
MW-2	7/11/96	11:30	90	2.6	NM	NM	NM	6,300	1.7	0.7	0	0.35	0
MW-2	7/11/96	11:40	90	2.3	13.8	84	80,000	NA	1.8	0.6	0	0.35	0
MW-2	7/11/96	11:50	90	2.4	NM	NM	NM	NA	1.5	0.5	0	0.29	0
MW-2	7/11/96	12:00	90	2.3	14.1	86	82,000	NA	1.4	0.4	0	0.25	0
MW-2	7/11/96	12:10	160	4	12.6	95	> 100,000	NA	1.9	0.8	0	0.5	0
MW-2	7/11/96	12:20	160	4.1	NM	NM	NM	NA	2	0.9	0	0.5	0
MW-2	7/11/96	12:30	125	3	13.4	90	95,000	NA	1.8	0.7	0	0.5	0
MW-2	7/11/96	12:40	125	2.8	NM	NM	NM	NA	1.6	0.6	0	0.52	0
MW-2	7/11/96	12:50	125	2.8	NM	NM	NM	NA	1.6	0.6	0	0.45	0
MW-2	7/11/96	13:00	125	2.7	14.6	84	90,000	9,300	1.5	0.6	0	0.4	0

**NOTES**

- cfm      Cubic Feet Per Minute
- LEL      Lower Explosive Limit
- TPH-G    Total Petroleum Hydrocarbons as Gas
- VOC      Volatile Organic Compounds
- ppm      Parts per million

**Table 4**  
**Remediation System Design Specifications**  
**Hooshi's Auto Service**  
**1499 MacArthur Boulevard**  
**Oakland, California**  
**August 1996**

Component	Specifications
<b>Extraction Wells</b>	<ol style="list-style-type: none"> <li>1. MW-1, MW-2 and MW-5 existing 2" diameter monitoring wells will be used as vapor extraction wells.</li> <li>2. Remove existing well box's from each well and replace with 2'x2'x2' utility vault.</li> <li>3. Utility vaults to have appropriate knockouts on all sides to allow for horizontal vapor extraction conduit.</li> <li>4. Connect top of each vapor extraction wells to horizontal vapor extraction conduit inside the utility vault.</li> </ol>
<b>Joint Trench</b>	<ol style="list-style-type: none"> <li>1. Connect each well to remediation system via underground conduit laid in joint trenches.</li> <li>2. Underground vapor extraction conduit to be Schedule 40 PVC.</li> <li>3. Piping to be placed minimum 24" below existing grade with a minimum 6" sand on all sides.</li> <li>4. Backfill material above sand to be Class 2 AB compacted to 95%.</li> <li>5. Trenches to be resurfaced to match existing conditions with a minimum 6" cutback.</li> </ol>
<b>Remediation Compound</b>	<ol style="list-style-type: none"> <li>1. Prepare approximately 15'x10' smooth and flat area at the southwest corner of Auto Repair Building for installation of remediation system.</li> <li>2. Install temporary fencing on north, west and south sides of remediation system.</li> </ol>
<b>Delivery Piping and Manifold</b>	<ol style="list-style-type: none"> <li>1. Above ground vapor extraction conduit to be Schedule 80 PVC.</li> <li>2. Conduits from wells to be brought aboveground inside remediation compound and terminated into a manifold.</li> <li>3. Manifold to be supported along westerly wall of Auto Repair Building by appropriate pipe support.</li> <li>4. Manifold to contain necessary valves, gauges and sampling ports for each well.</li> </ol>
<b>Remediation Equipment</b>	<ol style="list-style-type: none"> <li>1. Remediation system to be 150 cfm capacity all electric catalytic oxidizer.</li> <li>2. Remediation system to be trailer mounted with approximate dimensions of 10' long and 7' wide.</li> <li>3. Remediation system to be equipped with necessary safety interlocks and shutoff devices.</li> <li>4. Remediation system to be equipped with chart recorder to measure continuous catalytic oxidizer operating temperature and flow.</li> </ol>
<b>Utilities</b>	<ol style="list-style-type: none"> <li>1. Arrange for temporary electric connection for remediation system operation.</li> <li>2. Electric requirement for remediation system 240 volts, 3-phase, 200 amperes.</li> <li>3. PG&amp;E to drop electric conduit from overhead street pole to Auto Repair Building and set electric meter on site.</li> <li>4. Contractor to install appropriate electric disconnect box inside remediation compound and connect to PG&amp;E meter.</li> </ol>



# Site Location

Source: Thomas Brothers Maps

DATE: MAY 31, 1996

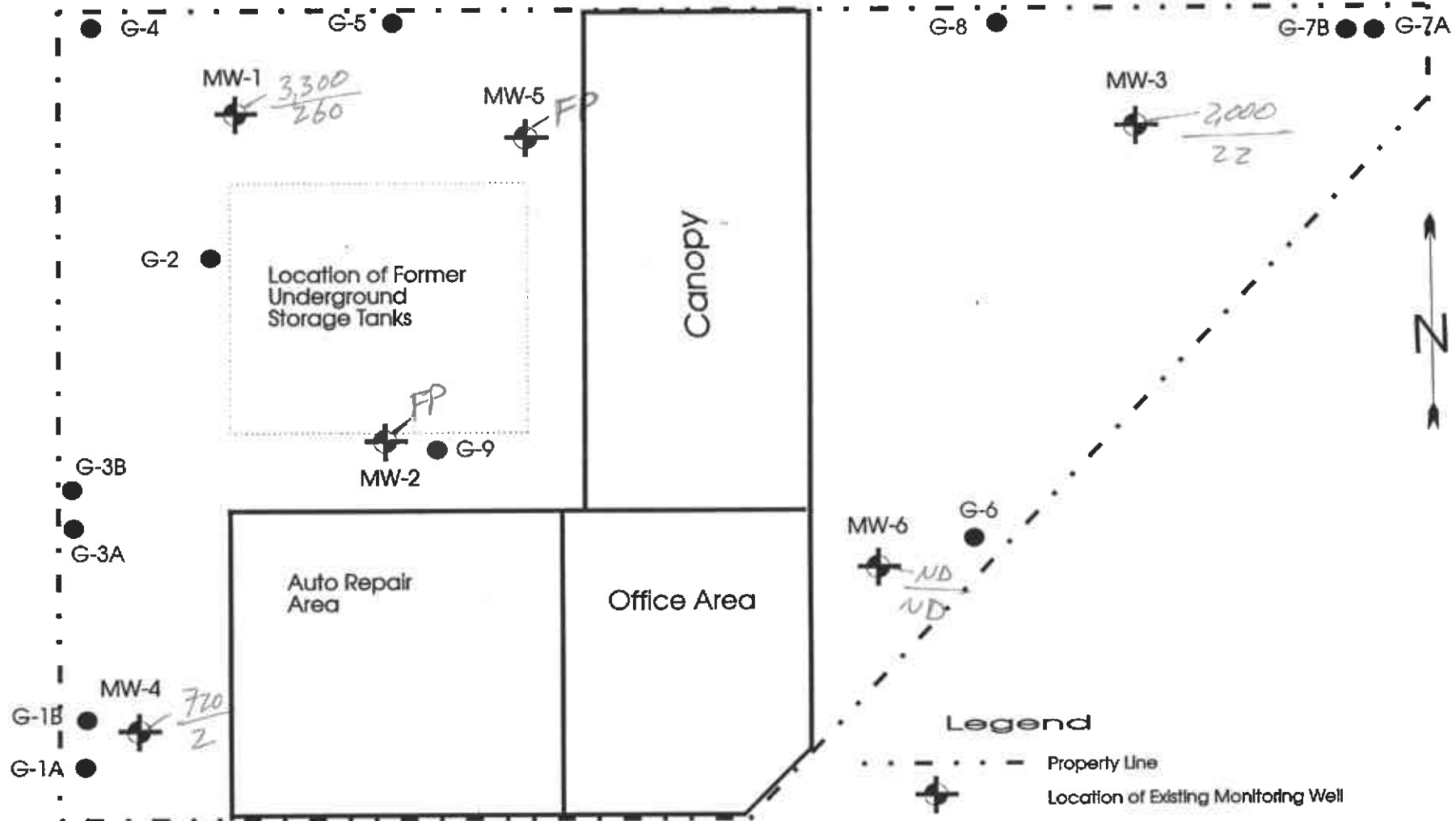


**centurywest**  
ENGINEERING CORPORATION

HOOSHI'S AUTOMOTIVE  
1499 MacArthur Boulevard  
Oakland, California  
CWEC 20596-001-01

Figure 1

MacArthur Boulevard



FP = Free Product  
 $\frac{3,300}{260} = \frac{TPH}{Benzene}$  (ppb)

DATE: MAY 31, 1996



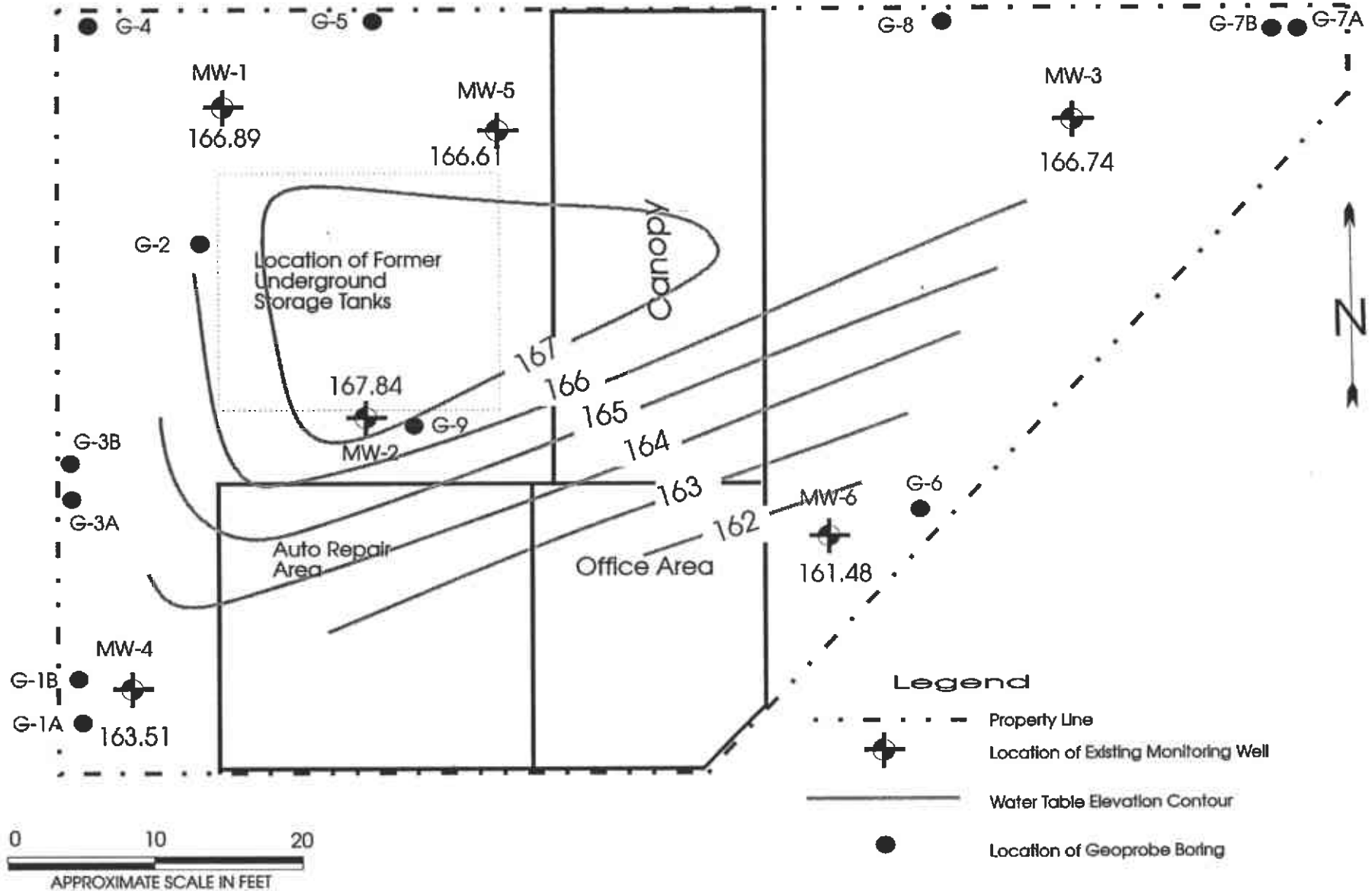
Site Map

HOOSHI'S AUTOMOTIVE  
1499 MacArthur Boulevard  
Oakland, California  
CWEC 20596-001-01

Figure 2



MacArthur Boulevard



DATE: MAY 31, 1996

**centurywest**  
ENGINEERING CORPORATION

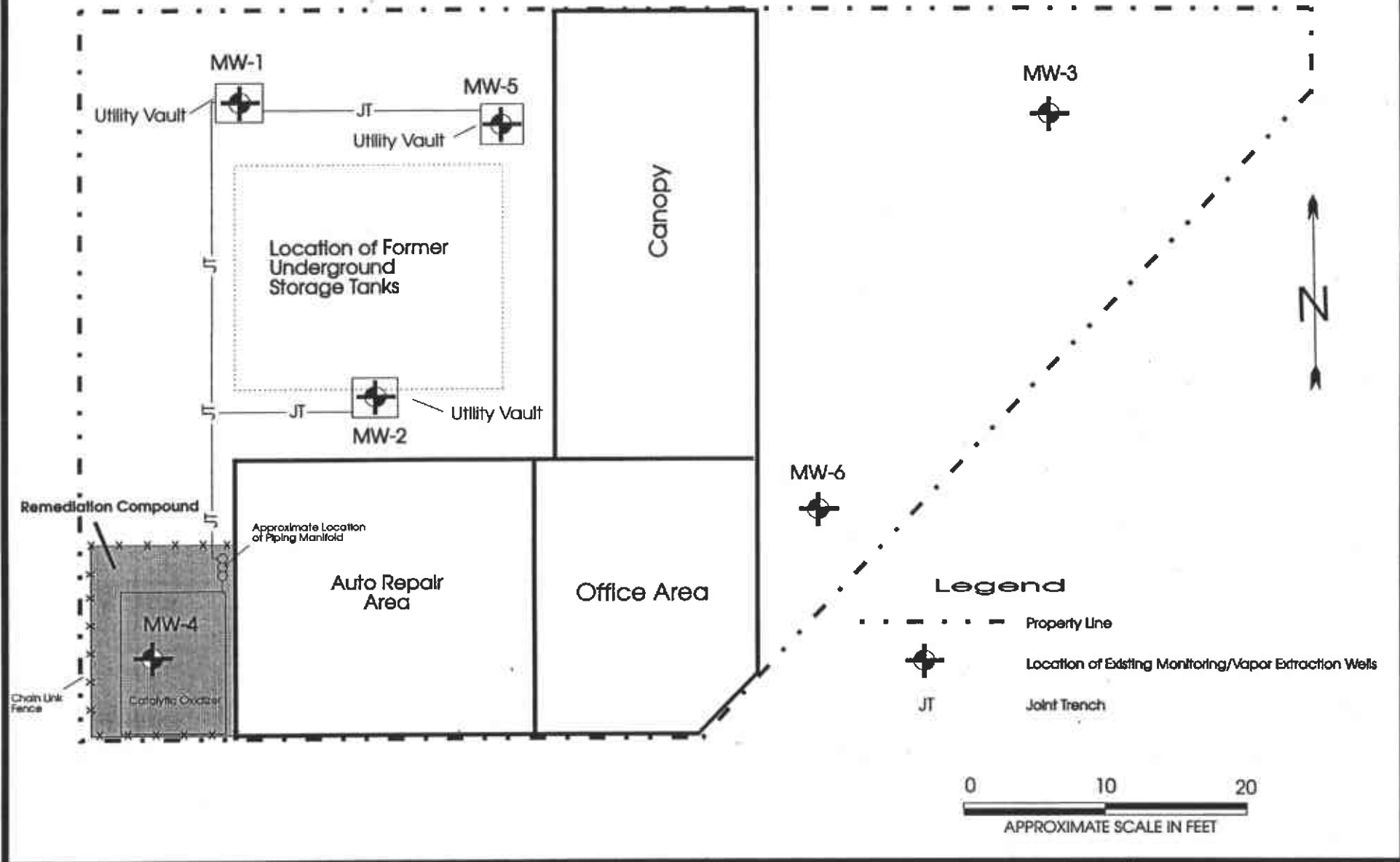
Water Table Elevation  
Contour Map

HOOSHI'S AUTOMOTIVE  
1499 MacArthur Boulevard  
Oakland, California  
CWEC 20596-001-01

Figure 3



MacArthur Boulevard



DATE: August 27, 1996



**centurywest**  
ENGINEERING CORPORATION

Remediation  
System Layout

HOOSHI'S AUTOMOTIVE  
1499 MacArthur Boulevard  
Oakland, California  
CWEC 20596-001-01

Figure 4



ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

5997 PARKSIDE DRIVE

PLEASANTON, CALIFORNIA 94588-5127

PHONE (510) 484-2600 FAX (510) 462-3914

12 June 1996

Mr. Rajeev Cherwoo  
Century West Engineering  
7950 Dublin Boulevard  
Dublin, CA 94568

Dear Mr. Cherwoo:

Enclosed is drilling permit 96410 for a monitoring well construction project at 1499 MacArthur Boulevard in Oakland for Naomi English.

Please note that permit condition A-2 requires that a well construction report be submitted after completion of the work. The report should include drilling and completion logs, location sketch, and permit number. Please submit the original of your completion report. We will forward your submittal to the California Department of Water Resources.

If you have any questions, please contact Wyman Hong at extension 235 or me at extension 240.

Very truly yours,

Craig A. Mayfield  
Water Resources Engineer III

CM:ab  
Enc.



# ZONE 7 WATER AGENCY

5997 PARKSIDE DRIVE

PLEASANTON, CALIFORNIA 94588

VOICE (510) 484-2600

FAX (510) 462-3914

## DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

FOR OFFICE USE

LOCATION OF PROJECT HOOSHI'S AUTOMOTIVE  
1499 MACARTHUR BLVD.  
OAKLAND, CA

PERMIT NUMBER 96410  
LOCATION NUMBER \_\_\_\_\_

CLIENT  
Name MS. NOAMI ENGLISH  
Address 1545 SCENICVIEW DR. Voice (510) 483 9015  
City SAN LEANDRO, CA Zip 94577

PERMIT CONDITIONS

Circled Permit Requirements Apply

APPLICANT  
Name CENTURY WEST ENGINEERING CORP.  
RATEW CHERWOOD Fax 510 551 7776  
Address 7950 DUBLIN BLVD. Voice 510 551 7774  
City DUBLIN, CA Zip 94568

### A. GENERAL

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

### B. WATER WELLS, INCLUDING PIEZOMETERS

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

- C. GEOTECHNICAL. Backfill bore hole with compacted cuttings or heavy bentonite and upper two feet with compacted material. In areas of known or suspected contamination, tremied cement grout shall be used in place of compacted cuttings.
- D. CATHODIC. Fill hole above anode zone with concrete placed by tremie.
- E. WELL DESTRUCTION. See attached.

TYPE OF PROJECT  
Well Construction  
Cathodic Protection \_\_\_\_\_  
Water Supply \_\_\_\_\_  
Monitoring  \_\_\_\_\_  
Geotechnical Investigation  
General \_\_\_\_\_  
Contamination  \_\_\_\_\_  
Well Destruction \_\_\_\_\_

PROPOSED WATER SUPPLY WELL USE  
Domestic \_\_\_\_\_ Industrial \_\_\_\_\_ Other  \_\_\_\_\_  
Municipal \_\_\_\_\_ Irrigation \_\_\_\_\_

DRILLING METHOD:  
Mud Rotary \_\_\_\_\_ Air Rotary \_\_\_\_\_ Auger  \_\_\_\_\_  
Cable \_\_\_\_\_ Other \_\_\_\_\_

DRILLER'S LICENSE NO. 482390 CS7, A

WELL PROJECTS  
Drill Hole Diameter 6 in. Maximum \_\_\_\_\_  
Casing Diameter 2 in. Depth 20 ft.  
Surface Seal Depth 3 ft. Number 3

GEOTECHNICAL PROJECTS  
Number of Borings \_\_\_\_\_ Maximum \_\_\_\_\_  
Hole Diameter \_\_\_\_\_ in. Depth \_\_\_\_\_ ft.

ESTIMATED STARTING DATE 06/24/96  
ESTIMATED COMPLETION DATE 06/25/96

Approved Wyman Hong Date 12 Jun 96  
Wyman Hong

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

APPLICANT'S SIGNATURE Lateen Chermur Date 06/05/96



# LOG OF BORING

SHEET 1 OF 1

BORING NUMBER : G-1B

PROJECT NAME: Hooshi Automotive

PROJECT NUMBER: 20596-001-01

DRILLING CONTRACTOR: Kvilhaug

DRILLING METHOD : Geoprobe

START DATE: 6/24/96 9:20 AM


COMPLETION DATE: 6/24/96 9:25 AM

DRILL MANUFACTURER/MODEL:

Geoprobe

TYPE OF BIT:

BORE HOLE DIAMETER: 2'

DEPTH SCALE (FEET)	SAMPLE NO.	SAMPLE TYPE	INTERVAL	RECOVERY	PID Reading	USCS	LOG OF MATERIAL	PIEZOMETER WELL INSTALLATION
5				100%		SP	Gravelly SAND, SP, medium dense, moist. red-yellow 7.5 YR 6/8, no hydrocarbon odor or discoloration, coarse grained - fill material	
10				100%			Total Depth = 7.5 ft - hit concrete or cobbles, backfilled at end of day with grout and top 6" was resurfaced with asphalt.	
20								

# LOG OF BORING

SHEET 1 OF 1

BORING NUMBER : G-2

PROJECT NAME: Hooshi Automotive

DRILL MANUFACTURER/MODEL:

Geoprobe

PROJECT NUMBER: 20596-001-01

DRILLING METHOD : **Geoprobe**

TYPE OF BIT:

DRILLING CONTRACTOR: Kvilhaug

START DATE: 6/24/96 9:30 AM

COMPLETION DATE: 6/24/96 10:10 AM

BORE HOLE DIAMETER: 2"

DEPTH SCALE (FEET)	SAMPLE NO.	SAMPLE TYPE	INTERVAL	RECOVERY	PID Reading	USCS	LOG OF MATERIAL	PIEZOMETER WELL INSTALLATION
5	G-2-5' 9:50 AM	geoprobe		100%		SW	Gravelly SAND, SM, medium dense, dry red-yellow 7.5 YR 6/8, no hydrocarbon odor or discoloration - fill material	
				100%		ML	Sandy Clayey SILT, ML, medium stiff, moist, olive 5Y 5/4 no hydrocarbon odor or discoloration	
10	G-2-10' 9:55 AM			100%		SP	Silty SAND, SP, medium dense, moist, olive-gray 5Y 4/2, hydrocarbon odor and discoloration present.	
15				100%		CL	CLAY, CL, medium stiff, moist, dark gray, moderate plasticity	
20						Depth = 16' - backfilled at end of day with grout and top 6" was resurfaced with asphalt.		

# LOG OF BORING

SHEET 1 OF 1

BORING NUMBER: G-3A

PROJECT NAME: Haoshi Automotive

PROJECT NUMBER: 20596-001-01

DRILLING CONTRACTOR: Kvilhaug

DRILLING METHOD: Geoprobe

START DATE: 6/24/96 10:20 AM


COMPLETION DATE: 6/24/96 10:35 AM

DRILL MANUFACTURER/MODEL:

Geoprobe \_\_\_\_\_

TYPE OF BIT:

BORE HOLE DIAMETER: 2"

DEPTH SCALE (FEET)	SAMPLE NO.	SAMPLE TYPE	INTERVAL	RECOVERY	PID Reading	USCS	LOG OF MATERIAL	PIEZOMETRY WELL INSTALLATION
5		geoprobe		90%		SP	Clayey, Gravelly, Silty SAND, SP medium dense, moist, red-brown 2.5YR 4/2 no hydrocarbon odor or discoloration - fill material	
10 15 20							Total depth = 6' - hit concrete, moved 4' easterly see boring 6-3B, backfilled at end of day with grout and top 6' was resurfaced with asphalt.	

# LOG OF BORING

SHEET 1 OF 1

BORING NUMBER: G-3B

PROJECT NAME: Hooshi Automotive

PROJECT NUMBER: 20596-001-01

DRILLING CONTRACTOR: Kmlhaug

DRILLING METHOD: Geoprobe

START DATE: 6/24/96 10:40 AM

COMPLETION DATE: 6/24/96 11:10 AM

DRILL MANUFACTURER/MODEL:

Geoprobe

TYPE OF BIT:

BORE HOLE DIAMETER: 2"

DEPTH SCALE (FEET)	SAMPLE NO.	SAMPLE TYPE	INTERVAL	RECOVERY	PID Reading	USCS	LOG OF MATERIAL	PIEZOMETER WELL INSTALLATION
5	G-3B-6' 10:44 AM	geoprobe		100%		SP/ML	Gravelly, Clayey SAND and SILT, SP/ML medium dense, moist, red-brown 2.5YR 4/2 no hydrocarbon odor or discoloration - fill material	
10	G-3B-10' 10:54 AM			100%	1.8 ppm	CH	CLAY, CH, medium stiff, dark gray to black with red iron staining and no hydrocarbon odor or discoloration from 7-8', from 8-11' color changes to olive gray 5Y 4/2 with apparent hydrocarbon staining.	
15	G-3B-14.5 11:00 AM			100%	9 ppm	SC	Gravelly CLAY, CL, medium stiff, moist, moderate plasticity with green hydrocarbon discoloration  Clayey SAND, SC, medium dense, moist, olive gray 5Y 4/2, moderate hydrocarbon odor	
20	Total Depth = 16' - backfilled at end of day with grout and top 6' was resurfaced with asphalt.							



# LOG OF BORING

SHEET 1 OF 1

BORING NUMBER : G-4

PROJECT NAME: Hooshi Automotive

DRILL MANUFACTURER/MODEL:

PROJECT NUMBER: 20596-001-01

Geoprobe

DRILLING CONTRACTOR: Kvilhaug

DRILLING METHOD : Geoprobe

TYPE OF BIT:

START DATE: 6/24/96 11:20

COMPLETION DATE: 6/24/96 11:50 AM

BORE HOLE DIAMETER: 2'

DEPTH SCALE (FEET)	SAMPLE NO.	SAMPLE TYPE	INTERVAL	RECOVERY	PID Reading	USCS	LOG OF MATERIAL	PIEZOMETER WELL INSTALLATION
5	G-4-5' 11:22 AM	geoprobe		100%		SP	Gravelly, Clayey SAND and silt. SP medium dense, moist, red-brown 2.5YR 4/2 no hydrocarbon odor or discoloration - fill material	
				100%		CL	CLAY, CL, soft, olive gray 5Y 4/2 with a moderate hydrocarbon odor and discoloration, medium plasticity	
				100%		CL	Silty CLAY, CL, stiff, moist, red gray 5YR 4/2 no hydrocarbon odor or discoloration	
10	G-4-10' 11:32 AM			100%	3 ppm	SM	Silty SAND, SC, moist, very stiff, brown 7.5 YR 4/4 sligt hydrocarbon odor	
15				100%		SC	SAND, SC, loose, yellow brown 10YR 5/8 to olive gray 5Y 4/2, moist, fine grained, moderate hydrocarbon odors from 12 to 14'	
20							Total Depth = 20' - backfilled at end of day with grout and top 6" was resurfaced with asphalt.	

# LOG OF BORING

SHEET 1 OF 1

BORING NUMBER : G-5

PROJECT NAME: Hooshi Automotive

DRILL MANUFACTURER/MODEL:

PROJECT NUMBER: 20596-001-01

Geoprobe

DRILLING CONTRACTOR: Kvilhaug

DRILLING METHOD : Geoprobe

TYPE OF BIT:

START DATE: 6/24/96 11:55

COMPLETION DATE: 6/24/96 12:15 PM

BORE HOLE DIAMETER: 2'

DEPTH SCALE (FEET)	SAMPLE NO.	SAMPLE TYPE	INTERVAL	RECOVERY	PID Reading	USCS	LOG OF MATERIAL	PIEZOMETRY WELL INSTALLATION
5	G-5-7' 11:59 AM	geoprobe		100%		SP	Gravelly, Clayey, Silty, SAND, SP medium dense, moist, red-brown 2.5YR 4/2 no hydrocarbon odor or discoloration - fill material	
				100%		CH	CLAY, CH, medium stiff, brown gray 5Y 5/2 with a moderate hydrocarbon odor	
				100%		CL	Silty CLAY, CL, stiff, olive gray 5Y 4/2, moist strong hydrocarbon odor and discoloration	
10	G-5-12' 12:12 AM			100%	1.2 ppm	SC	SAND, SC, loose, moist, olive brown 2.5YR 4/2, fine grained	
15								
20								
							Total Depth = 20' - backfilled at end of day with grout and top 6' was resurfaced with asphalt.	

# LOG OF BORING

SHEET 1 OF 1

BORING NUMBER : G-6

PROJECT NAME: Hooshi Automotive

PROJECT NUMBER: 20596-001-01

DRILLING CONTRACTOR: Kvilhaug

DRILLING METHOD : Geoprobe

START DATE: 6/24/96 1:00 PM

COMPLETION DATE: 6/24/96 1:30 PM

DRILL MANUFACTURER/MODEL:

Geoprobe

TYPE OF BIT:

BORE HOLE DIAMETER: 2"

DEPTH SCALE (FEET)	SAMPLE NO.	SAMPLE TYPE	INTERVAL	RECOVERY	PID Reading	USCS	LOG OF MATERIAL	PIEZOMETER WELL INSTALLATION
5		geoprobe	100%			SC	Gravelly, Silty, SAND, SM, medium dense, moist, red-brown 2.5YR 4/2, poorly graded, no hydrocarbon odor or discoloration - fill material	
10	G-6-10' 1:27 PM		80%		2 ppm	ML CL	SILT, ML, very soft, black, low plasticity  CLAY, CL, medium stiff, olive gray 5Y 4/2, moist, high plasticity	
15								
20							Total Depth = 20' - backfilled at end of day with grout and top 6" was resurfaced with asphalt.	

# LOG OF BORING

SHEET 1 OF 1

BORING NUMBER : G-7A

PROJECT NAME: Hooshi Automotive

PROJECT NUMBER: 20596-001-01

DRILLING CONTRACTOR: Kvilhaug

DRILLING METHOD : Geoprobe

START DATE: 6/24/96 1:38 PM

COMPLETION DATE: 6/24/96 1:40 PM

DRILL MANUFACTURER/MODEL:

Geoprobe

TYPE OF BIT:

BORE HOLE DIAMETER: 2"

DEPTH SCALE (FEET)	SAMPLE NO.	SAMPLE TYPE	INTERVAL	RECOVERY	BLOWS PER 6 IN.	USCS	LOG OF MATERIAL	PIEZOMETER WELL INSTALLATION
<div style="display: flex; flex-direction: column; justify-content: space-between;"> <span>0</span> <span>1</span> <span>2</span> <span>3</span> <span>4</span> <span>5</span> <span>6</span> <span>7</span> <span>8</span> <span>9</span> <span>10</span> </div>							<p style="text-align: center;">Fill material beneath</p> <hr/> <p>Bottom of Borehole - apprx. 2 ft. bgs - hlt concrete - moved 2' west - see boring G-7B</p>	

# LOG OF BORING

SHEET 1 OF 1

BORING NUMBER : G-7B

PROJECT NAME: Hooshi Automotive

DRILL MANUFACTURER/MODEL:

PROJECT NUMBER: 20596-001-01

Geoprobe

DRILLING CONTRACTOR: Kvilhaug


DRILLING METHOD : Geoprobe

TYPE OF BIT:

START DATE: 6/24/96 1:45 PM

COMPLETION DATE: 6/24/96 2:15 PM

BORE HOLE DIAMETER: 2'

DEPTH SCALE (FEET)	SAMPLE NO.	SAMPLE TYPE	INTERVAL	RECOVERY	PID Reading	USCS	LOG OF MATERIAL	PIEZOMETRY WELL INSTALLATION	
5	G-7B-5' 1:50 PM	geoprobe		80%		CH	Fill material  CLAY, CH, moist, olive gray 5Y 4/2 moderate plasticity		
							SC	Clayey SAND, SC, medium dense, moist, olive gray 5Y 4/2	
10	G-7B-10' 2:06 PM			95%			CL	CLAY, CL, stiff, moist, olive gray 5Y 4/2, medium plasticity	
							SP	SAND, SP, medium dense, moist, olive gray 5Y 4/2, fine grained	
20	Total depth = 20' - backfilled at end of day with grout and top 6" was resurfaced with asphalt								

# LOG OF BORING

SHEET 1 OF 1

BORING NUMBER: G-8

PROJECT NAME: Hooshi Automotive

DRILL MANUFACTURER/MODEL:

PROJECT NUMBER: 20596-001-01

Geoprobe

DRILLING CONTRACTOR: Kvihaug

DRILLING METHOD :

TYPE OF BIT:

START DATE: 6/24/96 2:20 PM

COMPLETION DATE: 6/24/96 2:35 PM

BORE HOLE DIAMETER: 2"

DEPTH SCALE (FEET)	SAMPLE NO.	SAMPLE TYPE	INTERVAL	RECOVERY	BLOWS PER 6 IN.	USCS	LOG OF MATERIAL	PIEZOMETER WELL INSTALLATION
5							Fill Material	
							No sample taken	
10	G-8-10'	geoprobe		95%		CH	CLAY, CH, medium stiff, moist, olive gray 5Y 4/2 high plasticity	
						SM	SAND, SM, medium dense, moist, olive 5Y 5/4, fine grained	
15								
20								
							Total Depth = 20' - backfilled at end of day with grout and top 6" was resurfaced with asphalt	



# LOG OF BORING

SHEET 1 OF 1

BORING NUMBER : MW-4

PROJECT NAME: Hooshi Automotive

PROJECT NUMBER: 20596-001-01

DRILLING CONTRACTOR: Kvilhaug

DRILLING METHOD : Hollow Stem Auger

START DATE: 6/27/96 9:15 AM

COMPLETION DATE: 6/27/96 10:20 AM

DRILL MANUFACTURER/MODEL:

Hollow Stem Auger Equipment

TYPE OF BIT:

BORE HOLE DIAMETER: 2"

DEPTH SCALE (FEET)	SAMPLE NO.	SAMPLE TYPE	INTERVAL	RECOVERY	Blows Per 6 IN.	USCS	LOG OF MATERIAL	PIEZOMETER WELL INSTALLATION
5	MW-4-5'				5,4,4	SC CL	Clayey SAND, SC, medium stiff moist, red brown 2.5YR 4/2 Fill material	
10	MW-4-10'				7,13,25		Sandy, CLAY, CL, medium stiff, red yellow 7.5YR 6/8 to olive grey 5Y 4/2, moist, moderate plasticity	
15	MW-4-15'				15,25,50	SC	Clayey SAND, SC, medium dense, moist, brown 7.5YR 4/2, fine grained	
20	MW-4-20'				20,40,50		Total Depth = 20'	



# LOG OF BORING

SHEET \_1\_ OF \_1\_

BORING NUMBER : MW-5

PROJECT NAME: Hooshi Automotive

PROJECT NUMBER: 20596-001-01

DRILLING CONTRACTOR: Kvilhaug

DRILLING METHOD : Hollow Stem Auger

START DATE: 6/27/96 11:15 AM

COMPLETION DATE: 6/27/96 11:47 AM

DRILL MANUFACTURER/MODEL:

Hollow Stem Auger Equipment

TYPE OF BIT:

BORE HOLE DIAMETER: 2'

DEPTH SCALE (FEET)	SAMPLE NO.	PID READING	INTERVAL	RECOVERY	Blows Per 6 IN.	USCS	LOG OF MATERIAL	PIEZOMETER WELL INSTALLATION	
5	MW-5-5'				5,13,18	SC	Clayey Sand, SC, medium dense moist, brown 7.5YR 4/4	<p>BENTONITE</p>	
10	MW-5-10'	100 ppm			25,40,50	CH	CLAY, CH, soft, moist, dark brown 7.5YR 4/2		
15	MW-5-15'	95 ppm			18,35,50	CL	Sandy, CLAY, CL, medium stiff, moist, light gray, moderate plasticity		
15	MW-5-15'	95 ppm			18,35,50	SC	Clayey SAND, SC, medium dense, moist, brown 7.5YR 4/2 with green tinge, fine grained, hydrocarbon odor and discoloration present		
20	Total depth = 20'								

# LOG OF BORING

SHEET 1 OF 1

BORING NUMBER : MW-6

PROJECT NAME: Hooshi Automotive

DRILL MANUFACTURER/MODEL:

Hollow Stem Auger Equipment

PROJECT NUMBER: 20596-001-01

DRILLING METHOD : Hollow Stem Auger

TYPE OF BIT:

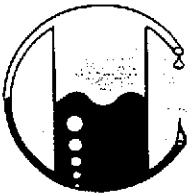
DRILLING CONTRACTOR: Kvilhaug

START DATE: 6/27/96 1:20 PM

COMPLETION DATE: 6/27/96 2:30 PM

BORE HOLE DIAMETER: 2'

DEPTH SCALE (FEET)	SAMPLE NO.	PID READING	INTERVAL	RECOVERY	Blows Per 6 IN.	USCS	LOG OF MATERIAL	PIEZOMETER WELL INSTALLATION
5	MW-6-5' 1:35 PM	1.3 ppm			5,8,8	SC CH	Clayey Sand, SC, medium dense moist, brown 7.5YR 4/4  CLAY, CH, soft, moist, dark brown 7.5YR 4/2	<p>BENTONITE</p> <p>SAND</p> <p>SAND</p>
10	MW-6-10' 1:50 PM				10,18,20	GC	Gravel-Sand-Clay mixture, GC medium dense, moist, olive brown 2.5Y 4/2	
15	MW-6-15' 2:05 PM	1.8 ppm			14,25,40	ML	Silty, Clayey, SAND, ML, medium stiff, moist, light gray to brown 7.5YR 4/4, slight plasticity, very fine grained	
20	MW-6-20' 2:20 PM	600 ppm			25,45,50		Total depth = 20'	



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Century West  
7950 Dublin Blvd., #203  
Dublin, CA 94568  
Attn: Bob Bogar  
Project Manager

Date Sampled: 06-24-96  
Date Received: 06-24-96  
Date Analyzed: 06-24-96

Sample Number  
V066016

Sample Description  
Proj#20596-001-01  
Hooshi Automotive  
1499 Mac Arthur Blvd.  
G-2-10' SOIL

## ANALYSIS

	<u>Detection Limit</u>	<u>Sample Results</u>
	ppm	ppm
Total Petroleum Hydrocarbons as Gasoline	1.0	<1.0
Benzene	0.005	<0.005
Toluene	0.005	<0.005
Xylenes	0.005	<0.005
Ethylbenzene	0.005	<0.005

QA/QC: Spike Recovery is 77%  
Duplicate Deviation is 2.5%

Note: Analysis was performed using EPA methods 5030 and TPH  
LUFT with method 8020 used for BTEX distinction.  
(ppm) = (mg/kg)

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Lab Director



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Dublin, CA 94568  
Attn: Bob Bogar  
Project Manager

Date Sampled: 06-24-96  
Date Received: 06-24-96  
Date Analyzed: 06-24-96

Sample Number  
V066017

Sample Description  
Proj#20596-001-01  
Hooshi Automotive  
1499 Mac Arthur Blvd.  
G-2-15' SOIL

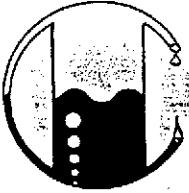
## ANALYSIS

	<u>Detection Limit</u>	<u>Sample Results</u>
	ppm	ppm
Total Petroleum Hydrocarbons as Gasoline	1.0	<1.0
Benzene	0.005	0.006
Toluene	0.005	0.009
Xylenes	0.005	0.025
Ethylbenzene	0.005	<0.005

Note: Analysis was performed using EPA methods 5030 and TPH  
LUFT with method 8020 used for BTEX distinction.  
(ppm) = (mg/kg)

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*Ronald G. Evans*  
for  
Ronald G. Evans  
Lab Director



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Attn: Bob Bogar  
Project Manager

Date Sampled: 06-24-96  
Date Received: 06-24-96  
Date Analyzed: 06-24-96

Sample Number  
V066018

Sample Description  
Proj#20596-001-01  
Hooshi Automotive  
1499 Mac Arthur Blvd.  
G-3B-10' SOIL

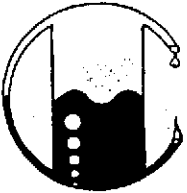
## ANALYSIS

	<u>Detection Limit</u>	<u>Sample Results</u>
	ppm	ppm
Total Petroleum Hydrocarbons as Gasoline	1.0	<1.0
Benzene	0.005	<0.005
Toluene	0.005	<0.005
Xylenes	0.005	<0.005
Ethylbenzene	0.005	<0.005

Note: Analysis was performed using EPA methods 5030 and TPH  
LUFT with method 8020 used for BTEX distinction.  
(ppm) = (mg/kg)

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Attn: Bob Bogar  
Project Manager

Date Sampled: 06-24-96  
Date Received: 06-24-96  
Date Analyzed: 06-24-96

Sample Number  
V066019

Sample Description  
Proj#20596-001-01  
Hooshi Automotive  
1499 Mac Arthur Blvd.  
G-3B-14.5' SOIL

## ANALYSIS

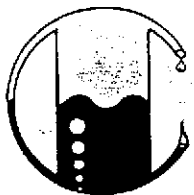
	<u>Detection Limit</u>	<u>Sample Results</u>
	ppm	ppm
Total Petroleum Hydrocarbons as Gasoline	1.0	1.5
Benzene	0.005	0.14
Toluene	0.005	0.012
Xylenes	0.005	0.18
Ethylbenzene	0.005	0.052

Note: Analysis was performed using EPA methods 5030 and TPH  
LUFT with method 8020 used for BTEX distinction.  
(ppm) = (mg/kg)

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Lab Director



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Attn: Bob Bogar  
Project Manager

Date Sampled: 06-24-96  
Date Received: 06-24-96  
Date Analyzed: 06-24-96

Sample Number  
V066020

Sample Description  
Proj#20596-001-01  
Hooshi Automotive  
1499 Mac Arthur Blvd.  
G-4-10' SOIL

## ANALYSIS

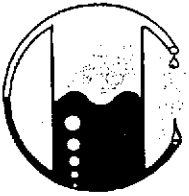
	<u>Detection Limit</u>	<u>Sample Results</u>
	ppm	ppm
Total Petroleum Hydrocarbons as Gasoline	1.0	<1.0
Benzene	0.005	<0.005
Toluene	0.005	<0.005
Xylenes	0.005	<0.005
Ethylbenzene	0.005	<0.005

Note: Analysis was performed using EPA methods 5030 and TPH  
LUFT with method 8020 used for BTEX distinction.  
(ppm) = (mg/kg)

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Attn: Bob Bogar  
Project Manager

Date Sampled: 06-24-96  
Date Received: 06-24-96  
Date Analyzed: 06-24-96

Sample Number  
V066021

Sample Description  
Proj#20596-001-01  
Hooshi Automotive  
1499 Mac Arthur Blvd.  
G-5-7' SOIL

## ANALYSIS

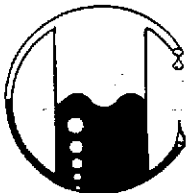
	<u>Detection Limit</u>	<u>Sample Results</u>
	ppm	ppm
Total Petroleum Hydrocarbons as Gasoline	1.0	<1.0
Benzene	0.005	<0.005
Toluene	0.005	<0.005
Xylenes	0.005	<0.005
Ethylbenzene	0.005	<0.005

Note: Analysis was performed using EPA methods 5030 and TPH  
LUFT with method 8020 used for BTEX distinction.  
(ppm) = (mg/kg)

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*Fred Chaske for*  
Ronald G. Evans  
Lab Director





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Dublin, CA 94568  
Attn: Bob Bogar  
Project Manager

Date Sampled: 06-24-96  
Date Received: 06-24-96  
Date Analyzed: 06-24-96

Sample Number  
V066022

Sample Description  
Proj#20596-001-01  
Hooshi Automotive  
1499 Mac Arthur Blvd.  
G-5-12' SOIL

## ANALYSIS

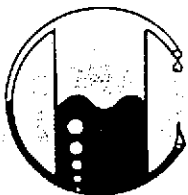
	<u>Detection Limit</u>	<u>Sample Results</u>
	ppm	ppm
Total Petroleum Hydrocarbons as Gasoline	1.0	<1.0
Benzene	0.005	<0.005
Toluene	0.005	<0.005
Xylenes	0.005	<0.005
Ethylbenzene	0.005	<0.005

Note: Analysis was performed using EPA methods 5030 and TPH  
LUFT with method 8020 used for BTEX distinction.  
(ppm) = (mg/kg)

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*Ronald G. Evans*  
*for*

Ronald G. Evans  
Lab Director



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Attn: Bob Bogar  
Project Manager

Date Sampled: 06-24-96  
Date Received: 06-24-96  
Date Analyzed: 06-24-96

Sample Number  
V066023

Sample Description  
Proj#20596-001-01  
Hooshi Automotive  
1499 Mac Arthur Blvd.  
G-6-10' SOIL

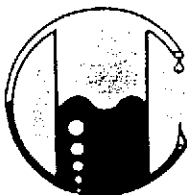
## ANALYSIS

	<u>Detection Limit</u>	<u>Sample Results</u>
	ppm	ppm
Total Petroleum Hydrocarbons as Gasoline	1.0	<1.0
Benzene	0.005	<0.005
Toluene	0.005	<0.005
Xylenes	0.005	<0.005
Ethylbenzene	0.005	<0.005

Note: Analysis was performed using EPA methods 5030 and TPH  
LUFT with method 8020 used for BTEX distinction.  
(ppm) = (mg/kg)

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Ronald G. Evans  
Lab Director



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Attn: Bob Bogar  
Project Manager

Date Sampled: 06-24-96  
Date Received: 06-24-96  
Date Analyzed: 06-24-96

Sample Number  
V066024

Sample Description  
Proj#20596-001-01  
Hooshi Automotive  
1499 Mac Arthur Blvd.  
G-7B-5' SOIL

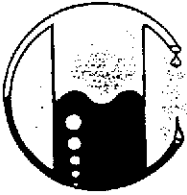
## ANALYSIS

	Detection Limit	Sample Results
	ppm	ppm
Total Petroleum Hydrocarbons as Gasoline	1.0	<1.0
Benzene	0.005	<0.005
Toluene	0.005	<0.005
Xylenes	0.005	<0.005
Ethylbenzene	0.005	<0.005

Note: Analysis was performed using EPA methods 5030 and TPH  
LUFT with method 8020 used for BTEX distinction.  
(ppm) = (mg/kg)

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Attn: Bob Bogar  
Project Manager

Date Sampled: 06-24-96  
Date Received: 06-24-96  
Date Analyzed: 06-24-96

Sample Number  
V066025

Sample Description  
Proj#20596-001-01  
Hooshi Automotive  
1499 Mac Arthur Blvd.  
G-7B-10' SOIL

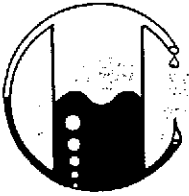
## ANALYSIS

	<u>Detection Limit</u>	<u>Sample Results</u>
	ppm	ppm
Total Petroleum Hydrocarbons as Gasoline	1.0	<1.0
Benzene	0.005	<0.005
Toluene	0.005	<0.005
Xylenes	0.005	<0.005
Ethylbenzene	0.005	<0.005

Note: Analysis was performed using EPA methods 5030 and TPH  
LUFT with method 8020 used for BTEX distinction.  
(ppm) = (mg/kg)

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*Fred Chosh*  
*for*  
Ronald G. Evans  
Lab Director



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Attn: Bob Bogar  
Project Manager

Date Sampled: 06-24-96  
Date Received: 06-24-96  
Date Analyzed: 06-24-96

Sample Number  
V066026

Sample Description  
Proj#20596-001-01  
Hooshi Automotive  
1499 Mac Arthur Blvd.  
G-8-10' SOIL

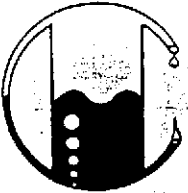
## ANALYSIS

	<u>Detection Limit</u>	<u>Sample Results</u>
	ppm	ppm
Total Petroleum Hydrocarbons as Gasoline	1.0	<1.0
Benzene	0.005	<0.005
Toluene	0.005	<0.005
Xylenes	0.005	<0.005
Ethylbenzene	0.005	<0.005

Note: Analysis was performed using EPA methods 5030 and TPH  
LUFT with method 8020 used for BTEX distinction.  
(ppm) = (mg/kg)

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Lab Director



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Attn: Bob Bogar  
Project Manager

Date Sampled: 06-24-96  
Date Received: 06-24-96  
Date Analyzed: 06-24-96

Sample Number  
V066027

Sample Description  
Proj#20596-001-01  
Hooshi Automotive  
1499 Mac Arthur Blvd.  
G-9-11.5' SOIL

## ANALYSIS

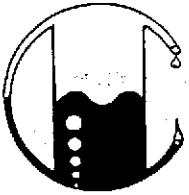
	<u>Detection Limit</u>	<u>Sample Results</u>
	ppm	ppm
Total Petroleum Hydrocarbons as Gasoline	1.0	98
Benzene	0.005	0.079
Toluene	0.005	0.064
Xylenes	0.005	4.2
Ethylbenzene	0.005	1.3

Note: Analysis was performed using EPA methods 5030 and TPH  
LUFT with method 8020 used for BTEX distinction.  
(ppm) = (mg/kg)

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*Fred Choske*  
*for*

Ronald G. Evans  
Lab Director



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Dublin, CA 94568  
Attn: Bob Bogar  
Project Manager

Date Sampled: 06-24-96  
Date Received: 06-24-96  
Date Analyzed: 06-24-96

Sample Number  
V066028

Sample Description  
Proj#20596-001-01  
Hooshi Automotive  
1499 Mac Arthur Blvd.  
G-9-12.5' SOIL

## ANALYSIS

	<u>Detection Limit</u>	<u>Sample Results</u>
	ppm	ppm
Total Petroleum Hydrocarbons as Gasoline	1.0	860
Benzene	0.005	3.1
Toluene	0.005	11
Xylenes	0.005	97
Ethylbenzene	0.005	14

Note: Analysis was performed using EPA methods 5030 and TPH  
LUFT with method 8020 used for BTEX distinction.  
(ppm) = (mg/kg)

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*Ronald G. Evans*

Ronald G. Evans  
Lab Director



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Dublin, CA 94568  
Attn: Bob Bogar  
Project Manager

Date Sampled: 06-24-96  
Date Received: 06-24-96  
Date Analyzed: 06-24-96

Sample Number  
V066029

Sample Description  
Proj#20596-001-01  
Hooshi Automotive  
1499 Mac Arthur Blvd.  
G-4-W WATER

## ANALYSIS

	<u>Detection Limit</u>	<u>Sample Results</u>
	ppb	ppb
Total Petroleum Hydrocarbons as Gasoline	50	<50
Benzene	0.5	<0.5
Toluene	0.5	1.0
Xylenes	0.5	1.2
Ethylbenzene	0.5	<0.5

Note: Analysis was performed using EPA methods 5030 and TPH  
LUFT with method 602 used for BTEX distinction.  
(ppb) = (µg/L)

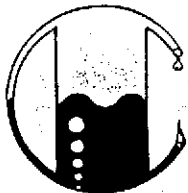
MOBILE CHEM LABS

*Fred Chosha*

Ronald G. Evans  
Lab Director

*R. Evans*





# MOBILE CHEM LABS INC.

5011 Blum Road, Suite 1 • Martinez, CA 94553  
Phone (510) 372-3700 • Fax (510) 372-6955

20596-001-01\2131\013769

Century West  
7950 Dublin Blvd., #203  
Dublin, CA 94568  
Attn: Bob Bogar  
Project Manager

Date Sampled: 06-24-96  
Date Received: 06-24-96  
Date Analyzed: 06-24-96

Sample Number  
V066030

Sample Description  
Proj#20596-001-01  
Hooshi Automotive  
1499 Mac Arthur Blvd.  
G-7-W WATER

## ANALYSIS

	<u>Detection Limit</u>	<u>Sample Results</u>
	ppb	ppb
Total Petroleum Hydrocarbons as Gasoline	50	<50
Benzene	0.5	<0.5
Toluene	0.5	1.3
Xylenes	0.5	1.5
Ethylbenzene	0.5	<0.5

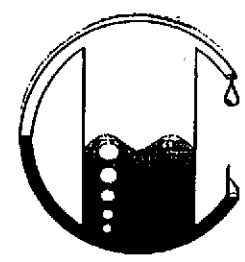
Note: Analysis was performed using EPA methods 5030 and TPH  
LUFT with method 602 used for BTEX distinction.  
(ppb) = (µg/L)

MOBILE CHEM LABS

*Ronald G. Evans*  
Ronald G. Evans  
Lab Director

Project No. 20596-001-01  
 Site Name/Location HOOSHI AUTOMOTIVE  
 1499 MACAURTHUR BLVD  
 OAKLAND CA

Consultant Name CENTURY WEST  
 Address #1 of 2  
 Sampler Name



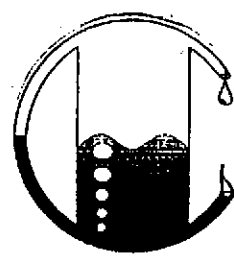
MOBILE CHEM LABS, INC.  
 1678 RELIEZ VALLEY RD.  
 LAFAYETTE, CA 94549  
 (510) 945-1266  
 (510) 943-6884 fax

SAMPLE ID NUMBER	DATE	TIME	LAB ID#	SAMPLE PRESERVATION			MATRIX			# of Cont.	GRAB/COMP	TPH-G/BTEX	TPH-D	TOG(5520)	TRPH(418.1)	8010/601	8080/608	8240/624	CAM 17 met.	8270/625	Hold
				HCl	HNO3	ICE	SOIL	WATER	AIR												
G-1-5'	6/24/96	0915				X	X			1	G										X
G-2-5'		0930				X	X			1	G										X
G-2-10'		0940				X	X			1	G	X									
G-2-15'		1005				X	X			1	G	X									
G-3B-6'		1025				X	X			1	G										X
G-3B-10'		1035				X	X			1	G	X									
G-3B-14.5'		1045				X	X			1	G	X									
G-4-5'		1110				X	X			1	G										X
G-4-10'		1133				X	X			1	G	X									
G-5-7'		1210				X	X			1	G	X									
G-5-12'		1212				X	X			1	G	X									
G-6-10'		1324				X	X			1	G	X									
G-7B+5'		1356				X	X			7	G	X									
G-7B-10'		1405				X	X			1	G	X									X
G-8-10'		1430				X	X			1	G	X									
G-9-11.5'		1450				X	X			1	G	X									

Relinquished By: *Lafayette Chem* For Century West  
 Date/Time: 6/24/96 1630  
 Received By: *Fred Chosha*  
 Comments:  
 Turn Around

Project No.  
20596-001-01

Site Name/Location HOOSHI Automotive  
1499 MAC AURTNER BLVD  
OAKLAND CA



MOBILE CHEM LABS, INC.  
1678 RELIEZ VALLEY RD.  
LAFAYETTE, CA 94549  
(510) 945-1266  
(510) 943-6884 fax

Consultant Name CENTURY West  
Address  
#2 of 2  
Sampler Name

SAMPLE ID NUMBER	DATE	TIME	LAB ID#	SAMPLE PRESERVATION			MATRIX			# of Cont.	GRAB/COMP	TPH-G/BTEX	TPH-D	TOG(5520)	TRPH(418.1)	8010/601	8080/608	8240/624	CAM 17 met.	8270/625						
				HCL	HNO3	ICE	SOIL	WATER	AIR																	
G-9-12.5	6/24/96	1451				X	X			1	G	X														
G-4-W		1620						X		1	G	X														
G-7-W		1624						X		1	G	X														



NATIONAL  
ENVIRONMENTAL  
TESTING, INC.

Santa Rosa Division  
3636 North Laughlin Road  
Suite 110  
Santa Rosa, CA 95403-8226  
Tel: (707) 526-7200  
Fax: (707) 541-2333

Glen Morelli  
Century West Engineering  
7950 Dublin Blvd., Ste 210  
Dublin, CA 94568

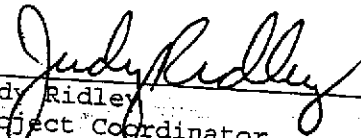
Date: 07/10/1996  
NET Client Acct. No: 75300  
NET Job No: 96.02005  
Received: 06/29/1996

Client Reference Information

Hooshi Automotive/Project No. 20596-001-01

Sample analysis in support of the project referenced above has been completed and results are presented on the following pages. Results apply only to the samples analyzed. Reproduction of this report is permitted only in its entirety. Please refer to the enclosed "Key to Abbreviations" for definition of terms. Should you have questions regarding procedures or results, please feel free to call me at (707) 541-2307.

Submitted by:

  
Judy Ridley  
Project Coordinator

Enclosure (s)

Client Name: Century West Engineering

Date: 07/10/1996

Client Acct: 75300

ELAP Cert: 1386

NET Job No: 96.02005

Page: 2

Ref: Hooshi Automotive/Project No. 20596-001-01

SAMPLE DESCRIPTION: MW-4-10

Date Taken: 06/27/1996

Time Taken:

NET Sample No: 265671

Parameter	Results	Flags	Reporting			Date	Date	Run
			Limit	Units	Method	Extracted	Analyzed	Batch No.
TPH (Gas/BTEX, Solid)								
5030/M8015	--						07/03/1996	2002
DILUTION FACTOR*	1						07/03/1996	2002
as Gasoline	ND		1.0	mg/kg	5030		07/03/1996	2002
8020 (GC, Solid)	--						07/03/1996	2002
Benzene	ND		2.5	ug/kg	8020		07/03/1996	2002
Toluene	ND		2.5	ug/kg	8020		07/03/1996	2002
Ethylbenzene	ND		2.5	ug/kg	8020		07/03/1996	2002
Xylenes (Total)	ND		2.5	ug/kg	8020		07/03/1996	2002
Methyl-tert-butyl ether	ND		10	ug/kg	8020		07/05/1996	2004
SURROGATE RESULTS	--						07/03/1996	2002
Bromofluorobenzene (SURR)	89			% Rec.	5030		07/03/1996	2002

NOTE: Results apply only to the samples analyzed. Reproduction of this report is permitted only in its entirety.

Client Name: Century West Engineering

Date: 07/10/1996

Client Acct: 75300

ELAP Cert: 1386

NET Job No: 96.02005

Page: 3

Ref: Hooshi Automotive/Project No. 20596-001-01

SAMPLE DESCRIPTION: MW-5-10

Date Taken: 06/27/1996

Time Taken:

NET Sample No: 265672

Parameter	Results	Flags	Reporting		Method	Date	Date	Run
			Limit	Units		Extracted	Analyzed	Batch
TPH (Gas/BTEX, Solid)								
5030/M8015							07/03/1996	2002
DILUTION FACTOR*	1						07/03/1996	2002
as Gasoline	ND		1.0	mg/kg	5030		07/03/1996	2002
8020 (GC, Solid)							07/03/1996	2002
Benzene	ND		2.5	ug/kg	8020		07/03/1996	2002
Toluene	ND		2.5	ug/kg	8020		07/03/1996	2002
Ethylbenzene	ND		2.5	ug/kg	8020		07/03/1996	2002
Xylenes (Total)	ND		2.5	ug/kg	8020		07/03/1996	2002
Methyl-tert-butyl ether	ND		10	ug/kg	8020		07/05/1996	2004
SURROGATE RESULTS							07/03/1996	2002
Bromofluorobenzene (Surr)	97			% Rec.	5030		07/03/1996	2002

NOTE: Results apply only to the samples analyzed. Reproduction of this report is permitted only in its entirety.

Client Name: Century West Engineering

Date: 07/10/1996

Client Acct: 75300

ELAP Cert: 1386

NET Job No: 96.02005

Page: 4

Ref: Hooshi Automotive/Project No. 20596-001-01

SAMPLE DESCRIPTION: MW-6-10

Date Taken: 06/27/1996

Time Taken:

NET Sample No: 265673

Parameter	Results	Flags	Reporting		Method	Date	Date	Run
			Limit	Units		Extracted	Analyzed	Batch
TPH (Gas/BTEX,Solid)								
5030/MB015							07/03/1996	2002
DILUTION FACTOR*	1						07/03/1996	2002
as Gasoline	ND		1.0	mg/kg	5030		07/03/1996	2002
8020 (GC,Solid)	--						07/03/1996	2002
Benzene	ND		2.5	ug/kg	8020		07/03/1996	2002
Toluene	ND		2.5	ug/kg	8020		07/03/1996	2002
Ethylbenzene	ND		2.5	ug/kg	8020		07/03/1996	2002
Xylenes (Total)	ND		2.5	ug/kg	8020		07/03/1996	2002
Methyl-tert-butyl ether	ND		10	ug/kg	8020		07/05/1996	2004
SURROGATE RESULTS	--						07/03/1996	2002
Bromofluorobenzene (SURRE)	89			% Rec.	5030		07/03/1996	2002

NOTE: Results apply only to the samples analyzed. Reproduction of this report is permitted only in its entirety.

Client Name: Century West Engineering

Date: 07/10/1996

Client Acct: 75300

ELAP Cert: 1386

NET Job No: 96.02005

Page: 5

Ref: Hooshi Automotive/Project No. 20596-001-01

## CONTINUING CALIBRATION VERIFICATION STANDARD REPORT

Parameter	CCV	CCV	Flags	Units	Date Analyzed	Analyst Initials	Run Batch Number
	% Recovery	Standard Amount Found					
TPH (Gas/BTXE, Solid)							
as Gasoline	85.2	2.13	2.50	mg/kg	07/03/1996		2002
Benzene	101.0	101	100.0	ug/kg	07/03/1996		2002
Toluene	98.7	98.7	100.0	ug/kg	07/03/1996		2002
Ethylbenzene	97.8	97.8	100.0	ug/kg	07/03/1996		2002
Xylenes (Total)	101.0	303	300.0	ug/kg	07/03/1996		2002
Methyl-tert-butyl ether	85.5	342	400.0	ug/kg	07/03/1996		2002
Bromofluorobenzene (SURR)	103.0	103	100	% Rec.	07/03/1996		2002
TPH (Gas/BTXE, Solid)							
as Gasoline	101.2	2.53	2.50	mg/kg	07/05/1996	aal	2004
Benzene	100.5	100.5	100.0	ug/kg	07/05/1996	aal	2004
Toluene	100.8	100.8	100.0	ug/kg	07/05/1996	aal	2004
Ethylbenzene	103.1	103.1	100.0	ug/kg	07/05/1996	aal	2004
Xylenes (Total)	101.7	305.2	300.0	ug/kg	07/05/1996	aal	2004
Methyl-tert-butyl ether	88.5	353.8	400.0	ug/kg	07/05/1996	aal	2004
Bromofluorobenzene (SURR)	105.0	105	100	% Rec.	07/05/1996	aal	2004

NOTE: Results apply only to the samples analyzed. Reproduction of this report is permitted only in its entirety.



Client Name: Century West Engineering  
 Client Acct: 75300  
 NET Job No: 96.02005

Date: 07/10/1996  
 ELAP Cert: 1386  
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Ref: Hooshi Automotive/Project No. 20596-001-01

## METHOD BLANK REPORT

Parameter	Method Blank	Amount Found	Reporting Limit	Flags	Units	Date Analyzed	Analyst Initials	Run Batch Number
TPH (Gas/BTEX, Solid)								
as Gasoline	ND		1.0		mg/kg	07/03/1996		2002
Benzene	ND		2.5		ug/kg	07/03/1996		2002
Toluene	ND		2.5		ug/kg	07/03/1996		2002
Ethylbenzene	ND		2.5		ug/kg	07/03/1996		2002
Xylenes (Total)	ND		2.5		ug/kg	07/03/1996		2002
Methyl-tert-butyl ether	ND		10		ug/kg	07/03/1996		2002
Bromofluorobenzene (SURRE)	99				% Rec.	07/03/1996		2002
TPH (Gas/BTEX, Solid)								
as Gasoline	ND		1.0		mg/kg	07/05/1996	aal	2004
Benzene	ND		2.5		ug/kg	07/05/1996	aal	2004
Toluene	ND		2.5		ug/kg	07/05/1996	aal	2004
Ethylbenzene	ND		2.5		ug/kg	07/05/1996	aal	2004
Xylenes (Total)	ND		2.5		ug/kg	07/05/1996	aal	2004
Methyl-tert-butyl ether	ND		10		ug/kg	07/05/1996	aal	2004
Bromofluorobenzene (SURRE)	103				% Rec.	07/05/1996	aal	2004

NOTE: Results apply only to the samples analyzed. Reproduction of this report is permitted only in its entirety.

Client Name: Century West Engineering

Date: 07/10/1996

Client Acct: 75300

ELAP Cert: 1386

NET Job No: 96.02005

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Ref: Hooshi Automotive/Project No: 20596-001-01

### MATRIX SPIKE / MATRIX SPIKE DUPLICATE

Parameter	Matrix Spike		RPD	Spike Amount	Matrix Spike		Sample Conc	Flags	Units	Date Analyzed	Run Batch	Sample Spiked
	% Rec.	% Rec.			Conc	Conc						
TPH (Gas/BTEX,Solid)												265671
as Gasoline	91.2	88.8	2.7	2.50	ND	2.28	2.22		mg/kg	07/03/1996	2002	265671
Benzene	104.7	106.5	1.7	32.1	ND	33.6	34.2		ug/kg	07/03/1996	2002	265671
Toluene	102.9	105.8	2.8	172	ND	177	182		ug/kg	07/03/1996	2002	265671
Bromofluorobenzene (SURRE)	95.0	94.0	1.1	100	89	95	94		% Rec.	07/03/1996	2002	265671
TPH (Gas/BTEX,Solid)												265779
as Gasoline	97.6	114.0	15.4	2.50	ND	2.44	2.85		mg/kg	07/05/1996	2004	265779
Benzene	71.6	95.6	28.7	29.25	ND	20.95	27.97		ug/kg	07/05/1996	2004	265779
Toluene	98.5	98.3	0.2	198.3	ND	195.25	194.9		ug/kg	07/05/1996	2004	265779
Bromofluorobenzene (SURRE)	104.0	106.0	1.9	100	101	104	106		% Rec.	07/05/1996	2004	265779

NOTE: Results apply only to the samples analyzed. Reproduction of this report is permitted only in its entirety.

## KEY TO RESULT FLAGS

- \* : RPD between sample duplicates exceeds 30%.
- \*M : RPD between sample duplicates or MS/MSD exceeds 20%.
- + : Correlation coefficient for the Method of Standard Additions is less than 0.995.
- < : Sample result is less than reported value.
- B-I : Value is between Method Detection Limit and Reporting Limit.
- B-0 : Analyte found in blank and sample.
- C : The result confirmed by secondary column or GC/MS analysis.
- CNA : Cr+6 not analyzed; Total Chromium concentration below Cr+6 regulatory level.
- COMP : Sample composited by equal volume prior to analysis.
- D- : The result has an atypical pattern for Diesel analysis.
- D1 : The result for Diesel is an unknown hydrocarbon which consists of a single peak.
- DH : The result appears to be a heavier hydrocarbon than Diesel.
- DL : The result appears to be a lighter hydrocarbon than Diesel.
- DR : Elevated Reporting Limit due to Matrix.
- DS : Surrogate diluted out of range.
- DX : The result for Diesel is an unknown hydrocarbon which consists of several peaks.
- FA : Compound quantitated at a 2X dilution factor.
- FB : Compound quantitated at a 5X dilution factor.
- FC : Compound quantitated at a 10X dilution factor.
- FD : Compound quantitated at a 20X dilution factor.
- FE : Compound quantitated at a 50X dilution factor.
- FF : Compound quantitated at a 100X dilution factor.
- FG : Compound quantitated at a 200X dilution factor.
- FH : Compound quantitated at a 500X dilution factor.
- FI : Compound quantitated at a 1000X dilution factor.
- FJ : Compound quantitated at a greater than 1000x dilution factor.
- FK : Compound quantitated at a 25X dilution factor.
- FL : Compound quantitated at a 250X dilution factor.
- G- : The result has an atypical pattern for Gasoline.
- G1 : The result for Gasoline is an unknown hydrocarbon which consists of a single peak.
- GH : The result appears to be a heavier hydrocarbon than Gasoline.
- GL : The result appears to be a lighter hydrocarbon than Gasoline.
- GX : The result for Gasoline is an unknown hydrocarbon which consists of several peaks.
- HT : Analysis performed outside of the method specified holding time.
- HTC : Confirmation analyzed outside of the method specified holding time.
- HTP : Prep procedure performed outside of the method specified holding time.
- HX : Peaks detected within the quantitation range do not match standard used.
- J : Value is estimated.
- MI : Matrix Interference Suspected.
- MSA : Value determined by Method of Standard Additions.
- MSA\* : Value obtained by Method of Standard Additions; Correlation coefficient is <0.995.
- NI1 : Sample spikes outside of QC limits; matrix interference suspected.
- NI2 : Sample concentration is greater than 4X the spiked value; the spiked value is considered insignificant.
- NI3 : Matrix Spike values exceed established QC limits, post digestion spike is in control.
- P7 : pH of sample > 2; sample analyzed past 7 days.
- RSC : Refer to subcontract laboratory report for QC data.
- S2 : Matrix interference confirmed by repeat analysis.
- SCN : Thiocyanate not analyzed separately; total value is below the Reporting Limit for Free Cyanide.
- UMDL : Undetected at the Method Detection Limit.





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3636 North Laughlin Road  
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Rajeev Cherwood  
Century West Engineering  
7950 Dublin Blvd., Ste 210  
Dublin, CA 94568

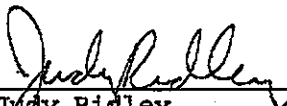
Date: 07/16/1996  
NET Client Acct No: 75300  
NET Job No: 96202040  
Received: 07/03/1996

Client Reference Information

Hooshi's Automotive/Project No. 20596-001-01

Sample analysis in support of the project referenced above has been completed and results are presented on the following pages. Results apply only to the samples analyzed. Reproduction of this report is permitted only in its entirety. Please refer to the enclosed "Key to Abbreviations" for definition of terms. Should you have questions regarding procedures or results, please feel free to call me at (707) 541-2307.

Submitted by:

  
\_\_\_\_\_  
Judy Ridley  
Project Coordinator

Enclosure(s)

Client Name: Century West Engineering

Date: 07/16/1996

Client Acct: 75300

KLAP Cert: 1386

NET Job No: 96.02040

Page: 4

Ref: Hooshi's Automotive/Project No. 20596-001-01

SAMPLE DESCRIPTION: MW-4

Date Taken: 07/03/1996

Time Taken:

NET Sample No: 265802

Parameter	Results	Flags	Reporting		Method	Date	Date	Run
			Limit	Units		Extracted	Analyzed	Batch No.
TPH (Gas/STXE, Liquid)								
5030/M8015							07/11/1996	3683
DILUTION FACTOR*	1						07/11/1996	3683
as Gasoline	0.72		0.050	ug/L	5030		07/11/1996	3683
8020 (GC, Liquid)	--						07/11/1996	3683
Benzene	2.0		0.50	ug/L	8020		07/11/1996	3683
Toluene	0.5		0.50	ug/L	8020		07/11/1996	3683
Ethylbenzene	2.5		0.50	ug/L	8020		07/11/1996	3683
Xylenes (Total)	23		0.50	ug/L	8020		07/11/1996	3683
Methyl-tert-butyl ether	3.2		2.0	ug/L	8020		07/11/1996	3683
SURROGATE RESULTS	--						07/11/1996	3683
Bromofluorobenzene (SURR)	97			% Rec.	5030		07/11/1996	3683

NOTE: Results apply only to the samples analyzed. Reproduction of this report is permitted only in its entirety.

Client Name: Century West Engineering

Date: 07/16/1996

Client Acct: 75300

ELAP Cert: 1386

NET Job No: 96.02040

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Ref: Hooshi's Automotive/Project No. 20596-001-01

SAMPLE DESCRIPTION: MW-6

Date Taken: 07/11/1996

Time Taken: 11:00

NET Sample No: 266149

Parameter	Results	Flags	Reporting Limit	Units	Method	Date Extracted	Date Analyzed	Run Batch No.
THF (Gas/BTEX, Liquid)							07/15/1996	3685
5030/MS015							07/15/1996	3685
DILUTION FACTOR	1						07/15/1996	3685
as Gasoline	ND		0.050	ug/L	5030		07/15/1996	3685
8020 (GC, Liquid)							07/15/1996	3685
Benzene	ND		0.50	ug/L	8020		07/15/1996	3685
Toluene	ND		0.50	ug/L	8020		07/15/1996	3685
Ethylbenzene	ND		0.50	ug/L	8020		07/15/1996	3685
Xylenes (Total)	ND		0.50	ug/L	8020		07/15/1996	3685
Methyl-tert-butyl ether	ND		2.0	ug/L	8020		07/15/1996	3685
SURROGATE RESULTS	--						07/15/1996	3685
Bromofluorobenzene (SURR)	102			µg Rec.	5030		07/15/1996	3685

NOTE: Results apply only to the samples analyzed. Reproduction of this report is permitted only in its entirety.

Client Name: Century West Engineering

Date: 07/16/1996

Client Acct: 75300

ELAP Cert: 1386

NET Job No: 96.02040

Page: 6

Ref: Hooshi's Automotive/Project No. 20596-001-01

## CONTINUING CALIBRATION VERIFICATION STANDARD REPORT

Parameter	CCV	CCV	CCV	Flags	Units	Date Analyzed	Analyst Initials	Run Batch Number
	Standard % Recovery	Standard Amount Found	Standard Amount Expected					
TPH (Gas/BTEXE, Liquid)								
as Gasoline	96.0	0.48	0.50		ug/L	07/11/1996	lss	3683
Benzene	105.5	21.09	20.0		ug/L	07/11/1996	lss	3683
Toluene	103.6	20.71	20.0		ug/L	07/11/1996	lss	3683
Ethylbenzene	103.8	20.75	20.0		ug/L	07/11/1996	lss	3683
Xylenes (Total)	103.1	61.87	60.0		ug/L	07/11/1996	lss	3683
Methyl-tert-butyl ether	90.9	72.69	80.0		ug/L	07/11/1996	lss	3683
Bromofluorobenzene (SURR)	90.0	90	100		% Rec.	07/11/1996	lss	3683
TPH (Gas/BTEXE, Liquid)								
as Gasoline	96.0	0.48	0.50		mg/L	07/12/1996	lss	3684
Benzene	95.5	19.1	20.0		ug/L	07/12/1996	lss	3684
Toluene	96.5	19.3	20.0		ug/L	07/12/1996	lss	3684
Ethylbenzene	98.0	19.6	20.0		ug/L	07/12/1996	lss	3684
Xylenes (Total)	97.2	58.3	60.0		ug/L	07/12/1996	lss	3684
Methyl-tert-butyl ether	89.1	71.3	80.0		ug/L	07/12/1996	lss	3684
Bromofluorobenzene (SURR)	106.0	106	100		% Rec.	07/12/1996	lss	3684
TPH (Gas/BTEXE, Liquid)								
as Gasoline	96.0	0.48	0.50		mg/L	07/15/1996	lss	3685
Benzene	105.5	21.09	20.0		ug/L	07/15/1996	lss	3685
Toluene	103.6	20.71	20.0		ug/L	07/15/1996	lss	3685
Ethylbenzene	102.4	20.47	20.0		ug/L	07/15/1996	lss	3685
Xylenes (Total)	106.8	64.07	60.0		ug/L	07/15/1996	lss	3685
Methyl-tert-butyl ether	98.5	78.82	80.0		ug/L	07/15/1996	lss	3685
Bromofluorobenzene (SURR)	100.0	100	100		% Rec.	07/15/1996	lss	3685

NOTE: Results apply only to the samples analyzed. Reproduction of this report is permitted only in its entirety.



Client Name: Century West Engineering

Date: 07/16/1996

Client Acct: 75300

ELAP Cert: 1386

NET Job No: 96.02040

Page: 7

Ref: Kooshi's Automotive/Project No. 20596-001-01

## METHOD BLANK REPORT

Parameter	Method		Units	Date Analyzed	Analyst Initials	Run Batch Number
	Blank Found	Reporting Limit				
TPH (Gas/BTEX, Liquid)						
as Gasoline	ND	0.050	ug/L	07/11/1996	lss	3683
Benzene	ND	0.50	ug/L	07/11/1996	lss	3683
Toluene	ND	0.50	ug/L	07/11/1996	lss	3683
Ethylbenzene	ND	0.50	ug/L	07/11/1996	lss	3683
Xylenes (Total)	ND	0.50	ug/L	07/11/1996	lss	3683
Methyl-tert-butyl ether	ND	2.0	ug/L	07/11/1996	lss	3683
Bromofluorobenzene (SRR)	87		% Rec.	07/11/1996	lss	3683
TPH (Gas/BTEX, Liquid)						
as Gasoline	ND	0.050	ug/L	07/12/1996	lss	3684
Benzene	ND	0.50	ug/L	07/12/1996	lss	3684
Toluene	ND	0.50	ug/L	07/12/1996	lss	3684
Ethylbenzene	ND	0.50	ug/L	07/12/1996	lss	3684
Xylenes (Total)	ND	0.50	ug/L	07/12/1996	lss	3684
Methyl-tert-butyl ether	ND	2.0	ug/L	07/12/1996	lss	3684
Bromofluorobenzene (SRR)	104		% Rec.	07/12/1996	lss	3684
TPH (Gas/BTEX, Liquid)						
as Gasoline	ND	0.050	ug/L	07/15/1996	lss	3685
Benzene	ND	0.50	ug/L	07/15/1996	lss	3685
Toluene	ND	0.50	ug/L	07/15/1996	lss	3685
Ethylbenzene	ND	0.50	ug/L	07/15/1996	lss	3685
Xylenes (Total)	ND	0.50	ug/L	07/15/1996	lss	3685
Methyl-tert-butyl ether	ND	2.0	ug/L	07/15/1996	lss	3685
Bromofluorobenzene (SRR)	99		% Rec.	07/15/1996	lss	3685

NOTE: Results apply only to the samples analyzed. Reproduction of this report is permitted only in its entirety.

Client Name: Century West Engineering

Date: 07/16/1996

Client Acct: 75300

ELAP Cert: 1386

NET Job No: 96.02040

Page: 8

Ref: Hooshi's Automotive/Project No. 20596-001-01

## MATRIX SPIKE / MATRIX SPIKE DUPLICATE

Parameter	Matrix Spike		RPD	Amount	Conc.	Matrix Spike		Flags	Units	Date Analyzed	Run Batch	Sample Spiked
	% Rec.	% Rec.				Conc.	Conc.					
TPH (Gas/BTEX, Liquid)												265977
as Gasoline	94.0	54.0	54.1	0.50	0.48	0.95	0.75		mg/L	07/11/1996	3683	265977
Benzene	93.8	89.6	4.5	7.10	1.7	8.36	8.06		ug/L	07/11/1996	3683	265977
Toluene	101.2	97.2	3.9	39.58	2.5	42.54	40.96		ug/L	07/11/1996	3683	265977
Bromofluorobenzene (SURR)	97.0	97.0	0.0	100	96	97	97		% Rec.	07/11/1996	3683	265977
TPH (Gas/BTEX, Liquid)												265978
as Gasoline	106.0	108.0	1.9	0.50	ND	0.53	0.54		mg/L	07/12/1996	3684	265978
Benzene	107.0	108.0	0.9	4.00	ND	4.28	4.32		ug/L	07/12/1996	3684	265978
Toluene	102.1	101.8	0.3	38.6	ND	39.4	39.3		ug/L	07/12/1996	3684	265978
Bromofluorobenzene (SURR)	104.0	97.0	6.9	100	97	104	97		% Rec.	07/12/1996	3684	265978
TPH (Gas/BTEX, Liquid)												266149
as Gasoline	94.0	92.0	2.2	0.50	ND	0.47	0.46		mg/L	07/15/1996	3685	266149
Benzene	92.5	90.9	1.7	7.87	ND	7.28	7.15		ug/L	07/15/1996	3685	266149
Toluene	96.2	94.8	1.5	40.24	ND	38.73	38.14		ug/L	07/15/1996	3685	266149
Bromofluorobenzene (SURR)	97.0	100.0	2.9	100	102	97	100		% Rec.	07/15/1996	3685	266149

NOTE: Results apply only to the samples analyzed. Reproduction of this report is permitted only in its entirety.

**CHAIN OF CUSTODY RECORD**

COMPANY Century West Engineering Corporation  
 ADDRESS 7950 Dublin Blvd., Suite 203  
 PHONE (510) 551-7774 FAX 510 551-7776  
 PROJECT NAME/LOCATION Hoashi's Automotive  
 PROJECT NUMBER 20596-001-01  
 PROJECT MANAGER \_\_\_\_\_

REPORT TO: Rejeve  
 INVOICE TO: \_\_\_\_\_  
 P.O. NO. \_\_\_\_\_  
 NET QUOTE NO. \_\_\_\_\_

AMPLIFIED BY \_\_\_\_\_  
 SIGNATURE \_\_\_\_\_  
 SIGNATURE \_\_\_\_\_  
 # and Type of Containers \_\_\_\_\_

DATE	TIME	SAMPLE ID/DESCRIPTION	MATRIX	GROSS	CONT.	#	TYPE	ANALYSES				COMMENTS
								MTBE	STX	TPH	6	
7/3/96		MW-1 - 2 VOAS						✓				
		<del>MW-2</del> 20m						✓				
		MW-3						✓				
		MW-4						✓				
		<del>MW-5</del> 26m						✓				
		MW-6						✓				discarded by Century West Engineering per Matt Broome to JF 7/8/96

CONDITION OF SAMPLE: BOTTLES INTACT?  YES / NO  
 FIELD FILTERED?  YES / NO  
 COC SEALS PRESENT AND INTACT? YES / NO NIA  
 VOLATILES FREE OF HEADSPACE?  YES / NO  
 TEMPERATURE UPON RECEIPT: 0.0°C  
 Bottles supplied by NET?  YES / NO

SAMPLE REMAINDER DISPOSAL: RETURN SAMPLE REMAINDER TO CLIENT VIA \_\_\_\_\_  
 REQUEST NET TO DISPOSE OF ALL SAMPLE REMAINDERS \_\_\_\_\_ DATE \_\_\_\_\_

RELINQUISHED BY: Glenn Morelli DATE/TIME: 7/3/96 12:12 PM  
 RECEIVED BY: [Signature] DATE/TIME: 7/3/96 14:13  
 REMARKS: Relinquished by [Signature]  
 RELINQUISHED BY: [Signature] DATE/TIME: 7/3/96 14:50  
 RECEIVED FOR NET BY: [Signature]  
 METHOD OF SHIPMENT: \_\_\_\_\_  
 RECEIVED BY: [Signature] DATE/TIME: 7/3/96 17:30  
 RECEIVED FOR NET BY: [Signature] DATE/TIME: 7/3/96 17:30



## KEY TO RESULT FLAGS

- \* : RPD between sample duplicates exceeds 30%.
- \*M : RPD between sample duplicates or MS/MSD exceeds 20%.
- + : Correlation coefficient for the Method of Standard Additions is less than 0.995.
- < : Sample result is less than reported value.
- B-I : Value is between Method Detection Limit and Reporting Limit.
- B-0 : Analyte found in blank and sample.
- C : The result confirmed by secondary column or GC/MS analysis.
- CNA : Cr+6 not analyzed; Total Chromium concentration below Cr+6 regulatory level.
- COMP : Sample composited by equal volume prior to analysis.
- D- : The result has an atypical pattern for Diesel analysis.
- D1 : The result for Diesel is an unknown hydrocarbon which consists of a single peak.
- DH : The result appears to be a heavier hydrocarbon than Diesel.
- DL : The result appears to be a lighter hydrocarbon than Diesel.
- DR : Elevated Reporting Limit due to Matrix.
- DS : Surrogate diluted out of range.
- DX : The result for Diesel is an unknown hydrocarbon which consists of several peaks.
- FA : Compound quantitated at a 2X dilution factor.
- FB : Compound quantitated at a 5X dilution factor.
- FC : Compound quantitated at a 10X dilution factor.
- FD : Compound quantitated at a 20X dilution factor.
- FE : Compound quantitated at a 50X dilution factor.
- FF : Compound quantitated at a 100X dilution factor.
- FG : Compound quantitated at a 200X dilution factor.
- FH : Compound quantitated at a 500X dilution factor.
- FI : Compound quantitated at a 1000X dilution factor.
- FJ : Compound quantitated at a greater than 1000x dilution factor.
- FK : Compound quantitated at a 25X dilution factor.
- FL : Compound quantitated at a 250X dilution factor.
- G- : The result has an atypical pattern for Gasoline.
- G1 : The result for Gasoline is an unknown hydrocarbon which consists of a single peak.
- GH : The result appears to be a heavier hydrocarbon than Gasoline.
- GL : The result appears to be a lighter hydrocarbon than Gasoline.
- GX : The result for Gasoline is an unknown hydrocarbon which consists of several peaks.
- HT : Analysis performed outside of the method specified holding time.
- HTC : Confirmation analyzed outside of the method specified holding time.
- HTP : Prep procedure performed outside of the method specified holding time.
- HX : Peaks detected within the quantitation range do not match standard used.
- J : Value is estimated.
- MI : Matrix Interference Suspected.
- MSA : Value determined by Method of Standard Additions.
- MSA\* : Value obtained by Method of Standard Additions; Correlation coefficient is <0.995.
- NI1 : Sample spikes outside of QC limits; matrix interference suspected.
- NI2 : Sample concentration is greater than 4X the spiked value; the spiked value is considered insignificant.
- NI3 : Matrix Spike values exceed established QC limits, post digestion spike is in control.
- P7 : pH of sample > 2; sample analyzed past 7 days.
- RSC : Refer to subcontract laboratory report for QC data.
- S2 : Matrix interference confirmed by repeat analysis.
- SCN : Thiocyanate not analyzed separately; total value is below the Reporting Limit for Free Cyanide.
- UMDL : Undetected at the Method Detection Limit.



July 18, 1996

Service Request No: S9601107

Rajeev Cherwoo  
Century West Engineering  
7950 Dublin Boulevard  
Suite 203  
Dublin, CA 94568

**Re: Hooshis Automotive**

Dear Rajeev Cherwoo:

The following pages contain analytical results for sample(s) received by the laboratory on July 11, 1996. Results of sample analyses are followed by Appendix A which contains sample custody documentation and quality assurance deliverables requested for this project. The work requested has been assigned the Service Request No. Listed above -- to help expedite our service please refer to this number when contacting the laboratory.

Analytical results were produced by procedures consistent with Columbia Analytical Services' (CAS) Quality Assurance Manual (with any deviations noted). Signature of this CAS Analytical Report below confirms that pages 2 through 11, following, have been thoroughly reviewed and approved for release in accord with CAS Standard Operating Procedure ADM-DatRev3.

Please feel welcome to contact me should you have questions or further needs.

Sincerely,

A handwritten signature in cursive script that reads "Steven L. Green for". The signature is written in black ink and is positioned above the typed name and title.

Steven L. Green  
Project Chemist

SLG/smh

COLUMBIA ANALYTICAL SERVICES, Inc.

Acronyms

A2LA	American Association for Laboratory Accreditation
ASTM	American Society for Testing and Materials
BOD	Biochemical Oxygen Demand
BTEX	Benzene, Toluene, Ethylbenzene, Xylenes
CAM	California Assessment Metals
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
COD	Chemical Oxygen Demand
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DLCS	Duplicate Laboratory Control Sample
DMS	Duplicate Matrix Spike
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
IC	Ion Chromatography
ICB	Initial Calibration Blank sample
ICP	Inductively Coupled Plasma atomic emission spectrometry
ICV	Initial Calibration Verification sample
J	Estimated concentration. The value is less than the MRL, but greater than or equal to the MDL. If the value is equal to the MRL, the result is actually <MRL before rounding.
LCS	Laboratory Control Sample
LUFT	Leaking Underground Fuel Tank
M	Modified
MBAS	Methylene Blue Active Substances
MCL	Maximum Contaminant Level. The highest permissible concentration of a substance allowed in drinking water as established by the U. S. EPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
MS	Matrix Spike
MTBE	Methyl tert-Butyl Ether
NA	Not Applicable
NAN	Not Analyzed
NC	Not Calculated
NCASI	National Council of the paper industry for Air and Stream Improvement
ND	Not Detected at or above the method reporting/detection limit (MRL/MDL)
NIOSH	National Institute for Occupational Safety and Health
NTU	Nephelometric Turbidity Units
ppb	Parts Per Billion
ppm	Parts Per Million
PQL	Practical Quantitation Limit
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
RPD	Relative Percent Difference
SIM	Selected Ion Monitoring
SM	Standard Methods for the Examination of Water and Wastewater, 18th Ed., 1992
STLC	Solubility Threshold Limit Concentration
SW	Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3rd Ed., 1986 and as amended by Updates I, II, IIA, and IIB.
TCLP	Toxicity Characteristic Leaching Procedure
TDS	Total Dissolved Solids
TPH	Total Petroleum Hydrocarbons
tr	Trace level. The concentration of an analyte that is less than the PQL but greater than or equal to the MDL. If the value is equal to the PQL, the result is actually <PQL before rounding.
TRPH	Total Recoverable Petroleum Hydrocarbons
TSS	Total Suspended Solids
TTLIC	Total Threshold Limit Concentration
VOA	Volatile Organic Analyte(s)

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Century West Engineering  
 Project: Hooshis Automotive  
 Sample Matrix: Air

Service Request: S9601107  
 Date Collected: 7/10/96  
 Date Received: 7/11/96  
 Date Extracted: NA  
 Date Analyzed: 7/11/96

BTEX and Total Volatile Hydrocarbons  
 EPA Methods 5030/8020/Modified 8015

Sample Name: MW5-1  
 Lab Code: S9601107-001

	MRLs		Results	
	mg/m3	uL/L (ppmv)	mg/m3	uL/L (ppmv)
Benzene	0.5	0.2	53	17
Toluene	0.5	0.1	240	64
Ethylbenzene	0.5	0.1	69	16
Xylenes, Total	1	0.2	200	46
Total Volatile Hydrocarbons:				
C1 - C5	10	5	15,000	3,700
C6 - C12	20	5	9,600	2,300
TPH as Gasoline*	20	5	9,600	2,300

\* TPH as gasoline is defined as C6 (benzene) through C12 (dodecane) and uses a molecular weight of 100 to calculate the ppmv.



COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Century West Engineering  
 Project: Hooshis Automotive  
 Sample Matrix: Air

Service Request: S9601107  
 Date Collected: 7/10/96  
 Date Received: 7/11/96  
 Date Extracted: NA  
 Date Analyzed: 7/11/96

BTEX and Total Volatile Hydrocarbons  
 EPA Methods 5030/8020/Modified 8015

Sample Name: MW5-2  
 Lab Code: S9601107-002

	MRLs		Results	
	mg/m3	uL/L (ppmv)	mg/m3	uL/L (ppmv)
Benzene	0.5	0.2	30	9
Toluene	0.5	0.1	150	40
Ethylbenzene	0.5	0.1	77	18
Xylenes, Total	1	0.2	210	48
Total Volatile Hydrocarbons:				
C1 - C5	10	5	5,500	1,300
C6 - C12	20	5	6,600	1,600
TPH as Gasoline*	20	5	6,600	1,600

\* TPH as gasoline is defined as C6 (benzene) through C12 (dodecane) and uses a molecular weight of 100 to calculate the ppmv.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Century West Engineering  
 Project: Hooshis Automotive  
 Sample Matrix: Air

Service Request: S9601107  
 Date Collected: 7/10/96  
 Date Received: 7/11/96  
 Date Extracted: NA  
 Date Analyzed: 7/11/96

BTEX and Total Volatile Hydrocarbons  
 EPA Methods 5030/8020/Modified 8015

Sample Name: MW1-1  
 Lab Code: S9601107-003

	MRLs		Results	
	mg/m3	uL/L (ppmv)	mg/m3	uL/L (ppmv)
Benzene	0.5	0.2	40	13
Toluene	0.5	0.1	43	11
Ethylbenzene	0.5	0.1	47	11
Xylenes, Total	1	0.2	64	15
Total Volatile Hydrocarbons:				
C1 - C5	10	5	13,000	3,200
C6 - C12	20	5	11,000	2,700
TPH as Gasoline*	20	5	11,000	2,700

\* TPH as gasoline is defined as C6 (benzene) through C12 (dodecane) and uses a molecular weight of 100 to calculate the ppmv.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Century West Engineering  
Project: Hooshis Automotive  
Sample Matrix: Air

Service Request: S9601107  
Date Collected: 7/10/96  
Date Received: 7/11/96  
Date Extracted: NA  
Date Analyzed: 7/11/96

BTEX and Total Volatile Hydrocarbons  
EPA Methods 5030/8020/Modified 8015

Sample Name: MW1-2  
Lab Code: S9601107-004

	MRLs		Results	
	mg/m3	uL/L (ppmv)	mg/m3	uL/L (ppmv)
Benzene	0.5	0.2	49	15
Toluene	0.5	0.1	120	32
Ethylbenzene	0.5	0.1	74	17
Xylenes, Total	1	0.2	130	30
Total Volatile Hydrocarbons:				
C1 - C5	10	5	9,900	2,400
C6 - C12	20	5	12,000	2,900
TPH as Gasoline*	20	5	12,000	2,900

\* TPH as gasoline is defined as C6 (benzene) through C12 (dodecane) and uses a molecular weight of 100 to calculate the ppmv.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Century West Engineering  
 Project: Hooshis Automotive  
 Sample Matrix: Air

Service Request: S9601107  
 Date Collected: 7/10/96  
 Date Received: 7/11/96  
 Date Extracted: NA  
 Date Analyzed: 7/12/96

BTEX and Total Volatile Hydrocarbons  
 EPA Methods 5030/8020/Modified 8015

Sample Name: MW2-1  
 Lab Code: S9601107-005

	MRLs		Results	
	mg/m3	uL/L (ppmv)	mg/m3	uL/L (ppmv)
Benzene	0.5	0.2	540	170
Toluene	0.5	0.1	1,100	290
Ethylbenzene	0.5	0.1	<50**	<10**
Xylenes, Total	1	0.2	660	150
Total Volatile Hydrocarbons:				
C1 - C5	10	5	59,000	14,000
C6 - C12	20	5	26,000	6,300
TPH as Gasoline*	20	5	26,000	6,300

\* TPH as gasoline is defined as C6 (benzene) through C12 (dodecane) and uses a molecular weight of 100 to calculate the ppmv.

\*\* Raised MRL due to high analyte concentration requiring sample dilution.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Century West Engineering  
 Project: Hooshis Automotive  
 Sample Matrix: Air

Service Request: S9601107  
 Date Collected: 7/10/96  
 Date Received: 7/11/96  
 Date Extracted: NA  
 Date Analyzed: 7/11/96

BTEX and Total Volatile Hydrocarbons  
 EPA Methods 5030/8020/Modified 8015

Sample Name: MW2-2  
 Lab Code: S9601107-006

	MRLs		Results	
	mg/m3	uL/L (ppmv)	mg/m3	uL/L (ppmv)
Benzene	0.5	0.2	380	120
Toluene	0.5	0.1	2,000	530
Ethylbenzene	0.5	0.1	400	92
Xylenes, Total	1	0.2	1,700	390
Total Volatile Hydrocarbons:				
C1 - C5	10	5	26,000	6,300
C6 - C12	20	5	38,000	9,300
TPH as Gasoline*	20	5	38,000	9,300

\* TPH as gasoline is defined as C6 (benzene) through C12 (dodecane) and uses a molecular weight of 100 to calculate the ppmv.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Century West Engineering  
 Project: Hooshis Automotive  
 Sample Matrix: Air

Service Request: S9601107  
 Date Collected: 7/10/96  
 Date Received: 7/11/96  
 Date Extracted: NA  
 Date Analyzed: 7/11/96

BTEX and Total Volatile Hydrocarbons  
 EPA Methods 5030/8020/Modified 8015

Sample Name: Method Blank  
 Lab Code: S960711-VB1

	MRLs		Results	
	mg/m3	uL/L (ppmv)	mg/m3	uL/L (ppmv)
Benzene	0.5	0.2	ND	ND
Toluene	0.5	0.1	ND	ND
Ethylbenzene	0.5	0.1	ND	ND
Xylenes, Total	1	0.2	ND	ND
Total Volatile Hydrocarbons:				
C1 - C5	10	5	ND	ND
C6 - C12	20	5	ND	ND
TPH as Gasoline*	20	5	ND	ND

\* TPH as gasoline is defined as C6 (benzene) through C12 (dodecane) and uses a molecular weight of 100 to calculate the ppmv.

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Report

**Client:** Century West Engineering  
**Project:** Hooshis Automotive  
**Sample Matrix:** Air

**Service Request:** S9601107  
**Date Collected:** 7/10/96  
**Date Received:** 7/11/96  
**Date Extracted:** NA  
**Date Analyzed:** 7/12/96

BTEX and Total Volatile Hydrocarbons  
 EPA Methods 5030/8020/Modified 8015

**Sample Name:** Method Blank  
**Lab Code:** S960712-VB1

	MRLs		Results	
	mg/m3	uL/L (ppmv)	mg/m3	uL/L (ppmv)
Benzene	0.5	0.2	ND	ND
Toluene	0.5	0.1	ND	ND
Ethylbenzene	0.5	0.1	ND	ND
Xylenes, Total	1	0.2	ND	ND
Total Volatile Hydrocarbons:				
C1 - C5	10	5	ND	ND
C6 - C12	20	5	ND	ND
TPH as Gasoline*	20	5	ND	ND

\* TPH as gasoline is defined as C6 (benzene) through C12 (dodecane) and uses a molecular weight of 100 to calculate the ppmv.



# SEQUOIA ANALYTICAL CHAIN OF CUSTODY

- 680 Chesapeake Drive • Redwood City, CA 94063 • (415) 364-9600 FAX (415) 364-9233
- 819 West Striker Ave. • Sacramento, CA 95834 • (916) 921-9600 FAX (916) 921-0100
- 1900 Bates Ave., Suite LM • Concord, CA 94520 • (510) 686-9600 FAX (510) 686-9689

59601107

Company Name: <u>Century West Eng.</u>			Project Name: <u>Hooshis Automotive</u>		
Address: <u>7950 Dublin Blvd Ste 203</u>			Billing Address (if different):		
City: <u>Dublin</u>	State: <u>CA</u>	Zip Code: <u>94568</u>			
Telephone: <u>510 551 7774</u>		FAX #: <u>510 551 7776</u>	P.O. #: <u>20596-001-01</u>		
Report To: <u>Rajeev Chavara</u>		Sampler: <u>J. Spruell</u>	QC Data: <input type="checkbox"/> Level A (Standard) <input type="checkbox"/> Level B <input type="checkbox"/> Level C <input type="checkbox"/> Level D		

Turnaround  10 Working Days  3 Working Days  2 - 8 Hours

Time:  7 Working Days  2 Working Days  5 Working Days  24 Hours

Analyses Requested

Drinking Water  
 Waste Water  
 Other

Client Sample I.D.	Date/Time Sampled	Matrix Desc.	# of Cont.	Cont. Type	Sequoia Sample #	Analyses Requested										Comments			
1. mws-1	7-10-96 12:30	Air	1	1 Liter T-bar	①	X	X												
2. mws-2	7-10-96 15:30		1		②	X	X												
3. mw1-1	7-11-96 9:50		1		③	X	X												
4. mw1-2	7-11-96 11:00		1		④	X	X												
5. mw2-1	7-11-96 11:30		1		⑤	X	X												
6. mw2-2	7-11-96 14:00		1		⑥	X	X												
7.																			
8.																			
9.																			
10.																			

Relinquished By: <u>J. Spruell</u>	Date: <u>7-11-96</u>	Time: <u>4:30</u>	Received By: <u>[Signature]</u>	Date: <u>7/11/96</u>	Time: <u>4:33 pm</u>
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By Lab:	Date:	Time:

Pink - Client  
Yellow - Sequoia  
White - Sequoia