Ultramar

Ultramar Inc.
P.O. Box 466
525 W. Third Street
Hanford, CA 93232-0466
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April 8, 1992

Mr. Donald D. Dalke
San Francisco Bay Region
Regional Water Quality Control Board
2101 Webster Street, Suite 500
Oakland, CA 94612

SUBJECT: BEACON STATION NO. 720, 1088 MARINA BLVD., SAN LEANDRO, CALIFORNIA

Dear Mr. Dalke:

Enclosed is a copy of the report on Additional Site Assessment and Quarterly Groundwater Monitoring, Fourth Quarter 1991 for the above-referenced Ultramar facility. Also included is a copy of the Quarterly Status Report which describes the work completed in this quarter and the anticipated to be completed in the next quarter.

The downgradient extent of the hydrocarbon plume has been define by MW-7. Ultramar is in the process of developing a remedial action plan to remediate the site.

Please call if you have any questions regarding this project.

Sincerely,

ULTRAMAR INC.

Terrence A. Fox
Senior Project Manager
Marketing Environmental Department

Enclosure: Ground-Water Sampling Report, Second Quarter 1991
Quarterly Status Report

cc w/encl: Mr. Rafat Shahid
Division of Hazardous Materials
Alameda County Health Care Services
80 Swan Way, Room 200
Oakland, CA 94621

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ENVIRONMENTAL PROJECT QUARTERLY STATUS REPORT

DATE REPORT SUBMITTED: April 8, 1992
QUARTER ENDING: December 31, 1991

SERVICE STATION NO.: 720
ADDRESS: 1088 Marina Blvd., San Leandro, CA
COUNTY: Alameda

ULTRAMAR CONTACT: Terrence A. Fox **TEL. NO:** 209-583-5545

BACKGROUND:

In January 1987, three underground gasoline storage tanks and one waste oil tank were excavated and removed from two tank cavities. Samples collected from beneath the former tanks indicated that hydrocarbons were present in the soil. In March 1987, five monitoring wells (MW-1 through MW-5) were installed by Conoco. Hydrocarbons were detected in soil and ground-water samples collected from the wells with the highest concentrations being detected in the area of MW-4. In July 1987, four soil were drilled in the vicinity of MW-4 to further characterize the soil contamination in that area. TPH concentrations above 100 ppm were detected in each boring. The site has been on a monitoring program since June 1987.

In July 1990, the site was purchased by Ultramar Inc. from Conoco. The monitoring program has continued.

In August 1991, perform shallow ground water study as screening tool to locate wells.

SUMMARY OF THIS QUARTER'S ACTIVITIES:

In October 1991, installed three additional wells to further define the extent of the dissolved hydrocarbon plume. Performed quarterly monitoring on December 24, 1991.

RESULT OF QUARTERLY MONITORING:

Monitoring data indicates that the benzene concentration increased in MW-1 from 310 ppb to 530 ppb. Benzene concentrations decreased in MW-2 from 1,800 ppb to 1,100 ppb, in MW-3 from 480 ppb to 150 ppb, in MW-4 from 8,000 ppb to 6,000 ppb, and in MW-5 from 4,200 ppb to 3,900 ppb. The initial benzene concentration in MW-8 was 1,700 ppb and benzene was not detected in MW-6 and MW-7.

PROPOSED ACTIVITY OR WORK FOR NEXT QUARTER:

ACTIVITY	ESTIMATED COMPLETION DATE
Continue quarterly monitoring program	

ADDITIONAL SITE ASSESSMENT
AND QUARTERLY GROUNDWATER MONITORING
FOURTH QUARTER 1991
BEACON STATION NO. 720
1088 MARINA BOULEVARD
SAN LEANDRO, CALIFORNIA

FOR

ULTRAMAR, INC.

JOB NO. EU-501/E189-01/02
MARCH 13, 1992

ENVIRONMENTAL GEOTECHNICAL CONSULTANTS, INC.
CONSULTANTS IN APPLIED EARTH SCIENCE

EGC

ENVIRONMENTAL GEOTECHNICAL CONSULTANTS, INC.

4229 NORTHGATE BOULEVARD, SUITE #3, SACRAMENTO, CALIFORNIA 95834
TELEPHONE (916) 925-4789 · FAX (916) 925-5973

Job No. EH-501/E189-01/02
March 13, 1992

Ultramar, Inc.
525 W. Third Street
Hanford, California 93232-0466

Attention: Mr. Terrence Fox

SUBJECT: Additional Site Assessment and Fourth Quarter 1991 Groundwater Monitoring at Beacon Station No. 720, 1088 Marina Boulevard, San Leandro, California

Dear Mr. Fox:

At the request of Ultramar, Inc., (Ultramar) Environmental Geotechnical Consultants, Inc. (EGC) conducted an additional subsurface site assessment and Fourth Quarter 1991 Groundwater Monitoring at Beacon gasoline station No. 720, 1088 Marina Boulevard, San Leandro, California. The work was conducted in general accordance with EGC's proposal EPH595, dated July 1, 1991. The purpose of this work was to assist Ultramar in further evaluating the approximate extent of hydrocarbon impact on soil and groundwater beneath and downgradient from the subject site.

Please call EGC at your convenience if you have any questions or require additional information.

Very truly yours,

ENVIRONMENTAL GEOTECHNICAL CONSULTANTS, INC.

John M. Phillips, P.E.
Project Engineer

John F. Hicks, P.E.
Principal

REGISTERED PROFESSIONAL ENGINEER
JOHN F. HICKS
C31759
CIVIL
STATE OF CALIFORNIA

vvk
Enclosures

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EXECUTIVE SUMMARY

On January 21, 1987, two 10,000 gallon gasoline underground storage tanks (USTs), one 7,500 gallon gasoline UST and one waste oil UST were removed from the subject site. Chips Environmental Consultants (CEC) observed removal of the tanks and obtained soil samples from the tank excavation. Due to hydrocarbon contamination of the soil exceeding 1000 parts per million (ppm) additional excavation was performed. The additional excavation was also observed by CEC. CEC obtained soil samples from the additional excavation, which had levels of hydrocarbon contamination generally below 100 ppm, however two samples were above 100 ppm.

Groundwater Technology Inc. (GTI), subsequently installed five monitoring wells at the site (Report R20-8224, dated May 15, 1987). Following installation of the monitoring wells a quarterly groundwater sampling program was initiated.

At the request of Ultramar, Inc., (Ultramar), Environmental Geotechnical Consultants, Inc. (EGC) performed the current additional site assessment to assist in evaluating the approximate extent of hydrocarbon impact on soil and water beneath and downgradient from the subject site. The scope of work included drilling ten exploratory soil borings and converting three of them into groundwater monitoring wells. The wells are located approximately in the suspected downgradient direction of groundwater flow from Ultramar's Beacon Station No. 720 located at 1088 Marina Boulevard, San Leandro, California (Figures 1, 2 and 3).

Laboratory analyses of soil samples collected from the exploratory borings reported concentrations of Total Petroleum Hydrocarbons (TPH) as gasoline ranging from non detect (ND) to 560 ppm and concentrations of Benzene, Toluene, Ethylbenzene, and Total Xylenes (BTEX) ranging from ND (all parameters) to 20 ppm (Total Xylenes). The highest concentration of Benzene detected in soil was 3.60 ppm.

Laboratory analyses of groundwater samples collected from the three monitoring wells, installed as part of the additional site assessment, reported TPH-gasoline concentrations ranging from ND to 130,000 parts per billion (ppb) and BTEX concentrations ranging from ND (all parameters) to 14,000 ppb (Benzene).

Following completion of the additional site assessment, quarterly monitoring was performed. Laboratory analyses of groundwater samples collected from all eight monitoring wells reported TPH-gasoline concentrations ranging from ND to 81,000 ppb and BTEX concentrations from ND (all parameters) to 6,100 ppb (Total Xylenes). The highest concentration of Benzene detected in water was 6,000 ppb.

PURPOSE AND SCOPE OF WORK

The purpose of this Additional Site Assessment was to assist Ultramar in evaluating the approximate extent of hydrocarbon impact on soil and groundwater beneath and downgradient from the subject site. EGC's scope of work was based on the scope of work proposed by Du Pont Environmental Remediation Services (DERS) of Pleasanton,

California in their work plan for the site dated September 27, 1990. EGC's scope of work included the drilling and logging of ten soil borings, sampling of subsurface soil, converting of three of the borings into groundwater monitoring wells, development of the monitoring wells, sampling of groundwater from the wells, performing well tests, surveying the locations of the wells, analyzing soil and water samples in State-certified analytical laboratories, and preparing this report.

SITE LOCATION AND DESCRIPTION

The subject site is located in the northwest corner of the intersection of Marina Boulevard and Eveleth Avenue, San Leandro, California (Figures 1 and 2). The site consists of the station building, three USTs and the pump islands and canopy.

BACKGROUND

On January 21, 1987, two 10,000 gallon gasoline underground storage tanks (USTs), one 7,500 gallon gasoline UST and one waste oil UST were removed from the subject site. Chips Environmental Consultants (CEC) observed removal of the tanks and obtained soil samples from the tank excavation. Due to Total Petroleum Hydrocarbons (TPH) contamination of the soil exceeding 1000 parts per million (ppm) additional excavation. The additional excavation was also observed by CEC. CEC obtained soil samples from

the additional excavation which had TPH contamination levels of generally below 100 ppm, however, two samples were above 100 ppm.

Groundwater Technology Inc. (GTI), subsequently installed five monitoring wells at the site (Report R20-8224, May 15, 1987). Following installation of the monitoring wells a quarterly groundwater sampling program was initiated.

FIELD EXPLORATION

Three exploratory borings were drilled on August 15, 1991 (B-1, B-2, B-3); four borings were drilled on September 19 through 20, 1991 (B-4 through B-7); and three borings were drilled and converted to monitoring wells on October 10 through 11, 1991 (MW-6, MW-7, MW-8). Borings B-1 through B-7 were installed as a screening tool in order to locate the additional monitoring wells. The approximate locations of the borings are shown on Figure 2. The borings were drilled with a Mobile B-53 drill rig with a hollow stem auger to depths of approximately 12 to 31.5 feet below the existing ground surface. Subsurface soil samples were generally taken at 5-foot intervals and were obtained by hydraulically driving a 2.5 inch outer diameter California Modified sampler.

Soil encountered during drilling was logged in the field by an EGC engineer. The soil was classified in accordance with the United Soil Classification System (USCS) which is included as Appendix C. Based on the soil conditions encountered in the borings, the subsurface geology of the site can be described as follows. All of the borings

encountered between approximately four to twelve inches of asphaltic concrete. The asphaltic concrete was generally underlain by an aggregate base consisting of either sand or crushed rock. Underlying the asphaltic concrete in boring B-7, and the aggregate base in the remaining borings, fill extending to depths of about 1.5 to 5 feet below grade was encountered. The fill generally consisted of a mixture of clay, sand and gravel.

Underlying the fill, were alternating layers of clay, silty clay, sandy clay and clayey sand native soils which extended to auger boring termination depths of about 12 to 31.5 feet below existing grade. **Occasional very sandy and gravelly lenses were encountered in the native soil.** Boring logs are included as figures 4 through 13.

Borings B-1 through B-6, were extended below the auger termination depths by between two to nine feet using a Hydropunch II. The Hydropunch consisted of a stainless steel, 2.0 inch outer diameter tube, terminated by a steel tip, and containing approximately five feet of polypropylene 1.0 inch outer diameter well screen. Following hydraulic advancement of the Hydropunch, the steel tube was retracted sufficient distance to expose the well screen, maintain a steel-to-soil contact seal, and leave an overlap of well screen within the steel tube. A stainless steel bailer was then used to obtain a water sample from within the well screen. Following water sampling, the steel tube was fully retracted from the boring, and the boring was grouted with a bentonite/cement grout. The groundwater samples obtained from the Hydropunch locations were analyzed on-site by a State-certified mobile laboratory. **Groundwater samples were obtained in this manner from Borings B-1, B-5 and B-6.** In the borings B-2, B-3 and B-4 a groundwater sample was not obtained due to extremely slow recharge.

MONITORING WELL CONSTRUCTION

After completion of borings MW-6, MW-7 and MW-8, monitoring wells were installed in them in accordance with EGC's "Environmental Drilling, Well Construction and Sampling Protocols" attached as Appendix A. The well casing consists of 2-inch-diameter Schedule 40 polyvinyl chloride (PVC). All wells were plugged at the bottom and are screened over intervals of 10 to 15 feet from the well bottoms with factory-slotted casing with 0.020-inch-wide slots. All well casing connections were made with threaded fittings. After installation of the casing, the borehole annulus was backfilled with washed, kiln-dried Lonestar No. 2-/16 sand to a point approximately 2 feet above the top of the screened casing. A bentonite seal approximately 2 feet thick was then placed above the sand pack, and the wells were grouted, using a tremie-pipe, with a bentonite/cement grout to approximately 1 foot below grade. The grouting of monitoring well MW-6 was observed by a representative of the Alameda County Flood Control District (Zone 7). Each well was completed using a locking watertight well cap, a standard lock (Dolphin 1600) in accordance with Ultramar's protocols, and a protective traffic-rated well cover supplied by Diversified Well Products, Inc. and set in place with concrete. Schematic diagrams of the well construction are shown in Figures 14 through 16.

Monitoring well MW-6 was originally drilled to a depth of 26.5 feet. However, a moderate odor was observed at a depth of about 16.0 feet below grade, and the well appeared to penetrate two aquifers (one at 16.0 feet and one at 26.0 feet). Therefore, the well was grouted to a depth of about 18.0 feet below grade.

SOIL SAMPLING AND LABORATORY ANALYSIS

Soil samples collected during drilling were screened in the field with a PID (photoionization detector, Thermo Environmental Instruments OVM Model 580B) for the presence of volatile hydrocarbon constituents. Screening was conducted by collecting the samples in clear Ziploc plastic bags, sealing the bags and leaving headspace to allow for volatilization. Each sample was allowed to volatilize for approximately 15 to 20 minutes, after which each bag was pierced; the concentration of volatile hydrocarbon constituents in the headspace was then measured with the PID. Results of the PID measurements are given on the respective boring logs.

Selected soil samples were collected for laboratory analysis in 6-inch-long, 2-inch-diameter, brass sample liners; the ends of each liner were sealed with teflon sheets and plastic end caps. The samples were labelled, and transported either to Sequoia Analytical's on-site mobile laboratory (samples 2-2 and 3-2) or to Applied Analytical's on-site mobile laboratory (samples 4-3, 5-3, 6-3 and 7-3) or placed on ice and delivered to Applied Analytical Environmental Laboratories. The above analytical laboratories are certified by the State of California to perform the required analyses. Chain-of-custody protocol was observed throughout the handling and transferring of samples. The soil samples were analyzed for the following: Total Petroleum Hydrocarbons (TPH) as gasoline by method GC FID/5030; and Benzene, Toluene, Ethylbenzene and Total Xylenes (BTEX) by EPA method 8020. Soil analytical results are summarized in Table 4. Laboratory analytical reports and chain-of-custody records are included as Appendix B.

WELL DEVELOPMENT, WATER SAMPLING AND LABORATORY ANALYSIS

Development and sampling of the groundwater monitoring wells were conducted in accordance with EGC's "Environmental Drilling, Well Construction and Sampling Protocols", included as Appendix A. Development of the monitoring wells was conducted on October 17, 1991. Thirty to 55 gallons of water were pumped from each well using a Grundfos Rediflow pump.

Sampling of the groundwater from the monitoring wells was conducted on October 17, 1991 (MW-7), October 24, 1991 (MW-8) and November 5, 1991 (MW-6) to allow time for recharging of the water in the wells. Water levels were first measured with a water-level meter. Groundwater was then observed for the presence of hydrocarbon sheen or odor by decanting the first bailer into a wide-mouthed container. Sheen and odor observed ranged from none in MW-6 and MW-7 to strong odor and sheen in MW-8. The wells were then purged until approximately 3 casing volumes were removed from each and pH, electrical conductivity and temperature were stabilized. Water samples from each well were collected with a new, disposable PVC bailer and decanted into 40-milliliter volatile organic analysis (VOA) bottles that had been prepared with dilute hydrochloric acid to act as a preservative. To avoid the presence of headspace in the sample bottles, care was taken during decanting to form a positive meniscus on each sample before it was capped. The samples were labelled and transported on blue ice to Applied Analytical Environmental Laboratories for analysis. The samples were analyzed for the following: TPH-gasoline by method GC FID/5030 and BTEX by EPA method 602. Groundwater analytical results are summarized in Table 3.

SURVEYING

The locations of monitoring wells MW-6, MW-7 and MW-8 were surveyed on November 22, 1991, by a survey crew from Dodge & Associates, licensed Land Surveyors, of Campbell, California. However, the elevations of the tops of casing obtained, did not agree with those previously published by GTI for the wells MW-1 through MW-5. Therefore, all eight monitoring wells were resurveyed by EGC personnel on December 30, 1991, using top of casing for MW-8 as a benchmark. The well survey data is listed in Table 1.

QUARTERLY GROUNDWATER MONITORING

Following the re-surveying, quarterly monitoring was performed on December 24, 1991. Figure 2 depicts the approximate groundwater gradient at the subject site for this sampling episode. This map was prepared from the survey data of each well and the measured depth to groundwater. The approximate groundwater flow direction on the subject site at the time of this sampling event is northwesterly under a gradient of 0.002.

WELL TEST RESULTS

Due to the on-site conditions of an unconfined aquifer, and partially penetrating wells, partially submerged well screens, aquifer characteristics were analyzed in existing monitoring wells B-4 and B-5 by slug tests. The slug tests were performed using a 10 foot long teflon bailer, and a Thor International remote data collection system consisting of:

- Model SDEE-01B data logger
- Model DXPE-01A electronic pressure transducer
- Model TCEE-01A pocket computer
- Model DPEE-01A electric power pack
- IBM compatible computer

The slug test was performed by placing the pressure transducer in the monitoring well, correlating measured groundwater elevations with hydrostatic water pressure measured by the pressure transducer, and withdrawing a slug of water from the monitoring well using the teflon bailer. The recharge of the well was then monitored at specific time intervals.

Following data collection, the results were analyzed using the Bouwer and Rice method. The results of the analyses were hydraulic conductivities (K) of 1.26 X 10^{-4} in/s and 6.10 X 10^{-6} in/s in monitoring wells MW-4 and MW-5, respectively.

FINDINGS

1. Seven soil borings were drilled on the subject site to depths of approximately 12.5 to 31.5 feet. Three additional groundwater monitoring wells were installed. Groundwater was initially encountered at depths of approximately 13.5 to 18.5 feet and stabilized between 14 to 18 feet.

2. TPH gasoline concentrations in soil samples obtained from the borings ranged from non-detected (ND) to 560 ppm. BTEX concentrations ranged from ND (all parameters) to 48 ppm (Total Xylenes). The highest concentration of Benzene detected in soil was 3.60 ppm in Boring B-3.

3. Laboratory analytical results for the quarterly groundwater monitoring samples (Table 2) reported benzene concentrations ranging from ND (MW-6) to 6,000 ppb (MW-4).

4. Assuming a draw down in each well of three feet the above K values yield rates of flow (Q) of 25.4 and 1.27 gallons per hour in monitoring wells MW-4 and MW-5 respectively.

CONCLUSIONS

- The groundwater gradient beneath the subject site as measured on December 24, 1991 is approximately northwesterly. This gradient is consistent with third quarter 1991 results but varies from second quarter results which showed a southwesterly gradient. The reason for this fluctuation is unknown.

- Based on varying southwesterly to northwesterly groundwater gradient directions, hydrocarbon contaminant concentrations in groundwater generally would be expected to be highest in MW-4, MW-5 and MW-8 (west of the USTs on the subject site). This is supported by laboratory data.

- The extent of hydrocarbon contaminants in groundwater has been defined in all directions on and immediately adjacent to the subject site except in the north and northwest directions.

- Based on the results of the slug tests, assuming a draw down in each well of three feet monitoring wells MW-4 and MW-5 should yield rates of flow (Q) of 25.4 and 1.27 gallons per hour respectively.

REPORTING RESPONSIBILITY

Responsibility for the reporting of these results to the regulatory agencies guiding this project lies with Ultramar. EGC therefore recommends that Ultramar provide this report to the following agencies:

Responsible Agencies

Regional Water Quality Control Board
San Francisco Bay Region
Toxics Cleanup Division
2101 Webster Street, Suite 500
Oakland, California 94612
Attention: Mr. Donald D. Dalke, Chief

Alameda County Department of Environmental Health
Division of Hazardous Materials
80 Swan Way, Room 200
Oakland, California 94621
Attention: Mr. Lowell Miller

LIMITATIONS

Our services consist of professional opinions and recommendations made in accordance with generally accepted environmental testing principles and practices. This warranty is in lieu of all other warranties either express or implied. The conclusions submitted in this report are based upon information obtained from our review of published data, site reconnaissance, subsurface exploration, laboratory testing, and appropriate analyses. Unanticipated hydrologic and geologic conditions are frequently encountered and cannot be evaluated by test borings, monitoring well installation and sampling and chemical

analysis. The test boring data and chemical analyses refer to the borings explored and sampled on the date indicated and may not be representative of subsurface or chemical conditions elsewhere at this site at some other time.

REFERENCES

Bouwer, Herman and Rice, R.C. A Slug Test for Determining Hydraulic Conductivity of Unconfined Aquifers with Completely or Partially Penetrating Wells, U.S. Water Conservation Laboratory, Agriculture Research Service, U.S. Department of Agriculture, Phoenix, Arizona 85040, Volume 12 No. 3, Water Resources Research, June 1976.

TABLE 1

GROUNDWATER ELEVATIONS
Page 1 of 5

Date Sampled	Depth to Groundwater (Feet)	Groundwater Elevation (Feet)
Groundwater Monitoring Well MW-1:		**Elevation of Top of Casing = 29.89 feet**
June 23, 1987	14.79	15.10
July 06, 1987	14.93	14.96
August 06, 1987	14.22	15.67
November 04, 1987	15.74	14.15
February 02, 1988	13.99	15.90
May 02, 1988	14.99	14.90
November 21, 1988	13.03	16.86
February 14, 1989	15.86	14.03
May 02, 1989	14.77	15.12
August 10, 1989	16.35	13.54
November 08, 1989	16.46	13.43
February 20, 1990	15.58	14.31
May 18, 1990	16.40	13.49
September 15, 1990	16.83	13.06
November 26, 1990	17.16	12.73
February 07, 1991	16.43	13.46
May 14, 1991	14.93	14.96
August 16, 1991	16.35	13.54
Groundwater Monitoring Well MW-1:		**New Elevation of Top of Casing = 33.10 feet**
December 24, 1991	17.20	15.90
Groundwater Monitoring Well MW-2:		**Elevation of Top of Casing = 29.57 feet**
June 23, 1987	14.51	15.06

TABLE 1

GROUNDWATER ELEVATIONS

Date Sampled	Depth to Groundwater (Feet)	Groundwater Elevation (Feet)
July 06, 1987	14.63	14.94
August 06, 1987	14.95	14.62
November 04, 1987	15.45	14.12
February 02, 1988	13.74	15.83
May 02, 1988	14.63	14.94
November 21, 1988	12.99	16.58
February 14, 1989	15.66	13.91
May 02, 1989	14.56	15.01
August 10, 1989	16.22	13.35
November 08, 1989	16.19	13.38
February 20, 1990	15.34	14.23
May 18, 1990	16.20	13.37
September 15, 1990	16.42	13.05
November 26, 1990	16.83	12.74
February 07, 1991	16.13	13.44
May 14, 1991	14.62	14.95
August 16, 1991	16.00	13.57
Groundwater Monitoring Well MW-2:		**New Elevation of Top of Casing = 32.80 feet**
December 24, 1991	16.90	15.90
Groundwater Monitoring Well MW-3:		**Elevation of Top of Casing = 29.13 feet**
June 23, 1987	14.13	15.00
July 06, 1987	14.24	14.89
August 06, 1987	14.52	14.61
November 04, 19887	15.09	14.04
February 02, 1988	13.37	15.76

TABLE 1

GROUNDWATER ELEVATIONS

Date Sampled	Depth to Groundwater (Feet)	Groundwater Elevation (Feet)
May 02, 1988	14.22	14.91
November 21, 1988	13.01	16.12
February 14, 1989	15.22	13.91
May 02, 1989	14.16	14.97
August 10, 1989	15.61	13.52
November 08, 1989	15.75	13.38
February 20, 1990	14.95	14.18
May 18, 1990	15.79	13.34
September 15, 1990	16.07	13.06
November 26, 1990	16.36	12.77
February 07, 1991	15.74	13.39
May 14, 1991	14.19	14.94
August 16, 1991	15.55	13.58
Groundwater Monitoring Well MW-3:	**New Elevation of Top of Casing = 32.30 feet**	
December 24, 1991	16.40	15.90
Groundwater Monitoring Well MW-4:	**Elevation of Top of Casing = 29.72 feet**	
June 23, 1987	14.77	14.95
July 06, 1987	14.91	14.81
August 06, 1987	15.19	14.53
November 04, 1987	15.72	14.00
February 02, 1088	14.03	15.69
May 02, 1988	14.89	14.83
November 21, 1988	12.88	16.84
February 14, 1989	15.83	13.89
May 02, 1989	14.75	14.97

TABLE 1

GROUNDWATER ELEVATIONS

Date Sampled	Depth to Groundwater (Feet)	Groundwater Elevation (Feet)
August 10, 1989	16.30	13.42
November 08, 1989	16.29	13.43
February 20, 1990	15.62	14.10
May 18, 1990	16.34	13.38
September 15, 1990	16.79	12.93
November 26, 1990	17.08	12.64
February 07, 1991	16.37	13.35
May 14, 1991	14.87	14.85
August 16, 1991	16.25	13.47
Groundwater Monitoring Well MW-4:		**New Elevation of Top of Casing = 32.90 feet**
December 24, 1991	17.10	15.80
Groundwater Monitoring Well MW-5:		**Elevation of Top of Casing = 29.55 feet**
June 23, 1987	14.63	14.92
July 06, 1987	14.79	14.76
August 06, 1987	15.07	14.48
November 04, 1987	15.61	13.94
February 02, 1988	13.84	15.71
May 02, 1988	14.77	14.78
November 21, 1988	12.84	16.71
February 14, 1989	15.72	13.83
May 02, 1989	14.68	14.87
August 10, 1989	16.03	13.52
November 08, 1989	16.33	13.22
February 20, 1990	15.44	14.11

TABLE 1

GROUNDWATER ELEVATIONS

Date Sampled	Depth to Groundwater (Feet)	Groundwater Elevation (Feet)
May 18, 1990	16.22	13.33
September 15, 1990	16.65	12.90
November 26, 1990	16.95	12.60
February 07, 1991	16.20	13.35
May 14, 1991	14.72	14.38
August 16, 1991	16.10	13.45
Groundwater Monitoring Well MW-5:	**New Elevation of Top of Casing = 32.70 feet**	
December 24, 1991	16.92	15.78
Groundwater Monitoring Well MW-6:	**Elevation of Top of Casing = 30.40 feet**	
December 24, 1991	14.12	16.28
Groundwater Monitoring Well MW-7:	**Elevation of Top of Casing = 31.20 feet**	
December 24, 1991	15.70	15.50
Groundwater Monitoring Well MW-8:	**Elevation of Top of Casing = 33.80 feet**	
December 24, 1991	18.00	15.80

Notes: 1) All elevations surveyed to an arbitrary datum
2) Elevations and depths are given in feet
3) Groundwater Technology, Inc., made measurements until February 1989
4) Du Pont Environmental Services collected samples from February 1989 through February 1991
5) Environmental Geotechnical Consultants, Inc., made measurements beginning in May 1991

TABLE 2

SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
Page 1 of 5

Well No.	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Xylenes (µg/L)	TPH-G (µg/L)	Comments
[redacted]	Apr. 16, 1987	2,313	3,770	664.1	3,331	17,276	
	June 23, 1987	1,887	2,141	466.7	1,652	26,027	
	July 06, 1987	778.2	943.7	133.2	422.1	3,938	
	Aug. 06, 1987	1,270	1,576	288.7	873.7	6,079	
	Nov. 04, 1987	1,700	4,000	720	2,200	15,000	
	Feb. 02, 1988	1,500	1,700	230	740	14,000	
	May 02, 1988	3,500	700	4,900	2,700	33,000	
	Nov. 21, 1988	2,200	560	2,800	2,200	15,000	
	Feb. 14, 1989	1,700	1,700	340	1,500	12,000	Odor
	May 02, 1989	1,500	2,400	510	2,400	18,000	Odor, Slight Sheen
	Aug. 10, 1989	1,400	1,500	360	1,600	10,000	Odor
	Nov. 08, 1989	920	470	190	360	7,200	Odor
	Feb. 20, 1990	810	540	270	800	3,300	
	May 18, 1990	1,900	500	560	1,600	5,600	
	Sep. 15, 1990	320	110	150	520	5,200	Odor
	Nov. 26, 1990	370	59	150	370	3,000	Odor
	Feb. 07, 1991	750	570	480	1,800	14,000	
	May 14, 1991	1,000	1,400	600	2,500	41,000	
	Aug. 16, 1991	310	210	150	480	4,000	Odor
	Dec. 24, 1991	530	95	310	680	11,000	[redacted] Odor
[redacted]	Apr. 16, 1987	3,131	4,239	1,067	4,608	17,920	
	June 23, 1987	2,188	2,622	1,047	4,699	49,354	
	July 06, 1987	1,575	1,729	457	1,702	8,676	
	Aug. 06, 1987	2,623	3,722	702	2,882	14,376	
	Nov. 04, 1987	2,200	4,100	900	3,500	19,000	

TABLE 2

SUMMARY OF GROUNDWATER ANALYTICAL RESULTS

Well No.	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Xylenes (µg/L)	TPH-G (µg/L)	Comments
[redacted]	Feb. 02, 1988	6,200	6,500	1,000	4,000	54,000	
	May 02, 1988	6,800	1,300	7,100	5,400	53,000	
	Nov. 21, 1988	--	--	--	--	--	Free product
	Feb. 14, 1989	6,900	4,300	1,100	5,200	48,000	Film of free product
	May 02, 1989	6,100	8,800	2,100	16,000	111,000	Odor, sheen
	Aug. 10, 1989	4,200	2,900	1,000	5,800	39,000	Odor, sheen
	Nov. 08, 1989	3,700	1,500	740	2,200	45,000	Odor, heavy sheen
	Feb. 20, 1990	5,000	8,200	1,600	11,000	60,000	
	May 18, 1990	6,200	1,900	1,300	610	19,000	
	Sep. 15, 1990	1,400	820	660	3,000	27,000	Odor, sheen
	Nov. 26, 1990	1,100	880	700	3,800	28,000	Odor, sheen
	Feb. 07, 1991	2,100	1,900	1,300	6,200	63,000	Odor, sheen
	May 14, 1991	2,200	2,700	1,100	5,900	100,000	Moderate odor Slight sheen
	Aug. 16, 1991	1800	950	990	3900	32,000	Slight odor, sheen
	Dec. 24, 1991	1,100	550	750	2,700	30,000	[redacted]
[redacted]	Apr. 16, 1987	1,371	2,438	472.3	2,617	9,967	
	June 23, 1987	646.2	822.9	320.9	1,280	16,824	
	July 06, 1987	340.3	384.2	116.5	420.2	3,395	
	Aug. 06, 1987	441.9	436.3	118.2	417.3	3,107	
	Nov. 04, 1987	320	280	74	250	2,600	
	Feb. 02, 1988	2,200	2,300	500	2,300	44,000	
	May 02, 1988	1,600	450	840	1,700	14,000	
	Nov. 21, 1988	1,200	220	560	810	8,100	
	Feb. 14, 1989	1,500	220	220	500	5,500	Odor

TABLE 2

SUMMARY OF GROUNDWATER ANALYTICAL RESULTS

Well No.	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Xylenes (µg/L)	TPH-G (µg/L)	Comments
	Aug. 10, 1989	750	10	190	210	2,700	Odor
	Nov. 08, 1989	370	90	ND	58	2,400	Odor
	Feb. 20, 1990	1,200	810	77	460	3,700	
	May 18, 1990	980	ND	330	250	2,300	
	Sep. 15, 1990	240	36	150	230	4,700	Odor
	Nov. 26, 1990	170	8.4	86	120	1,400	Odor
	Feb. 07, 1991	220	20	120	230	2,900	
	May 14, 1991	370	39	220	820	15,000	
	Aug. 16, 1991	480	50	360	680	7,200	Slight Odor
	Dec. 24, 1991	150	20	100	140	4,900	[redacted]
[redacted]	Apr. 16, 1987	5,896	3,797	893.9	4,106	19,309	
	June 23, 1987	4,030	1,842	850.0	3,254	31,429	
	July 06, 1987	2,710	1,247	308.2	1,312	8,117	
	Aug. 06, 1987	3,992	1,589	447.9	1,611	10,464	
	Nov. 04, 1987	9,500	17,000	2,800	11,000	55,000	
	Feb. 02, 1988	11,000	7,400	1,400	6,200	47,000	
	May 02, 1988	9,200	1,300	6,100	6,400	58,000	
	Nov. 21, 1988	5,700	1,600	3,100	7,600	48,000	
	Feb. 14, 1989	8,700	2,500	900	3,800	29,000	Odor & sheen
	May 02, 1989	4,800	5,600	1,800	8,800	69,000	Odor, slight sheen
	Aug. 10, 1989	15,000	6,600	1,800	12,000	67,000	Odor, slight sheen
	Nov. 08, 1989	11,000	3,200	1,100	4,400	71,000	Odor, slight sheen
	Feb. 20, 1990	8,100	4,500	930	3,500	19,000	
	May 18, 1990	45,000	12,000	5,000	27,000	100,000	
	Sep. 15, 1990	4,200	1,200	740	3,000	38,000	

TABLE 2

SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
Page 4 of 5

Well No.	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Xylenes (µg/L)	TPH-G (µg/L)	Comments
[redacted]	Nov. 26, 1990	2,800	650	810	2,600	19,000	Odor
	Feb. 07, 1991	4,600	1,100	1,600	4,600	41,000	Odor, sheen
	May 14, 1991	7,300	830	3,900	3,600	100,000	Slight odor, sheen
	Aug. 16, 1991	8,000	2,500	1,100	4,000	45,000	Strong odor, sheen
	Dec. 24, 1991	6,000	1,200	1,100	3,700	79,000	Odor, sheen
[redacted]	Apr. 16 1987	2,267	921.2	3,277	4,536	17,733	
	June 23, 1987	2,239	516.8	953.9	1,587	19,555	
	July 06, 1987	1,335	313.7	799.2	923.9	5,631	
	Aug. 06, 1987	1,890	881.2	576.8	93.4	6,450	
	Nov. 04, 1987	1,300	500	270	640	4,600	
	Feb. 02, 1988	3,100	1,500	550	1,400	24,000	
	May 02, 1988	4,400	490	1,200	1,500	17,000	
	Nov. 21, 1988	5,600	590	870	2,200	19,000	
	Feb. 14, 1989	4,300	810	410	1,300	13,000	Odor
	May 02, 1989	2,900	1,500	690	3,200	24,000	Odor, slight sheen
	Aug. 10, 1989	6,700	2,300	860	4,700	36,000	Odor, slight sheen
	Nov. 08, 1989	5,300	860	460	600	30,000	Odor
	Feb. 20, 1990	1,700	220	120	370	3,400	
	May 18, 1990	18,000	2,000	1,500	5,600	24,000	
	Sep. 15, 1990	2,600	2,200	1,000	4,900	42,000	Odor, sheen
	Nov. 26, 1990	1,900	280	260	800	8,500	Odor, sheen

TABLE 2

SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
Page 5 of 5

Well No.	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Xylenes (µg/L)	TPH-G (µg/L)	Comments
	Feb. 07, 1991	1,500	1,200	610	2,700	24,000	Odor
	May 14, 1991	3,800	4,400	1,400	6,400	120,000	Odor, sheen
	Aug. 16, 1991	4,200	1,900	760	2,900	29,000	Moderate odor, sheen
	Dec. 24, 1991	3,900	1,500	880	3,200	63,000	[illegible]
[illegible]	Dec. 24, 1991	ND	ND	ND	ND	[illegible]	
[illegible]	Dec. 24, 1991	ND	ND	ND	ND	ND	
[illegible]	Dec. 24, 1991	[illegible]	2,400	1,200	6,100	81,000	[illegible]

Notes:
1) TPH-G = Total Petroleum Hydrocarbons as gasoline
2) Odor refers to petroleum hydrocarbon odor
3) All results are presented in parts per billion
4) Groundwater Technology, Inc., collected samples prior to February 1989
5) Du Pont Environmental Services collected samples from February 1989 through February 1991
6) Environmental Geotechnical Consultants, Inc. collected samples beginning in May 1991
7) ND = Non Detect
8) See analytical results for detection limits (Appendix B)

TABLE 3

SUMMARY OF MOBILE LABORATORY ANALYTICAL RESULTS FOR [redacted]

Sample Location	Benzene (ppb)	Toluene (ppb)	Ethylbenzene (ppb)	Xylene (ppb)	TPH-Gas (ppb)	Laboratory	Date Sampled
B-1	14,000	5,700	2,400	9,600	72,000	Sequoia Mobile	8-15-91
B-5	ND	8.8	ND	ND	ND	Applied Analytical Mobile	9-20-91
B-6	490	37	130	360	3,100	Applied Analytical Mobile	9-20-91
MW-7	ND	ND	ND	ND	ND	Applied Analytical Mobile	10-17-91
MW-8	2,400	4,700	1,500	9,000	130,000	Applied Analytical Mobile	10-24-91
MW-6	ND	ND	ND	ND	120	Applied Analytical Mobile	11-5-91

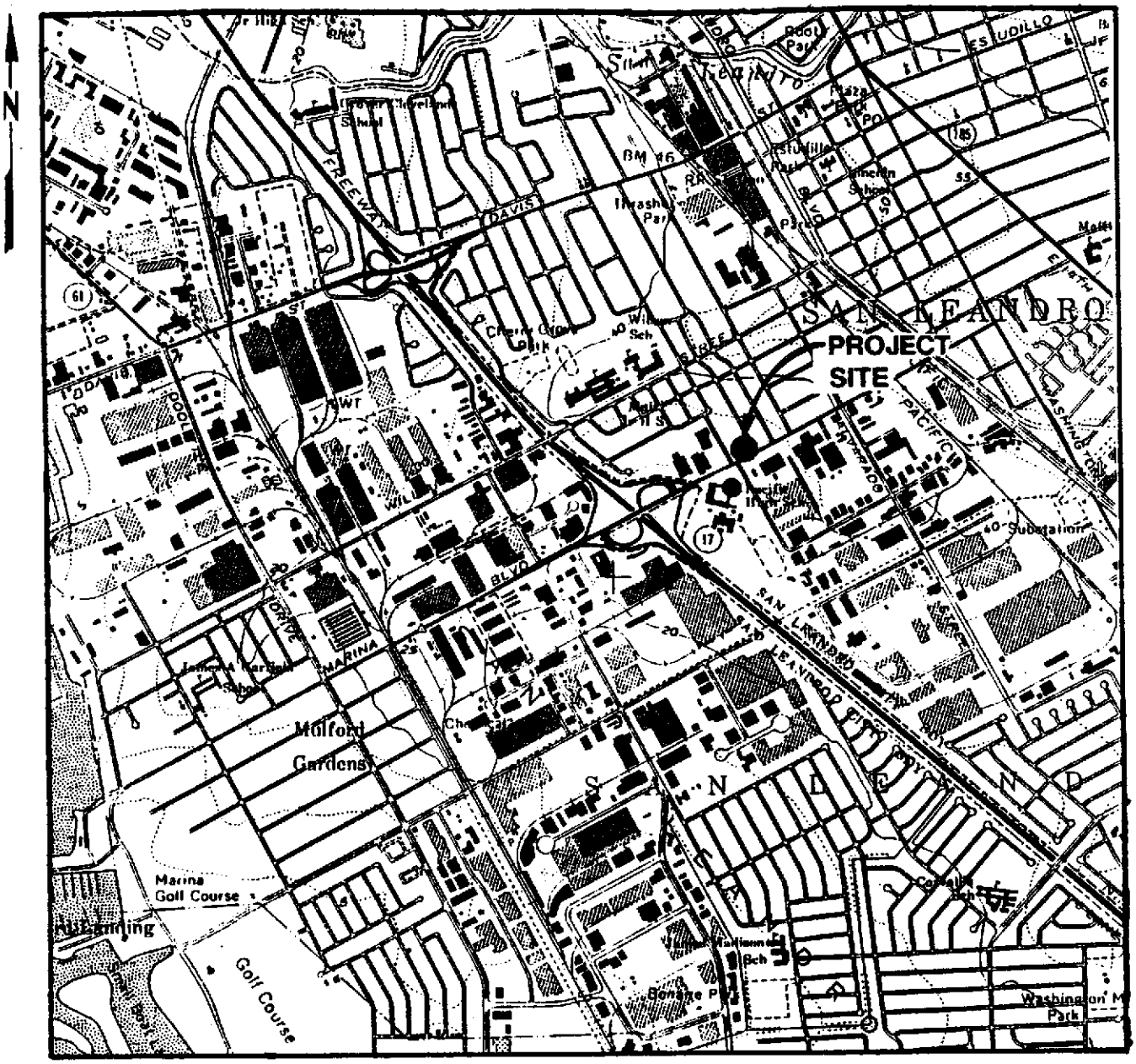
Notes:
1) ND = Non Detect
2) ppb = parts per billion
3) See analytical results for detection limits (Appendix B)

TABLE 4

SUMMARY OF LABORATORY ANALYTICAL RESULTS FOR SOIL
Page 1 of 1

Sample Location	Depth	TPH-Gas (ppm)	Benzene (ppm)	Toluene (ppm)	Ethylbenzene (ppm)	Xylene (ppm)	Laboratory	Date Sampled
2-2	10.0	2.1	0.220	0.088	0.071	0.270	Sequoia Mobile	8-15-91
[illegible]-2	14.0	[illegible]60	3.60	19.00	9.10	48.00	Applied Analytical Mobile	8-15-91
4-3	13.5	ND	ND	ND	ND	ND	Applied Analytical Mobile	9-19-91
5-3	13.0	ND	ND	ND	ND	ND	Applied Analytical Mobile	9-19-91
6-3	10.0	ND	ND	ND	ND	ND	Applied Analytical Mobile	9-19-91
7-3	13.5	ND	ND	ND	ND	ND	Applied Analytical Mobile	9-20-91
MW-6 #1	5.0	ND	ND	ND	ND	ND	Applied Analytical	10-10-91
MW-6 #2	10.0	ND	ND	ND	ND	ND	Applied Analytical	10-10-91
MW-6 #3	15.0	11	ND	0.035	0.011	0.047	Applied Analytical	10-10-91
MW-6 #4	20.0	ND	ND	ND	ND	ND	Applied Analytical	10-10-91
MW-6 #5	25.0	ND	ND	ND	ND	ND	Applied Analytical	10-10-91
MW-7 #1	7.0	ND	ND	ND	ND	ND	Applied Analytical	10-10-91
MW-7 #2	10.0	ND	ND	ND	ND	ND	Applied Analytical	10-10-91
MW-7 #3	13.5	ND	ND	ND	ND	ND	Applied Analytical	10-10-91
MW-7 #4	15.0	ND	ND	ND	ND	ND	Applied Analytical	10-10-91
MW-7 #5	20.0	ND	ND	ND	ND	ND	Applied Analytical	10-10-91
MW-7 #6	25.0	ND	ND	ND	ND	ND	Applied Analytical	10-10-91
MW-8 #1	5.0	ND	ND	0.010	ND	0.011	Applied Analytical	10-11-91
MW-8 #2	10.0	ND	ND	ND	ND	0.008	Applied Analytical	10-11-91
MW-8 #3	13.5	ND	0.012	ND	ND	0.027	Applied Analytical	10-11-91
MW-8 #4	[illegible]8.0	[illegible]0	0.670	4.800	3.300	20.000	Applied Analytical	10-11-91
MW-8 #5	25.0	2.6	0.014	0.056	0.020	0.150	Applied Analytical	10-11-91
MW-8 #6	30.0	ND	ND	ND	ND	0.010	Applied Analytical	10-11-91
C-1*	0.50	ND	ND	ND	ND	ND	Mobile Chem Labs Inc.	10-10-91

Notes: 1) ND = Non Detect
2) ppb = parts per billion
3) See analytical results for detection limits (Appendix B)
* Stockpile composite which tested ND for organic lead



NOTES

1. BASE MAP TAKEN FROM USGS SAN LEANDRO, CALIFORNIA 7.5 MINUTE TOPOGRAPHIC QUADRANGLE. (1980)

DATE	11/21/91
JOB NO.	E189-02
DWG NO.	E189-02/1
DRAWN	D SUTU
CHK'D	J PHILLIPS
APP'D	J HICKS

EGC ENVIRONMENTAL GEOTECHNICAL CONSULTANTS, INC.
CONSULTANTS IN APPLIED EARTH SCIENCE

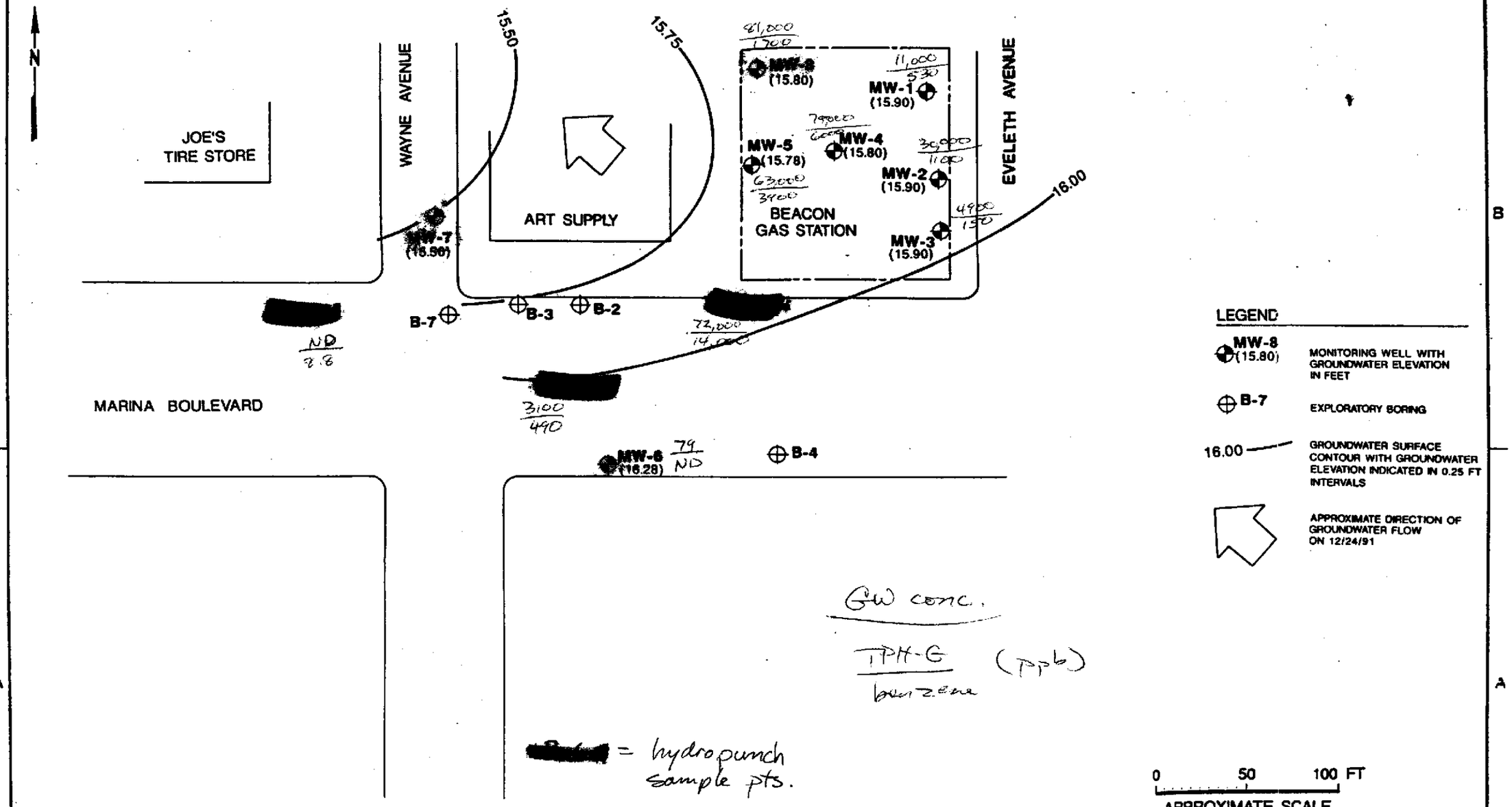
PROJECT SITE LOCATION MAP

1088 MARINA BLVD., SAN LEANDRO, CALIFORNIA

ULTRAMAR, INC.

FIGURE NO. 1

REV NO.



REVISIONS				
NO.	DATE	ZONE	DESCRIPTION	DRAWN / APPROVED

NOTES

PROFESSIONAL SEAL

DATE	1/92
JOB NO.	E 189-02
DWG NO.	E 189-02/2
DRAWN	D SUTU
CHK'D	J PHILLIPS
APP'D	J HICKS

EGC ENVIRONMENTAL GEOTECHNICAL CONSULTANTS, INC.
CONSULTANTS IN APPLIED EARTH SCIENCE

GROUNDWATER GRADIENT MAP

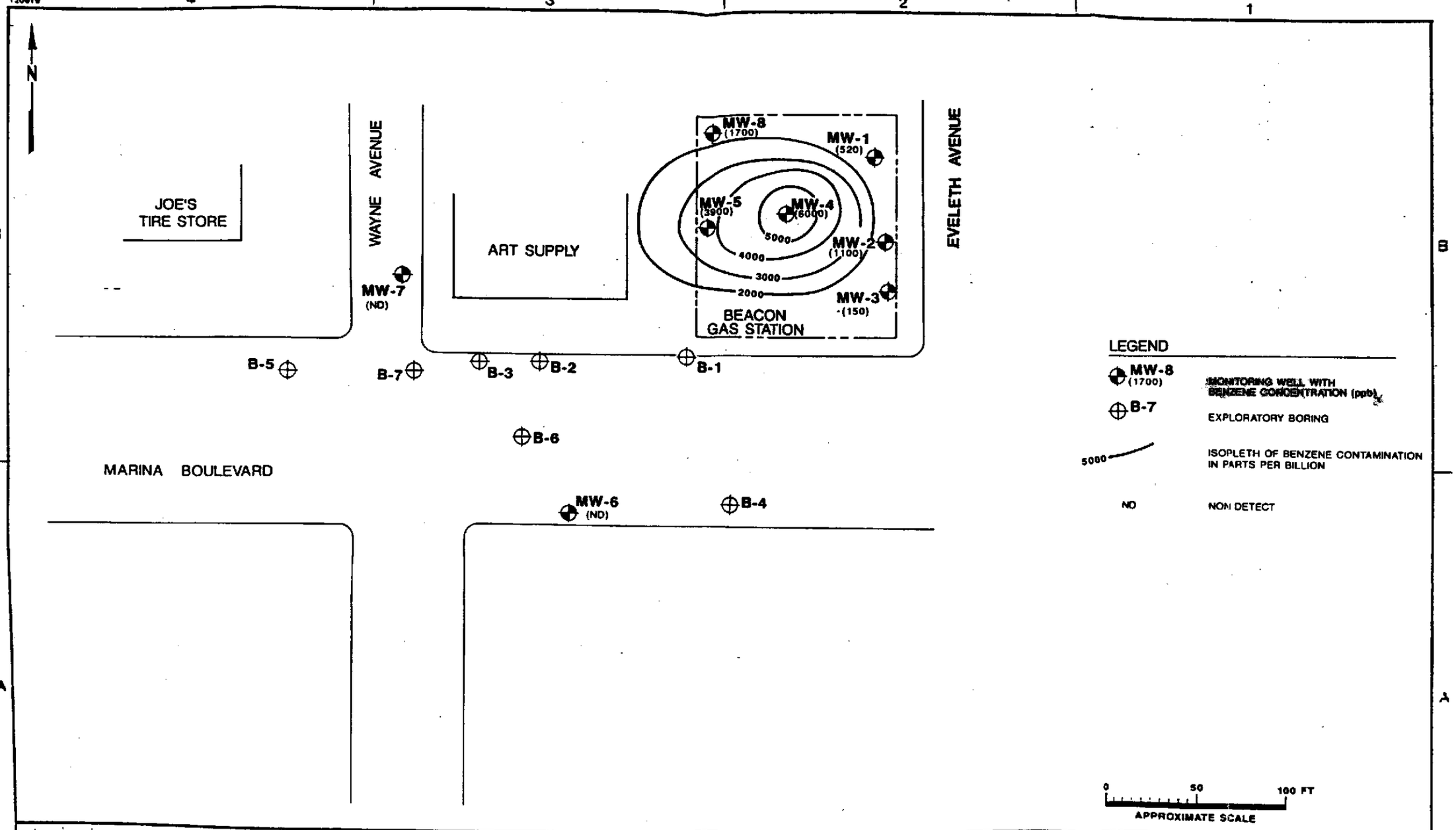
1088 MARINA BLVD., SAN LEANDRO, CALIFORNIA

ULTRAMAR, INC.

FIGURE NO. 2

REV. NO.

4 3 2 1



DATE	1/92
JOB NO.	E 189-02
DWG NO.	E 189-02/3
DRAWN	D SUTU
CHKD	J PHILLIPS
APPD	J HICKS

EGC ENVIRONMENTAL GEOTECHNICAL CONSULTANTS, INC.
CONSULTANTS IN APPLIED EARTH SCIENCE

ISOPLETH MAP OF BENZENE CONCENTRATIONS IN GROUNDWATER
1088 MARINA BLVD., SAN LEANDRO, CALIFORNIA

FIGURE NO. 3

ULTRAMAR, INC.

REVISIONS | NO. | DATE | DESCRIPTION | DRAWN | APPROVED

NOTES

EXPLORATORY BORING LOG

PROJECT NO. E189-02	LOGGED BY: J PHILLIPS	DATE DRILLED: 08/15/91	PAGE 1 OF 1
DRILL RIG: MOBILE B - 53 DEPTH TO GROUNDWATER :		BORING ELEV: EXISTING GRADE BORING DIAM: 8 INCHES	BORING NO. [redacted]

SOIL / ROCK MATERIAL DESCRIPTION AND REMARKS	CONSISTENCY	USCS GROUP SYMBOL	DEPTH IN FEET	SAMPLE	BLOW COUNT	WATER CONTENT	DRY DENSITY	[redacted]	PASSING #200	UNCONFINED COMPRESSIVE STRENGTH
					N	%	PCF	PPM	%	PSF
ASPHALTIC CONCRETE, 12 inches BASE ROCK, 6 inches			1							
FILL: clay, green, slightly moist, slight odor			2							
CLAY, dark gray, moist, low plasticity, slight odor		CL	3							
			4							
			5							
			6							
Sandy CLAY, grayish green, moist, slight odor		CL	7							
			8							
			9							
Clayey SAND, gray, moist, low plasticity, very strong odor		SC	10							
			11	1				75		
			12							
Sandy CLAY, gray, trace grravel, moist, low plasticity, very strong odor		CL	13							
			14							
			15							
Gravel layer @ 13.0 ft			16	2				[redacted]		
			17							
			18							
			19	3				376		
			20							
End of Boring: 20.0 feet Hydropunch to 22 feet Groundwater not encountered			21							
			22							
			23							
			24							
			25							

NOTES:

DATE	12/91
JOB NO.	E189-02
DWG NO.	E18902/26
DRAWN	J HATALA
CHK'D	J PHILLIPS
APP'D	J HICKS

EGC ENVIRONMENTAL GEOTECHNICAL CONSULTANTS, INC.
CONSULTANTS IN APPLIED EARTH SCIENCE

EXPLORATORY BORING LOG
B - 1
1088 MARINA BLVD., SAN LEANDRO, CALIFORNIA
ULTRAMAR, INC.

FIGURE NO. 4

F:\HOME\DRAFTING\GEMDRAW\EGC\E1890226

EXPLORATORY BORING LOG

PROJECT NO. E189-02	LOGGED BY: J PHILLIPS	DATE DRILLED: 08/15/91	PAGE 1 OF 1
DRILL RIG: MOBILE B - 53 DEPTH TO GROUNDWATER : 10 FEET		BORING ELEV: EXISTING GRADE BORING DIAM: 8 INCHES	BORING NO. B-2

SOIL / ROCK MATERIAL DESCRIPTION AND REMARKS	CONSISTENCY	USCS GROUP SYMBOL	DEPTH IN FEET	SAMPLE	BLOW COUNT	WATER CONTENT	DRY DENSITY	ISOBUTYLENE EQUIVALENT	PASSING #200	UNCONFINED COMPRESSIVE STRENGTH
					N	%	PCF	PPM	%	PSF
ASPHALTIC CONCRETE, 12 inches BASE ROCK, 6 inches			1							
FILL, clay, green, slightly moist, slight odor			2							
CLAY, dark gray, moist, high plasticity, strong odor		CH	3 4 5 6	1				305		
Sandy CLAY, gray, [illegible] low plasticity, slight odor, [illegible]e gravel		CL	7 8 9 10							
			11	2				44		
			12 13 14 15							
Strong odor			16	3				1304		
End of Boring: 16.5 feet Hydropunch to 20 feet Groundwater encountered @ 10 feet			17 18 19 20 21 22 23 24 25							

NOTES:

DATE	12/91
JOB NO.	E189-02
DWG NO.	E189-02/27
DRAWN	J HATALA
CHK'D	J PHILLIPS
APP'D	J HICKS

EGC ENVIRONMENTAL GEOTECHNICAL CONSULTANTS, INC.
CONSULTANTS IN APPLIED EARTH SCIENCE

EXPLORATORY BORING LOG
B - 2
1088 MARINA BLVD., SAN LEANDRO, CALIFORNIA
ULTRAMAR, INC.

FIGURE NO. 5

F:\HOME\DRAFTING\GEMDRAW\EGC\E189-227

EXPLORATORY BORING LOG

PROJECT NO. E189-02	LOGGED BY: J PHILLIPS	DATE DRILLED: 08/15/91	PAGE 1 OF 1
DRILL RIG: MOBILE B - 53 DEPTH TO GROUNDWATER :		BORING ELEV: EXISTING GRADE BORING DIAM: 8 INCHES	BORING NO. B-3

SOIL / ROCK MATERIAL DESCRIPTION AND REMARKS	CONSISTENCY	USCS GROUP SYMBOL	DEPTH IN FEET	SAMPLE	BLOW COUNT	WATER CONTENT	DRY DENSITY	PID	PASSING # 200	UNCONFINED COMPRESSIVE STRENGTH
					N	%	PCF		%	PSF
ASPHALTIC CONCRETE, 12 inches BASE ROCK12 inches			1							
CLAY, very dark brown, moist, low plasticity, moderate odor		CL	2							
CLAY, brown, slightly moist, low plasticity, slight odor		CL	3							
			4							
			5							
			6							
			7							
			8	1				37		
Sandy CLAY, gray, wet, low plasticity, strong odor		CL	9							
			10							
			11							
			12							
Sandy CLAY, gray, wet, strong odor		CL	13							
			14							
			15	2				[illegible]		
			16							
CLAY, brown, moist, low plasticity, strong odor		CL	17							
			18							
			19							
			20							
CLAY, brown, wet, low plasticity		CL	21	3				13		
			22							
End of Boring: 21.5 feet Hydropunch to 23.5 feet Groundwater not encountered			23							
			24							
			25							

NOTES:

DATE	12/91
JOB NO.	E189-02
DWG NO.	E18902/28
DRAWN	J HATALA
CHK'D	J PHILLIPS
APP'D	J HICKS

EGC ENVIRONMENTAL GEOTECHNICAL CONSULTANTS, INC.
CONSULTANTS IN APPLIED EARTH SCIENCE

EXPLORATORY BORING LOG
B - 3
1088 MARINA BLVD., SAN LEANDRO, CALIFORNIA
ULTRAMAR, INC.

FIGURE NO. 6

F:\HOME\DRAFTING\GEMDRAW\EGC\E1890228

EXPLORATORY BORING LOG

PROJECT NO. E189-02	LOGGED BY: J PHILLIPS	DATE DRILLED: 08/15/91	PAGE 1 OF 1
DRILL RIG: MOBILE B - 53 DEPTH TO GROUNDWATER : 15 FEET		BORING ELEV: EXISTING GRADE BORING DIAM: 8 INCHES	BORING NO. B-4

SOIL / ROCK MATERIAL DESCRIPTION AND REMARKS	CONSISTENCY	USCS GROUP SYMBOL	DEPTH IN FEET	SAMPLE	BLOW COUNT	WATER CONTENT	DRY DENSITY	ISOBUTYLENE EQUIVALENT	PASSING # 200	UNCONFINED COMPRESSIVE STRENGTH
					N	%	PCF	PPM	%	PSF
ASPHALTIC CONCRETE, 18 inches BASE ROCK, 6 inches			1							
CLAY, dark brown, slightly moist, moderate plasticity, slight odor		CL	2 3							
Sandy CLAY, brown, slightly moist, low plasticity		CL	4 5 6	1				0		
Sandy CLAY, gray, moist, low plasticity, slight odor		CL	7 8							
CLAY, grayish brown, sandy layers, moist, high plasticity		CH	9 10 11	2				0		
Silty SAND seam @ 14.0 feet			12 13 14	3				0		
End of Boring: 15.0 feet Hydropunch to 24.0 feet Groundwater encountered @ 15.0 feet		▽	15 16 17 18 19 20 21 22 23 24 25							

NOTES:

DATE	12/91
JOB NO.	E189-02
DWG NO.	E189-02/29
DRAWN	J HATALA
CHK'D	J PHILLIPS
APP'D	J HICKS

EGC ENVIRONMENTAL GEOTECHNICAL CONSULTANTS, INC.
CONSULTANTS IN APPLIED EARTH SCIENCE

EXPLORATORY BORING LOG
B - 4
1088 MARINA BLVD., SAN LEANDRO, CALIFORNIA
ULTRAMAR, INC.

FIGURE NO. 7

F:\HOME\DRAFTING\GEMDRAW\EGC\E1890229

EXPLORATORY BORING LOG

PROJECT NO. E189-02	LOGGED BY: J PHILLIPS	DATE DRILLED: 09/19/91	PAGE 1 OF 1
DRILL RIG: MOBILE B - 53 DEPTH TO GROUNDWATER :		BORING ELEV: EXISTING GRADE BORING DIAM: 8 INCHES	BORING NO. B-5

SOIL / ROCK MATERIAL DESCRIPTION AND REMARKS	CONSISTENCY	USCS GROUP SYMBOL	DEPTH IN FEET	SAMPLE	BLOW COUNT	WATER CONTENT	DRY DENSITY	ISOBUTYLENE EQUIVALENT	PASSING #200	UNCONFINED COMPRESSIVE STRENGTH
					N	%	PCF	PPM	%	PSF
ASPHALTIC CONCRETE 8 inches SAND, 6 inches			1							
CLAY, very dark brown, slightly moist, moderate plasticity, [illegible] odor		CL	2 3 4							
Sandy CLAY, gray and brown, slightly moist, low plasticity, [illegible] odor		CL	5 6	1				0		
			7 8 9 10							
			11	2				0		
			12 13							
Silty SAND seam @ 14.0 feet			14	3				0		
End of Boring: 14.5 feet Hydropunch to 21.5 feet Groundwater not encountered			15 16 17 18 19 20 21 22 23 24 25							

NOTES:

DATE	12/91
JOB NO.	E189-02
DWG NO.	E189-02/30
DRAWN	J HATALA
CHK'D	J PHILLIPS
APP'D	J HICKS

EGC ENVIRONMENTAL GEOTECHNICAL CONSULTANTS, INC.
CONSULTANTS IN APPLIED EARTH SCIENCE

EXPLORATORY BORING LOG
B - 5
1088 MARINA BLVD., SAN LEANDRO, CALIFORNIA
ULTRAMAR, INC.

FIGURE NO. 8

F:\HOME\DRAFTING\GEMDRAW\EGC\E1890230

EXPLORATORY BORING LOG

PROJECT NO. E189-02	LOGGED BY: J PHILLIPS	DATE DRILLED: 09/19/91	PAGE 1 OF 1
DRILL RIG: MOBILE B - 53 DEPTH TO GROUNDWATER :		BORING ELEV: EXISTING GRADE BORING DIAM: 8 INCHES	BORING NO. B-6

SOIL / ROCK MATERIAL DESCRIPTION AND REMARKS	CONSISTENCY	USCS GROUP SYMBOL	DEPTH IN FEET	SAMPLE	BLOW COUNT	WATER CONTENT	DRY DENSITY	ISOBUTYLENE EQUIVALENT	PASSING # 200	UNCONFINED COMPRESSIVE STRENGTH
					N	%	PCF	PPM	%	PSF
ASPHALTIC CONCRETE, 12 inches SAND, 6 inches			1							
CLAY, dark brown, slightly moist, moderate plasticity, slight odor		CL	2 3 4							
CLAY, gray, slightly moist, moderate plasticity		CL	5 6 7 8 9 10	1				0		
Sandy CLAY, gray, trace gravel, slightly moist, moderate plasticity		CL	11 12	2				3		
End of Boring: 12.0 feet Hydropunch to 20.0 feet Groundwater not encountered			13 14 15 16 17 18 19 20 21 22 23 24 25							

NOTES:

DATE	12/91
JOB NO.	E189-02
DWG NO.	E189-02/31
DRAWN	J HATALA
CHK'D	J PHILLIPS
APP'D	J HICKS

EGC ENVIRONMENTAL GEOTECHNICAL CONSULTANTS, INC.
CONSULTANTS IN APPLIED EARTH SCIENCE

EXPLORATORY BORING LOG
B - 6
1088 MARINA BLVD., SAN LEANDRO, CALIFORNIA
ULTRAMAR, INC.

FIGURE NO. 9

F:\HOME\DRAFTING\GEMDRAW\EGCNE1890231

EXPLORATORY BORING LOG

PROJECT NO. E189-02	LOGGED BY: J PHILLIPS	DATE DRILLED: 09/20/91	PAGE 1 OF 1
DRILL RIG: MOBILE B - 53 DEPTH TO GROUNDWATER :		BORING ELEV: EXISTING GRADE BORING DIAM: 8 INCHES	BORING NO. B-7

SOIL / ROCK MATERIAL DESCRIPTION AND REMARKS	CONSISTENCY	USCS GROUP SYMBOL	DEPTH IN FEET	SAMPLE	BLOW COUNT	WATER CONTENT	DRY DENSITY	ISOBUTYLENE EQUIVALENT	PASSING # 200	UNCONFINED COMPRESSIVE STRENGTH
					N	%	PCF	PPM	%	PSF
ASPHALTIC CONCRETE, 12 inches			1							
FILL, clay, dark brown and gray, moist, moderate plasticity			2							
Sandy CLAY, gray, trace gravel, slightly moist, low plasticity		CL	3							
			4							
			5							
			6	1				2		
			7							
			8							
			9							
			10							
			11	2				0		
			12							
			13							
CLAY, brown and gray mottled, moist, moderate plasticity, sandy zones		CL	14	3				8		
			15							
CLAY, brown, moist, low plasticity		CL	16							
			17							
			18	4				1		
End of Boring: 19.5 feet Groundwater not encountered			19							
			20							
			21							
			22							
			23							
			24							
			25							

NOTES:

DATE	12/91
JOB NO.	E189-02
DWG NO.	E189-02/32
DRAWN	J HATALA
CHK'D	J PHILLIPS
APP'D	J HICKS

EGC ENVIRONMENTAL GEOTECHNICAL CONSULTANTS, INC.
CONSULTANTS IN APPLIED EARTH SCIENCE

EXPLORATORY BORING LOG
B - 7
1088 MARINA BLVD., SAN LEANDRO, CALIFORNIA
ULTRAMAR, INC.

FIGURE NO. 10

F:\HOME\DRAFTING\GEMDRAW\EGC\E1890232

EXPLORATORY BORING LOG

PROJECT NO. E189-02	LOGGED BY: J PHILLIPS	DATE DRILLED: 10/10/91	PAGE 1 OF 2
DRILL RIG: MOBILE B - 53 DEPTH TO GROUNDWATER : 15.5 FEET		BORING ELEV: EXISTING GRADE BORING DIAM: 8 INCHES	BORING NO. MW-6

SOIL / ROCK MATERIAL DESCRIPTION AND REMARKS	CONSISTENCY	USCS GROUP SYMBOL	DEPTH IN FEET	SAMPLE	BLOW COUNT	WATER CONTENT	DRY DENSITY	ISOBUTYLENE EQUIVALENT	PASSING # 200	UNCONFINED COMPRESSIVE STRENGTH
					N	%	PCF	PPM	%	PSF
ASPHALTIC CONCRETE, 6 inches BASE ROCK,6 inches			1							
FILL, clay, dark brown, slightly moist, high plasticity			2 3 4							
Silty CLAY, grayish brown, slightly moist, low plasticity		CL	5 6	1				0		
			7 8 9 10							
Very silty gravel @ 12.0 feet			11	2				0		
			12 13 14 15							
Gray, wet, moderate odor			16	3				40		
			17 18 19							
CLAY, brown and gray mottled, shell fragments, moist, low plasticity, slight odor		CL	20 21	4				0		
			22 23 24 25							

NOTES:

DATE	12/91
JOB NO.	E189-02
DWG NO.	E189-02/33A
DRAWN	J HATALA
CHK'D	J PHILLIPS
APP'D	J HICKS

EGC ENVIRONMENTAL GEOTECHNICAL CONSULTANTS, INC.
CONSULTANTS IN APPLIED EARTH SCIENCE

EXPLORATORY BORING LOG
MW-6
1088 MARINA BLVD., SAN LEANDRO, CALIFORNIA
ULTRAMAR, INC.

FIGURE NO. 11
1 OF 2

F:\HOME\DRAFTING\GEMDRAW\EGCIE189233A

EXPLORATORY BORING LOG

PROJECT NO. E189-02	LOGGED BY: J PHILLIPS	DATE DRILLED: 10/10/91	PAGE 2 OF 2
DRILL RIG: MOBILE B - 53 DEPTH TO GROUNDWATER : 15.5 FEET		BORING ELEV: EXISTING GRADE BORING DIAM: 8 INCHES	BORING NO. MW-6

SOIL / ROCK MATERIAL DESCRIPTION AND REMARKS	CONSISTENCY	USCS GROUP SYMBOL	DEPTH IN FEET	SAMPLE	BLOW COUNT	WATER CONTENT	DRY DENSITY	ISOBUTYLENE EQUIVALENT	PASSING # 200	UNCONFINED COMPRESSIVE STRENGTH
					N	%	PCF	PPM	%	PSF
[redacted] silty			25 26	5				0		
End of Boring: 26.5 feet Groundwater encountered @ 15.5 feet			27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49							

NOTES:

DATE	12/91
JOB NO.	E189-02
DWG NO.	E189-02/33B
DRAWN	J HATALA
CHK'D	J PHILLIPS
APP'D	J HICKS

EGC ENVIRONMENTAL GEOTECHNICAL CONSULTANTS, INC.
CONSULTANTS IN APPLIED EARTH SCIENCE

EXPLORATORY BORING LOG
MW-6
1068 MARINA BLVD., SAN LEANDRO, CALIFORNIA
ULTRAMAR, INC.

FIGURE NO. 11
2 OF 2

F:\HOME\DRAFTING\GEMDRAW\EGC\E189233B

EXPLORATORY BORING LOG

PROJECT NO. E189-02	LOGGED BY: J PHILLIPS	DATE DRILLED: 10/10/91	PAGE 1 OF 2
DRILL RIG: MOBILE B - 53 DEPTH TO GROUNDWATER : 20 FEET		BORING ELEV: EXISTING GRADE BORING DIAM: 8 INCHES	BORING NO. MW-7

SOIL / ROCK MATERIAL DESCRIPTION AND REMARKS	CONSISTENCY	USCS GROUP SYMBOL	DEPTH IN FEET	SAMPLE	BLOW COUNT N	WATER CONTENT %	DRY DENSITY PCF	ISOBUTYLENE EQUIVALENT PPM	PASSING #200 %	UNCONFINED COMPRESSIVE STRENGTH PSF
ASPHALTIC CONCRETE, 4 inches SAND, 6 inches FILL, clay. dark brown, slightly moist, high plasticity, trace gravel			1 2 3							
Silty CLAY, grayish brown, slightly moist, low plasticity		CL	4 5 6 7 8 9 10 11 12 13 14 15	1 2 3						
Shell fragments at @ 14.0 feet										
CLAY, brown, slightly moist, low plasticity		CL	16 17 18 19 20	4						
CLAY, brown, slightly moist, low plasticity		CL	21 22 23 24 25	5						

NOTES:

DATE	12/91
JOB NO.	E189-02
DWG NO.	E189-02/34A
DRAWN	J HATALA
CHK'D	J PHILLIPS
APP'D	J HICKS

EGC ENVIRONMENTAL GEOTECHNICAL CONSULTANTS, INC.
CONSULTANTS IN APPLIED EARTH SCIENCE

EXPLORATORY BORING LOG
MW-7
1088 MARINA BLVD., SAN LEANDRO, CALIFORNIA
ULTRAMAR, INC.

FIGURE NO. 12
1 OF 2

F:\HOME\DRAFTING\GEMDRAW\EGC\E189234A

EXPLORATORY BORING LOG

PROJECT NO. E189-02	LOGGED BY: J PHILLIPS	DATE DRILLED: 10/10/91	PAGE 2 OF 2
DRILL RIG: MOBILE B - 53 DEPTH TO GROUNDWATER : 20 FEET		BORING ELEV: EXISTING GRADE BORING DIAM: 8 INCHES	BORING NO. MW-7

SOIL / ROCK MATERIAL DESCRIPTION AND REMARKS	CONSISTENCY	USCS GROUP SYMBOL	DEPTH IN FEET	SAMPLE	BLOW COUNT	WATER CONTENT	DRY DENSITY	ISOBUTYLENE EQUIVALENT	PASSING #200	UNCONFINED COMPRESSIVE STRENGTH
					N	%	PCF	PPM	%	PSF
			25							
Saturated, silty			26	5				0		
End of Boring: 26.5 feet Groundwater encountered @ 20.0 feet			27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49							

NOTES:

DATE	12/91
JOB NO.	E189-02
DWG NO.	E189-02/348
DRAWN	J HATALA
CHK'D	J PHILLIPS
APP'D	J HICKS

EGC ENVIRONMENTAL GEOTECHNICAL CONSULTANTS, INC.
CONSULTANTS IN APPLIED EARTH SCIENCE

EXPLORATORY BORING LOG
MW-7
1088 MARINA BLVD., SAN LEANDRO, CALIFORNIA
ULTRAMAR, INC.

FIGURE NO. 12
2 OF 2

F:\HOME\DRAFTING\GEMDRAW\EGC\E1892348

EXPLORATORY BORING LOG

PROJECT NO. E189-02	LOGGED BY: J PHILLIPS	DATE DRILLED: 10/11/91	PAGE 1 OF 2
DRILL RIG: MOBILE B - 53 DEPTH TO GROUNDWATER : 24 FEET		BORING ELEV: EXISTING GRADE BORING DIAM: 8 INCHES	BORING NO. MW-8

SOIL / ROCK MATERIAL DESCRIPTION AND REMARKS	CONSISTENCY	USCS GROUP SYMBOL	DEPTH IN FEET	SAMPLE	BLOW COUNT	WATER CONTENT	DRY DENSITY	ISOBUTYLENE EQUIVALENT	PASSING #200	UNCONFINED COMPRESSIVE STRENGTH
					N	%	PCF	PPM	%	PSF
ASPHALTIC CONCRETE, 4 inches SAND, 4 inches FILL, clay, dark brown, trace gravel, low plasticity			1 2 3							
CLAY, brown, moist, low plasticity		CL	4 5 6	1				0		
			7 8 9 10							
			11	2				0		
Sandy CLAY, brown and gray, slightly moist, low plasticity		CL	12 13 14	3				22		
Moist, strong odor			15 16 17 18 19	4				251		
			20 21 22 23 24 ▽							
			25							

NOTES:

DATE	12/91
JOB NO.	E189-02
DWG NO.	E189-02/35A
DRAWN	J HATALA
CHK'D	J PHILLIPS
APP'D	J HICKS

EGC ENVIRONMENTAL GEOTECHNICAL CONSULTANTS, INC.
CONSULTANTS IN APPLIED EARTH SCIENCE

EXPLORATORY BORING LOG
MW-8
1088 MARINA BLVD., SAN LEANDRO, CALIFORNIA
ULTRAMAR, INC.

FIGURE NO. 13
1 OF 2

F:\HOME\DRAFTING\GEMDRAW\EGC\E189235A

EXPLORATORY BORING LOG

PROJECT NO. E189-02	LOGGED BY: J PHILLIPS	DATE DRILLED: 10/11/91	PAGE 2 OF 2
DRILL RIG: MOBILE B - 53 DEPTH TO GROUNDWATER : 24 FEET		BORING ELEV: EXISTING GRADE BORING DIAM: 8 INCHES	BORING NO. MW-8

SOIL / ROCK MATERIAL DESCRIPTION AND REMARKS	CONSISTENCY	USCS GROUP SYMBOL	DEPTH IN FEET	SAMPLE	BLOW COUNT	WATER CONTENT	DRY DENSITY	ISOBUTYLENE EQUIVALENT	PASSING # 200	UNCONFINED COMPRESSIVE STRENGTH
					N	%	PCF	PPM	%	PSF
Sandy CLAY, brown and gray, moist, low plasticity		CL	25							
			26	5				5		
			27							
			28							
			29							
			30							
			31	6				2		
End of Boring: 31.5 feet Groundwater encountered @ 24.0 feet			32							
			33							
			34							
			35							
			36							
			37							
			38							
			39							
			40							
			41							
			42							
			43							
			44							
			45							
			46							
			47							
			48							
			49							

NOTES:

DATE	12/91
JOB NO.	E189-02
DWG NO.	E189-02/358
DRAWN	J HATALA
CHK'D	J PHILLIPS
APP'D	J HICKS

EGC ENVIRONMENTAL GEOTECHNICAL CONSULTANTS, INC.
CONSULTANTS IN APPLIED EARTH SCIENCE

EXPLORATORY BORING LOG
MW-8
1088 MARINA BLVD., SAN LEANDRO, CALIFORNIA
ULTRAMAR, INC.

FIGURE NO. 13
2 OF 2

F:\HOME\DRAFTING\GEMDRAW\EGCE189235B

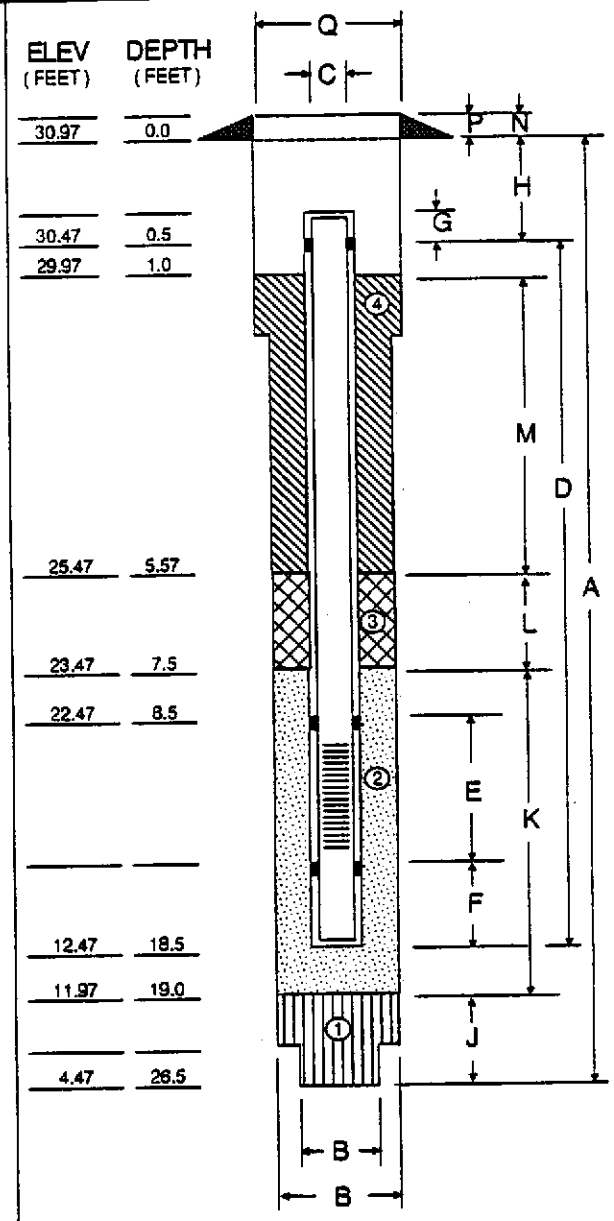
SITE / LOCATION	BEGIN DATE	BOREHOLE DIA	ANGLE & BEARING	BOREHOLE NO.
BEACON STATION #720, SAN LEANDRO, CALIFORNIA	10/10/91	8 INCH		MW-6
COORDINATES / STATIONING	**END DATE**	**LOGGED BY**		**GROUND ELEV.**
	10/10/91	J PHILLIPS		30.97'

DIMENSIONS

A	TOTAL DEPTH OF BOREHOLE	18.0 FT
B	BOREHOLE DIA.	8.0 IN.
C	WELL CASING DIA.	2.0 IN.
D	WELL CASING LENGTH	7.5 FT
E	WELL CASING SLOTTED INTERVAL	10.0 FT
F	WELL CASING BOTTOM PLUG	2.0 IN.
G	WELL CASING TOP CAP INTERVAL	0
H	WELL CASING RISER DEPTH	6.0 IN.
J	BOTTOM MATERIAL INTERVAL	8.0 FT
K	PERMEABLE MATERIAL INTERVAL	11.5 FT
L	IMPERMEABLE MATERIAL INTERVAL	2.0 FT
M	BACKFILL MATERIAL INTERVAL	4.5 FT
N	BACKFILL MOUND INTERVAL	1.0 IN.
P	PROTECTIVE COVER HEIGHT	1.0 IN.
Q	PROTECTIVE COVER DIA	8.0 IN.

MATERIALS DATA

WELL CASING	SCHEDULE 40 PVC
WELL CASING SLOT SIZE	0.020 IN.
WELL CASING SLOT SPACING	0.125 IN.
WELL CASING BOTTOM PLUG	SCHEDULE 40 PVC
WELL CASING TOP CAP	LOCKABLE
BOTTOM MATERIAL ①	BENTONITE/CEMENT
PERMEABLE ②	#2 SAND
INPERMEABLE ③	BENTONITE
BACKFILL MATERIAL ④	BENTONITE/CEMENT
PROTECTIVE COVER	LOCKED, FLUSH, SEALED



SECTION VIEW
(NOT TO SCALE)

NOTES

DATE	12/91	EGC	ENVIRONMENTAL GEOTECHNICAL CONSULTANTS, INC. CONSULTANTS IN APPLIED EARTH SCIENCE
JOB NO.	E189-02		
DWG NO.	E1892/36		MONITORING WELL INSTALLATION RECORD MW-6
DRAWN	J HATALA		1088 MARINA BLVD., SAN LEANDRO, CALIFORNIA
CHK'D	J PHILLIPS		ULTRAMAR, INC.
APP'D	J HICKS		FIGURE NO. 14

FORM 42 10/17/90

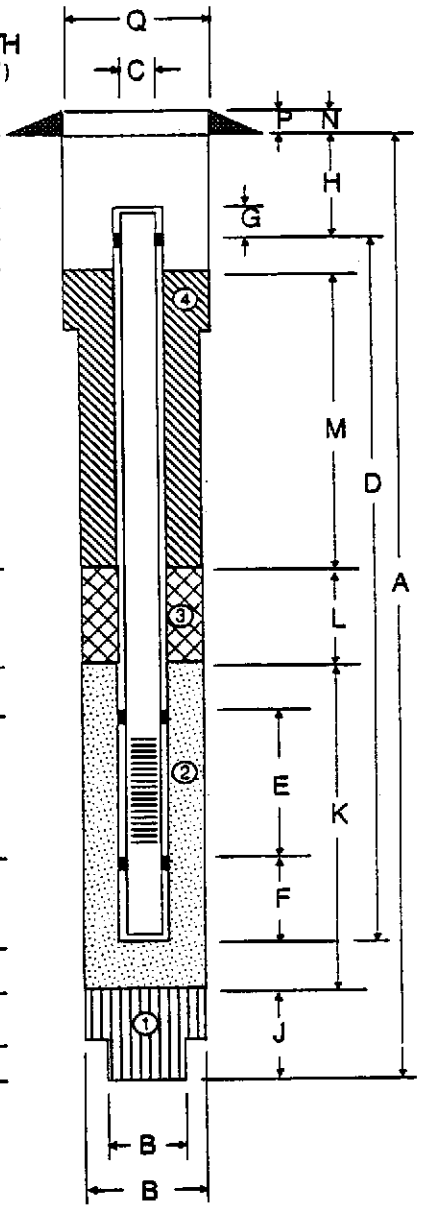
SITE / LOCATION BEACON STATION #720, SAN LEANDRO, CALIFORNIA	BEGIN DATE 10/10/91	BOREHOLE DIA 8 INCH	ANGLE & BEARING	BOREHOLE NO. MW-7
COORDINATES / STATIONING	END DATE 10/10/91	LOGGED BY J PHILLIPS		GROUND ELEV. 31.64'

DIMENSIONS

A	TOTAL DEPTH OF BOREHOLE	26.5 FT
B	BOREHOLE DIA.	8.0 IN.
C	WELL CASING DIA.	2.0 IN.
D	WELL CASING LENGTH	10.0 FT
E	WELL CASING SLOTTED INTERVAL	15.0 FT
F	WELL CASING BOTTOM PLUG	2.0 IN.
G	WELL CASING TOP CAP INTERVAL	0
H	WELL CASING RISER DEPTH	6.0 IN.
J	BOTTOM MATERIAL INTERVAL	0
K	PERMEABLE MATERIAL INTERVAL	18.0 FT
L	IMPERMEABLE MATERIAL INTERVAL	2.0 FT
M	BACKFILL MATERIAL INTERVAL	5.5 FT
N	BACKFILL MOUND INTERVAL	1.0 IN.
P	PROTECTIVE COVER HEIGHT	1.0 IN.
Q	PROTECTIVE COVER DIA	8.0 IN.

MATERIALS DATA

WELL CASING	SCHEDULE 40 PVC
WELL CASING SLOT SIZE	0.020 IN.
WELL CASING SLOT SPACING	0.125 IN.
WELL CASING BOTTOM PLUG	SCHEDULE 40 PVC
WELL CASING TOP CAP	LOCKABLE
BOTTOM MATERIAL ①	
PERMEABLE ②	#2 SAND
INPERMEABLE ③	BENTONITE
BACKFILL MATERIAL ④	BENTONITE/CEMENT
PROTECTIVE COVER	LOCKED, FLUSH, SEALED



SECTION VIEW
(NOT TO SCALE)

NOTES

DATE	12/91	EGC	ENVIRONMENTAL GEOTECHNICAL CONSULTANTS, INC. CONSULTANTS IN APPLIED EARTH SCIENCE
JOB NO.	E189-02		
DWG NO.	E1892/37		MONITORING WELL INSTALLATION RECORD MW-7
DRAWN	J HATALA		1088 MARINA BLVD., SAN LEANDRO, CALIFORNIA
CHK'D	J PHILLIPS		ULTRAMAR, INC.
APP'D	J HICKS		FIGURE NO. 15

FORM 42 10/17/90

SITE / LOCATION	BEGIN DATE	BOREHOLE DIA	ANGLE & BEARING	BOREHOLE NO.
BEACON STATION #720, SAN LEANDRO, CALIFORNIA	10/11/91	8 INCH		MW-8
COORDINATES / STATIONING	**END DATE**	**LOGGED BY**		**GROUND ELEV.**
	10/11/91	J PHILLIPS		34.30'

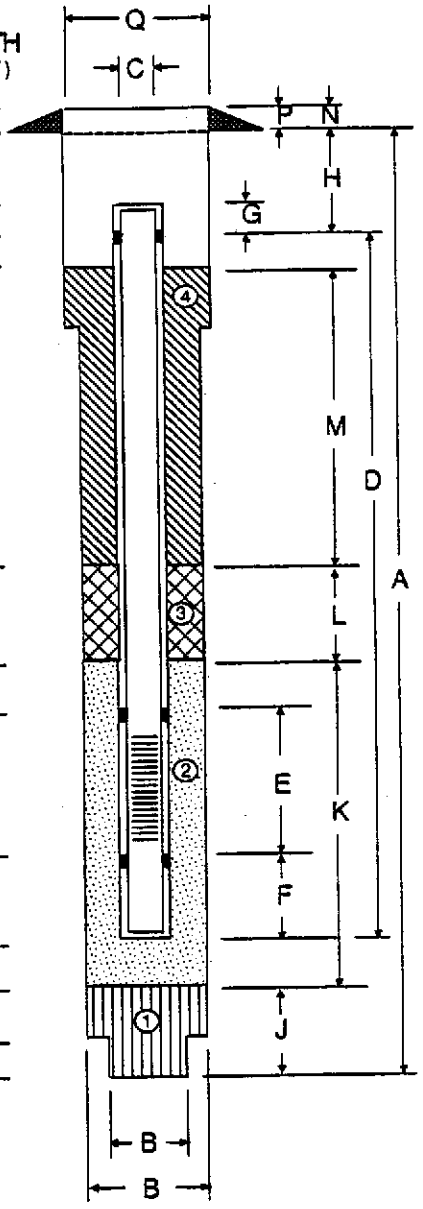
DIMENSIONS

A	TOTAL DEPTH OF BOREHOLE	31.5 FT
B	BOREHOLE DIA.	8.0 IN.
C	WELL CASING DIA.	2.0 IN.
D	WELL CASING LENGTH	15.0 FT
E	WELL CASING SLOTTED INTERVAL	15.0 FT
F	WELL CASING BOTTOM PLUG	2.0 IN.
G	WELL CASING TOP CAP INTERVAL	0
H	WELL CASING RISER DEPTH	18.0 IN.
J	BOTTOM MATERIAL INTERVAL	2.0 FT
K	PERMEABLE MATERIAL INTERVAL	18.0 FT
L	IMPERMEABLE MATERIAL INTERVAL	2.0 FT
M	BACKFILL MATERIAL INTERVAL	10.5 FT
N	BACKFILL MOUND INTERVAL	1.0 IN.
P	PROTECTIVE COVER HEIGHT	1.0 IN.
Q	PROTECTIVE COVER DIA	8.0 IN.

MATERIALS DATA

WELL CASING	SCHEDULE 40 PVC
WELL CASING SLOT SIZE	0.020 IN.
WELL CASING SLOT SPACING	0.125 IN.
WELL CASING BOTTOM PLUG	SCHEDULE 40 PVC
WELL CASING TOP CAP	LOCKABLE
BOTTOM MATERIAL ①	
PERMEABLE ②	#2 SAND
INPERMEABLE ③	BENTONITE
BACKFILL MATERIAL ④	BENTONITE/CEMENT
PROTECTIVE COVER	LOCKED, FLUSH, SEALED

ELEV (FEET)	DEPTH (FEET)
34.30	0.0
33.80	0.5
33.30	1.0
22.8	11.5
20.8	13.5
18.8	15.5
3.8	30.5
2.8	31.5



SECTION VIEW
(NOT TO SCALE)

NOTES

DATE	12/91	EGC	ENVIRONMENTAL GEOTECHNICAL CONSULTANTS, INC.
JOB NO.	E189-02		CONSULTANTS IN APPLIED EARTH SCIENCE
DWG NO.	E1892/38	MONITORING WELL INSTALLATION RECORD	FIGURE NO.
DRAWN	J HATALA	MW-8	16
CHK'D	J PHILLIPS	1088 MARINA BLVD., SAN LEANDRO, CALIFORNIA	
APP'D	J HICKS	ULTRAMAR, INC.	

FORM 42 10/17/90

GROUNDWATER SAMPLING AND ANALYSIS

Quality Assurance/Quality Control Objectives

The sampling and analysis procedures employed by EGC for groundwater sampling and monitoring follow specific Quality Assurance/Quality Control (QA/QC) guidelines. Quality Assurance objectives have been established by EGC to develop and implement procedures for obtaining and evaluating water quality and field data in an accurate, precise and complete manner so that sampling procedures and field measurements provide information that is comparable and representative of actual field conditions. Quality Control (QC) is maintained by EGC by using specific field protocols and requiring the analytical laboratory to perform internal and external QC checks. It is the goal of EGC to provide data that are accurate, precise, complete, comparable, and representative. The definitions for accuracy, precision, completeness, comparability, and representativeness are as follows:

1. Accuracy - the degree of agreement of a measurement with an accepted reference or true value.

2. Precision - a measure of agreement among individual measurements under similar conditions. Usually expressed in terms of the standard deviation.

3. Completeness - the amount of valid data obtained from a measurement system compared to the amount that was expected to meet the project data goals.

4. Comparability - expresses the confidence with which one data set can be compared to another.

5. Representativeness - a sample or group of samples that reflects the characteristics of the media at the sampling point. It also includes how well the sampling point represents the actual parameter variations which are under study.

As part of the EGC QA/QC program, applicable federal, state and local reference guidance documents are to be followed. The procedures outlined in these regulations, manuals, handbooks, guidance documents and journals are incorporated into the EGC sampling procedures to assure that: (1) groundwater samples are properly collected, (2) groundwater samples are identified, preserved, and transported in a manner such that they are representative of field conditions, and (3) chemical analyses of samples are accurate and reproducible.

GUIDANCE AND REFERENCE DOCUMENTS USED TO COLLECT GROUNDWATER SAMPLES

U.S.E.P.A. - 339/9-51-002	NEIC Manual for Groundwater/ Subsurface Investigation at Hazardous Waste Sites
U.S.E.P.A. - 503/SW611	Procedures Manual for Groundwater Monitoring at Solid Waste Disposal Facilities (August, 1977)
U.S.E.P.A. - 600/4-79-020	Methods for Chemical Analysis of Water and Wastes (1983)
U.S.E.P.A. - 600/4-82-029	Handbook for Sampling and Sample Preservation of Water and Wastewater (1982)
U.S.E.P.A. - SW-846#, 3rd Edition	Test Methods for Evaluating Solid Waste - Physical/Chemical Methods (November, 1986)
40 CFR 136.3e. Table II (Code of Federal Regulations)	Required Containers, Preservation Techniques, and Holding Times
Resources Conservation and Recovery Act (OSWER 9950.1)	Groundwater Monitoring Technical Enforcement Guidance Document (September, 1986)
California Regional Water Quality Control Board (Central Valley Region)	A Compilation of Water Quality Goals (September, 1988); Updates (October, 1988)
California Regional Water Quality Control Board (North Coast, San Francisco Bay, and Central Valley)	Regional Board Staff Recommendations for Initial Evaluations and Investigation of Underground Tanks: Tri-Regional Recommendations (June, 1988)
Regional Water Quality Control Board (Central Valley Region)	Memorandum: Disposal, Treatment, and Refuse of Soils Contaminated with Petroleum Fractions (August, 1986)
State of California Department of Health Services	Hazardous Waste Testing Laboratory Certification List (March, 1987)
State of California Water Resources Control Board	Leaking Underground Fuel Tank (LUFT) Field Manual (May, 1988), and LUFT Field Manual Revision (April, 1989)

State of California Water Resources Control Board	Title 23, (Register #85.#33-8-17-85), Subchapter 16: Underground Tank Regulations; Article 3, Sections 2632 and 2634; Article 4, Section 2647 (October, 1986)
Alameda County Water District	Groundwater Protection Program: Guidelines for Groundwater and Soil Investigations at Leaking Underground Fuel Tank Sites (November, 1988)
American Public Health Association	Standard Methods for the Examination of Water and Wastewaters, 16th Edition
Analytical Chemistry (journal)	Principles of Environmental Analysis. Volume 55, Pages 2212-2218 (December, 1983)
Santa Clara Valley Water District	Guidelines for Preparing or Reviewing Sampling Plans for Soil and Groundwater Investigation of Fuel Contamination Sites (January, 1989)
American Petroleum Institute	Groundwater Monitoring & Sample Bias; API Publication 4367, Environmental Affairs Department, June 1983

Because groundwater samples collected by EGC are analyzed in the parts per billion (ppb) range for many compounds, care is exercised to prevent contamination of samples. When volatile or semi-volatile organic compounds are included for analysis, EGC sampling crew members will adhere to the following precautions in the field:

1. A clean pair of new, disposable gloves are worn for each well being sampled.

2. When possible, samples are collected from known or suspected wells that are least contaminated (i.e., background) followed by wells in increasing order of contamination.

3. All sample bottles and equipment are kept away from fuels and solvents. When possible, gasoline (used in generators) is stored away from bailers, sample bottles, purging pumps, etc.

4. Bailers are made of Teflon or Stainless Steel. Other materials such as plastic may contaminate samples with phthalate esters which interfere with many Gas Chromatography (GC) analyses.

5. Volatile organic groundwater samples are collected so that air passage through the sample does not occur or is minimal (to prevent volatiles from being stripped from the samples); sample bottles are filled by slowly running the sample down the side

of the bottle until there is a positive convex meniscus over the neck of the bottle; the Teflon side of the septum (in cap) is positioned against the meniscus, and the cap screwed on tightly; the sample is inverted and the bottle lightly tapped. The absence of an air bubble indicates a successful seal; if a bubble is evident, the cap is removed, more sample is added, and the bottle is resealed.

6. Extra Teflon seals are brought into the field in case seals are difficult to handle and/or are dropped. Dropped seals are considered contaminated and are not used. When replacing seals or if seals become flipped, care is taken to assure that the Teflon seal faces down.

Laboratory and field handling procedures of samples are monitored by including QC samples for analysis with every submitted sample lot from a project site. QC samples may include any combination of the following:

1. Trip Blank. Used for purgeable organic compounds only; QC samples are collected in 40 milliliter (ml) sample vials filled in the analytical laboratory with organic-free water. Trip blanks are sent to the project site, and travel with project site samples. Trip blanks are not opened, and are returned from a project site with the project site samples for analysis.

2. Field Blank. Prepared in the field using organic-free water. These QC samples accompany project site samples to the laboratory and are analyzed for specific chemical parameters unique to the project site where they were prepared.

3. Duplicates. Duplicate samples are collected "second samples" from a selected well and project site. They are collected as either split samples or second-run samples collected from the same well.

4. Equipment Blank. Period QC sample collected from field equipment rinsate to verify decontamination procedures.

The number and types of QC samples are determined on a site-specific basis.

SAMPLE COLLECTION

This section describes the routine procedures followed by EGC while collecting groundwater samples for chemical analysis. These procedures include decontamination, water-level measurements, well purging, physical parameter measurements, sample collection, sample preservation, sample handling, and sample documentation. Critical sampling objectives for EGC are to:

1. Collect groundwater samples that are representative of the sampled matrix.

2. Maintain sample integrity from the time of sample collection to receipt by the analytical laboratory.

Decontamination Procedures

All physical parameter measuring and sampling equipment are decontaminated prior to sample collection using Alconox or equivalent detergent followed by steam cleaning with deionized water. Any sampling equipment surfaces or parts that might absorb specific contaminants, such as plastic pump valves, impellers, etc., are cleaned in the same manner.

Sample bottles, bottle caps and septa used for sampling volatile organics are thoroughly cleaned and prepared in the laboratory. Sample bottles, bottle caps and septa are protected from all potential chemical contact before actual usage at a sample location.

During field sampling, equipment which has been placed in a well shall be decontaminated by cleaning with Alconox or equivalent detergent followed by steam cleaning with deionized water before purging or sampling the next well.

Water-Level Measurements

Prior to purging and sampling a well, the static-water levels are measured in all wells at a project site using an electric sounder and/or calibrated portable oil-water interface probe. Both static water-level and separate-phase product thickness are measured to the nearest $\pm$0.01 foot. The presence of separate-phase product is confirmed using a clean, acrylic or polyvinylchloride (PVC) bailer, measured to the nearest $\pm$0.01 foot with an engineer's scale tape.

The monofilament line used to lower the bailer is replaced between wells with new line to preclude the possibility of cross-contamination. Field observations (e.g., well integrity, product color, turbidity, water color, odors, etc) are noted on the EGC Well Sampling Field Data Sheet. Before and after each use, the electric sounder, interface probe and bailer are decontaminated by washing with Alconox or equivalent detergent followed by rinsing with deionized water to prevent cross-contamination.

Well Purging

Before sampling occurs, well casing storage water and interstitial water in the artificial sand pack will be purged using: (1) a positive displacement bladder pump constructed of inert, non-wetting, Teflon and stainless steel; (2) a pneumatic-airlift pumping system; (3) a centrifugal pumping system; or (4) a Teflon or Stainless Steel bailer. Methods of purging will be assessed based on well size, location, accessibility, and known chemical conditions. Individual well purge volumes are calculated from casing volumes. As a general rule, a minimum of 3 to 5 casing volumes will be purged. Wells which dewater or demonstrate slow recharge periods (i.e., low-yield wells) during purging activities may be sampled after fewer purging cycles. If a low-yield (low recovery) well is to be sampled, sampling will not take place until at least 70 percent of the previously measured water column has been replaced by recharge. Removal of stagnant water will either be disposed of or stored in 55-gallon drums for future disposal as outlined for contaminated soil cuttings in the section on soil sampling protocol. Physical parameter measurements (temperature, pH, and specific conductance) are closely monitored throughout the well purging process and are used by the EGC sampling crew as indicators for assessing

sufficient purging. Purging is continued until all three physical parameters have stabilized. Specific conductance (conductivity) meters are read to the nearest ±10 umhos/cm, and are calibrated daily. pH meters are read to the nearest ±0.1 pH units and are calibrated daily. Temperature is read to the nearest 0.1 degree F. Calibration of physical parameter meters will follow manufacturers specifications. Collected field data during purging activities will be entered on the EGC Well Sampling Field Data Sheet. Copies of the EGC Field Data Sheets will be reviewed by the EGC Sampling Manager for accuracy and completeness.

DOCUMENTATION

Sample Container Labels

Each sample container will be labeled immediately after the sample is collected. Label information will include:

Sample point designation (i.e., well number or code)
Sampler's identification
Project number
Date and time of collection
Type of preservation used

Well Sampling Data Forms

In the field, the EGC sampling crew will record the following information on the Well Sampling Data Sheet for each sample collected:

Project number
Client
Location
Source (i.e., well number)
Time and date
Well accessibility and integrity
Pertinent well data (e.g., depth, product thickness, static water-level, pH, specific conductance, temperature)
Calculated and actual purge volumes

Chain-of-Custody

A Chain-of-Custody record shall be completed and accompany every shipment of samples to the analytical laboratory in order to establish the documentation necessary to trace sample possession from time of collection. The record will contain the following information:

Sample or station number or sample identification (ID)
Signature of collector, sampler, or recorder
Date and time of collection
Place of collection
Sample type

APPLIED ANALYTICAL

Environmental Laboratories

3164 Gold Camp Drive, #200
Rancho Cordova, CA 95670
Bus: (916) 852-6699
Fax: (916) 852-6688

ANALYSIS REPORT

1020lab.frm

Attention:	Mr. John Phillips	Date Sampled:	09-20-91
	Environmental Geo-	Date Received:	09-20-91
	Technical Consultants	BTEX Analyzed:	09-20-91
	4229 Northgate Blvd. #3	TPHg Analyzed:	09-20-91
	Sacramento, CA 95834	TPHd Analyzed:	NR
Project:	E189-02	Matrix:	WATER
	San Leandro #720		

	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPHg	TPHd
	ppb	ppb	ppb	ppb	ppb	ppb
Detection Limit:	0.5	0.5	0.5	0.5	50	NR
SAMPLE Laboratory Identification						
#5 WATER	ND	8.8	ND	ND	ND	NR

ppm = parts per million = mg/Kg = millograms per Kilograms.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not requested.

ANALYTICAL PROCEDURES

BTEX– Benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction using EPA Method 5030 followed by analysis using EPA Method 8020/602, which utilizes a gas chromatograph (GC) equipped with a photoionization detector (PID) and a flame-ionization detector (FID) in series.

TPHg–Total petroleum hydrocarbons as gasoline (low-to-medium boiling points) are measured by extraction using EPA Method 5030, followed by analysis using modified EPA Method 8015, which utilizes a GC equipped with an FID.

TPHd–Total petroleum hydrocarbons as diesel (high boiling points) are measured by extraction using EPA Method 3550 for soils and EPA Method 3510 for water, followed by modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Laboratory Representative

09-20-91
Date Reported

Signatures of persons involved in chain of possession
Inclusive dates of possession

Samples shall always be accompanied by a Chain-of-Custody record. When transferring the samples, the individual relinquishing and receiving the samples will sign, date, and note the time on the Chain-of-Custody record. EGC will be responsible for notifying the laboratory coordinator when and how many samples will be sent to the laboratory for analysis, and what types of analyses shall be performed.

Sample Handling Storage and Transport

All chemical sampling, handling and storage will be conducted under the direction of our consulting Analytical Chemist. All laboratory chemical testing will be accomplished by a State approved laboratory.

All equipment that contacts samples will be thoroughly cleaned prior to arrival to a site and between samplings. New or used samplers will be steam-cleaned or washed with an anionic detergent solution (i.e., Liquinox or Alconox), rinsed well with tap water, rinsed with distilled water, drained of excess water and air-dried or wiped dry with a clean towel.

Equipment blanks will be taken during the final stage of decontamination at the rate of no more than one per groundwater monitoring well. Selected method blanks will be subjected to chemical analysis for quality control.

All samples will be collected in an order such that those parameters most sensitive to volatilization will be sampled first. A general order of collection for some common groundwater parameters follows:

- Volatile Organic Compounds (VOC's)
- Total Organic Halogens (TOX)
- Total Organic Carbon (TOC)
- Extractable Organics
- Total Metals
- Dissolved Metals
- Phenols
- Sulfate and Chloride
- Turbidity
- Nitrate and Ammonia

All samples will be held at 4°C by packing in ice in a covered ice chest specifically designated for that purpose. At no time will the elapsed time between sample collection and delivery at the outside laboratory be greater than 72 hours. Preservatives will not be added to any sample unless instructed, and preservatives will be supplied and requested by the outside laboratory. Under no circumstances will sample containers be opened by anyone other than laboratory personnel who will perform the specified chemical analysis.

If it is necessary for samples or sample chests to leave the immediate control of the sampler prior to delivery to the laboratory, such as shipment by a common carrier (e.g., Federal Express), a custody seal will be placed on each sample container and/or sample chest to ensure that the samples have not been tampered with during transportation. The custody seal will contain the sampler's signature, the date and time the seal was emplaced.

APPLIED ANALYTICAL

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Fax: (916) 852-6688

ANALYSIS REPORT

1020lab.frm

Attention: Mr. John Phillips
Environmental Geo-
Technical Consultants
4229 Northgate Blvd. #3
Sacramento, CA 95834

Project: E189-02
San Leandro #720

Date Sampled: 09-20-91
Date Received: 09-20-91
BTEX Analyzed: 09-20-91
TPHg Analyzed: 09-20-91
TPHd Analyzed: NR
Matrix: WATER

	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPHg	TPHd
	ppb	ppb	ppb	ppb	ppb	ppb
Detection Limit:	5.0	5.0	5.0	5.0	500	NR
SAMPLE Laboratory Identification						
#6 WATER	490	37	130	360	3100	NR

ppm = parts per million = mg/Kg = millograms per Kilograms.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not requested.

ANALYTICAL PROCEDURES

BTEX– Benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction using EPA Method 5030 followed by analysis using EPA Method 8020/602, which utilizes a gas chromatograph (GC) equipped with a photoionization detector (PID) and a flame-ionization detector (FID) in series.

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TPHd–Total petroleum hydrocarbons as diesel (high boiling points) are measured by extraction using EPA Method 3550 for soils and EPA Method 3510 for water, followed by modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Laboratory Representative

09-20-91
Date Reported

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ANALYSIS REPORT

1020lab.frm

Attention: Mr. John Phillips
Environmental Geo-
Technical Consultants
4229 Northgate Blvd. #3
Sacramento, CA 95834

Project: E189-02
San Leandro #720

Date Sampled: 09-20-91
Date Received: 09-20-91
BTEX Analyzed: 09-20-91
TPHg Analyzed: 09-20-91
TPHd Analyzed: NR
Matrix: SOIL

	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPHg	TPHd
	ppm	ppm	ppm	ppm	ppm	ppm
Detection Limit:	0.005	0.005	0.005	0.005	1.0	NR
SAMPLE Laboratory Identification						
7-3 13.5-15	ND	ND	ND	ND	ND	NR

ppm = parts per million = mg/Kg = millograms per Kilograms.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not requested.

ANALYTICAL PROCEDURES

BTEX– Benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction using EPA Method 5030 followed by analysis using EPA Method 8020/602, which utilizes a gas chromatograph (GC) equipped with a photoionization detector (PID) and a flame-ionization detector (FID) in series.

TPHg–Total petroleum hydrocarbons as gasoline (low-to-medium boiling points) are measured by extraction using EPA Method 5030, followed by analysis using modified EPA Method 8015, which utilizes a GC equipped with an FID.

TPHd–Total petroleum hydrocarbons as diesel (high boiling points) are measured by extraction using EPA Method 3550 for soils and EPA Method 3510 for water, followed by modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Laboratory Representative

09-20-91
Date Reported

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Rancho Cordova, CA 95670
Bus: (916) 852-6699
Fax: (916) 852-6688

ANALYSIS REPORT

1020lab.frm

Attention:	Mr. John Phillips	Date Sampled:	09-19-91
	Environmental Geo-	Date Received:	09-19-91
	Technical Consultants	BTEX Analyzed:	09-19-91
	4229 Northgate Blvd. #3	TPHg Analyzed:	09-19-91
	Sacramento, CA 95834	TPHd Analyzed:	NR
Project:	E189-02	Matrix:	SOIL
	San Leandro #720		

	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPHg	TPHd
	ppm	ppm	ppm	ppm	ppm	ppm
Detection Limit:	0.005	0.005	0.005	0.005	1.0	NR
SAMPLE Laboratory Identification						
4-3 13.5-15.0	ND	ND	ND	ND	ND	NR
5-3 13-14.5	ND	ND	ND	ND	ND	NR
6-3 10-11.5	ND	ND	ND	ND	ND	NR

ppm = parts per million = mg/Kg = milligrams per Kilograms.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not requested.

ANALYTICAL PROCEDURES

BTEX– Benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction using EPA Method 5030 followed by analysis using EPA Method 8020/602, which utilizes a gas chromatograph (GC) equipped with a photoionization detector (PID) and a flame-ionization detector (FID) in series.

TPHg–Total petroleum hydrocarbons as gasoline (low-to-medium boiling points) are measured by extraction using EPA Method 5030, followed by analysis using modified EPA Method 8015, which utilizes a GC equipped with an FID.

TPHd–Total petroleum hydrocarbons as diesel (high boiling points) are measured by extraction using EPA Method 3550 for soils and EPA Method 3510 for water, followed by modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Laboratory Representative

09-20-91
Date Reported

Applied Analytical [redacted]

CHAIN-OF-CUSTODY RECORD

E189-02 ULTRAMAR/BEACON #720

DATE	TIME	SAMPLE I.D.	No. of Containers	TPHg	BTEX	TPHd	Preserved	LABORATORY I.D. NUMBER
9-19-91	11:00	4-3 13.5 - 15.0	1	X	X			soil
9-19-91	12:30	5-3 13 - 14.5	1	X	X			soil
9-19-91	14:56	6-3 10 - 11.5	1	X	X			soil
9-20-91	9:30	#6 water	1	X	X			water - 40ml VOA
9-20-91	10:00	#5 water	1	X	X			water - 40ml VOA
9-20-91	10:46	7-3 13.5 - 15	1	X	X			Soil

ANALYSIS

Bill To Ultramar with a Copy to John Philips at EBC

RELINQUISHED BY (Signature): John M. Philips

RELINQUISHED BY (Signature):

RELINQUISHED BY (Signature):

DATE / TIME: 9/20/91

RECEIVED BY (Signature): Guy McCormick

RECEIVED FOR LABORATORY BY (Signature):

REMARKS:

SEND RESULTS TO:

[redacted]

Proj. Mgr.: J. Philips

SEQUOIA ANALYTICAL

1900 Bates Avenue • Suite LM • Concord, California 94520
(510) 686-9600 • FAX (510) 686-9689

RECEIVED DEC 1 2 1991

Environmental Geotechnical Cons.	Client Project ID:	Beacon Station #720	Sampled:	Aug 15, 1991
4229 Northgate Blvd., Suite 3	Matrix Descript:	Soil	Received:	Aug 15, 1991
Sacramento, CA 95834	Analysis Method:	EPA 5030/8015/8020	Analyzed:	Aug 15, 1991
Attention: John Phillips	First Sample #:	108-0737	Reported:	Aug 16, 1991

TOTAL PETROLEUM FUEL HYDROCARBONS with BTEX DISTINCTION (EPA 8015/8020)

Sample Number	Sample Description	Low/Medium B.P. Hydrocarbons mg/kg (ppm)	Benzene mg/kg (ppm)	Toluene mg/kg (ppm)	Ethyl Benzene mg/kg (ppm)	Xylenes mg/kg (ppm)
108-0737	Sample 2 - 2	2.1	0.22	0.088	0.071	0.27
Detection Limits:		**1.0**	**0.0050**	**0.0050**	**0.0050**	**0.0050**

Low to Medium Boiling Point Hydrocarbons are quantitated against a gasoline standard.
Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Belinda C. Vega
Laboratory Director

SEQUOIA ANALYTICAL

1900 Bates Avenue • Suite LM • Concord, California 94520
(510) 686-9600 • FAX (510) 686-9689

Environmental Geotechnical Cons.	Client Project ID:	Beacon Station #720	Sampled:	Aug 15, 1991
4229 Northgate Blvd., Suite 3	Matrix Descript:	Soil	Received:	Aug 15, 1991
Sacramento, CA 95834	Analysis Method:	EPA 5030/8015/8020	Analyzed:	Aug 15, 1991
Attention: John Phillips	First Sample #:	108-0738	Reported:	Aug 16, 1991

TOTAL PETROLEUM FUEL HYDROCARBONS with BTEX DISTINCTION (EPA 8015/8020)

Sample Number	Sample Description	Low/Medium B.P. Hydrocarbons mg/kg (ppm)	Benzene mg/kg (ppm)	Toluene mg/kg (ppm)	Ethyl Benzene mg/kg (ppm)	Xylenes mg/kg (ppm)
108-0738	Sample 3 - 2	560	3.6	19	9.1	48
Detection Limits:		**50**	**0.25**	**0.25**	**0.25**	**0.25**

Low to Medium Boiling Point Hydrocarbons are quantitated against a gasoline standard.
Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

SEQUOIA ANALYTICAL

Belinda C. Vega
Laboratory Director

SEQUOIA ANALYTICAL

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(510) 686-9600 • FAX (510) 686-9689

Environmental Geotechnical Cons.	Client Project ID:	Beacon Station #720	Sampled:	Aug 15, 1991
4229 Northgate Blvd., Suite 3	Matrix Descript:	Water	Received:	Aug 15, 1991
Sacramento, CA 95834	Analysis Method:	EPA 5030/8015/8020	Analyzed:	Aug 15, 1991
Attention: John Phillips	First Sample #:	108-0736	Reported:	Aug 16, 1991

TOTAL PETROLEUM FUEL HYDROCARBONS with BTEX DISTINCTION (EPA 8015/8020)

Sample Number	Sample Description	Low/Medium B.P. Hydrocarbons µg/L (ppb)	Benzene µg/L (ppb)	Toluene µg/L (ppb)	Ethyl Benzene µg/L (ppb)	Xylenes µg/L (ppb)
108-0736	Sample #1	72,000	14,000	5,700	2,400	9,600
Detection Limits:		**6,000**	**60**	**60**	**60**	**60**

Low to Medium Boiling Point Hydrocarbons are quantitated against a gasoline standard.
Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

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Belinda C. Vega
Laboratory Director

SEQUOIA ANALYTICAL

1900 Bates Avenue • Suite LM • Concord, California 94520
(510) 686-9600 • FAX (510) 686-9689

Environmental Geotechnical Cons. Client Project ID: Beacon Station #720
4229 Northgate Blvd., Suite 3
Sacramento, CA 95834
Attention: John Phillips QC Sample Group: 1080737-38 Reported: Aug 16, 1991

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl-Benzene	Xylenes
Method:	EPA 8015/8020	EPA 8015/8020	EPA 8015/8020	EPA 8015/8020
Analyst:	S. Chieffo	S. Chieffo	S. Chieffo	S. Chieffo
Reporting Units:	ng	ng	ng	ng
Date Analyzed:	Aug 15, 1991	Aug 15, 1991	Aug 15, 1991	Aug 15, 1991
QC Sample #:	GBLK081591	GBLK081591	GBLK081591	GBLK081591
Sample Conc.:	N.D.	2.8	N.D.	3.3
Spike Conc. Added:	100	100	100	300
Conc. Matrix Spike:	95	95	96	290
Matrix Spike % Recovery:	95	92	96	97
Conc. Matrix Spike Dup.:	97	98	96	290
Matrix Spike Duplicate % Recovery:	97	95	96	97
Relative % Difference:	2.1	3.1	0	0

Laboratory blank contained the following analytes: None Detected

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Belinda C. Vega
Laboratory Director

% Recovery:	Conc. of M.S. - Conc. of Sample / Spike Conc. Added	x 100
Relative % Difference:	Conc. of M.S. - Conc. of M.S.D. / (Conc. of M.S. + Conc. of M.S.D.) / 2	x 100

SEQUOIA ANALYTICAL

1900 Bates Avenue • Suite LM • Concord, California 94520
(510) 686-9600 • FAX (510) 686-9689

Environmental Geotechnical Cons.
4229 Northgate Blvd., Suite 3
Sacramento, CA 95834
Attention: John Phillips

Client Project ID: Beacon Station #720

QC Sample Group: 11080737-38

Reported: Aug 16, 1991

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl-Benzene	Xylenes
Method:	EPA 8015/8020	EPA 8015/8020	EPA 8015/8020	EPA 8015/8020
Analyst:	S. Chieffo	S. Chieffo	S. Chieffo	S. Chieffo
Reporting Units:	ng	ng	ng	ng
Date Analyzed:	Aug 15, 1991	Aug 15, 1991	Aug 15, 1991	Aug 15, 1991
QC Sample #:	GBLK081591A	GBLK081591A	GBLK081591A	GBLK081591A
Sample Conc.:	N.D.	N.D.	N.D.	N.D.
Spike Conc. Added:	100	100	100	300
Conc. Matrix Spike:	87	89	88	270
Matrix Spike % Recovery:	87	89	88	90
Conc. Matrix Spike Dup.:	91	93	88	270
Matrix Spike Duplicate % Recovery:	91	93	88	90
Relative % Difference:	4.5	4.4	0	0

Laboratory blank contained the following analytes: None Detected

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Belinda C. Vega
Laboratory Director

$$\text{\% Recovery:} \quad \frac{\text{Conc. of M.S. - Conc. of Sample}}{\text{Spike Conc. Added}} \times 100$$

$$\text{Relative \% Difference:} \quad \frac{\text{Conc. of M.S. - Conc. of M.S.D.}}{\text{(Conc. of M.S. + Conc. of M.S.D.) / 2}} \times 100$$

SEQUOIA ANALYTICAL

State-Certified Laboratory for Analysis of Water, Soil, and Hazardous Materials

MOBILE LAB SERVICES
CHAIN OF CUSTODY REPORT

Page:

CLIENT: [illegible] REPORT TO: [illegible] DATE: 8-15-91

SITE/PROJECT: [illegible] ATTENTION: [illegible]

	SAMPLE ID/DESC.	Matrix/ Cont.	ANALYSIS REQUESTED BTEX	TPHg	TPHd	TRPH	MOBIL LAB ID	TIME REC'D.	INITIALS Rel'd	Rec'd
1	SAMPLE #1	W	X	X		1080736	1089843	13:05	JMP	S.C.
2	SAMPLE 2-2	S	X	X		737	1089844	14:45	JMP	S.C.
3	SAMPLE 3-2	S	X	X		738	1089845	15:40	JMP	S.C.
4										
5										
6										
7										
8										
9										
10										
11										
12										

PROJECT INFORMATION

JOB #: M108 FIRST SAMPLE#: 1089843 DATE: 8-15-91

FILE #: LAST SAMPLE #: 1089845 RAW DATA:

BILLING INFORMATION

TIME LEFT SEQUOIA: 07:15 TIME ARRIVED SEQUOIA: 17:45

TOTAL HRS./CHARGES: 9.75 hrs @ 120.00/hr TIME ON SITE: 08:00 TIME OFF SITE: 16:45

0.75 hrs @ 270.00/hr

BILL TO: =(1957.50) OTHER BILLABLE:

COMMENTS:

NOTE: [illegible] OVERTIME ON SITE

0.75 hrs

APPLIED ANALYTICAL

Environmental Laboratories

42501 Albrae St., Suite 100
Fremont, CA 94538
Bus: (510) 623-0775
Fax: (510) 651-2233

ANALYSIS REPORT

1020lab.frm

Attention:	Mr. John Phillips	Date Sampled:	10-17-91
	EGC	Date Received:	10-25-91
	4229 Northgate	BTEX Analyzed:	10-31-91
	Sacramento, CA 95834	TPHg Analyzed:	10-31-91
Project:	AGS 19505-L, Project #E189-02	TPHd Analyzed:	NR
	Station #720, San Leandro	Matrix:	Water

	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPHg	TPHd
	ppb	ppb	ppb	ppb	ppb	ppb
Detection Limit:	0.5	0.5	0.5	0.5	50	100
SAMPLE Laboratory Identification						
MW-7 W1110858	ND	ND	ND	ND	ND	NR
MW-8 W1110859	2400	4700	1500	9000	130000	NR

ppb = parts per billion = µg/L = micrograms per liter.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not requested.

ANALYTICAL PROCEDURES

BTEX– Benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction using EPA Method 5030 followed by analysis using EPA Method 8020/602, which utilizes a gas chromatograph (GC) equipped with a photoionization detector (PID) and a flame-ionization detector (FID) in series.

TPHg–Total petroleum hydrocarbons as gasoline (low-to-medium boiling points) are measured by extraction using EPA Method 5030, followed by analysis using modified EPA Method 8015, which utilizes a GC equipped with an FID.

TPHd–Total petroleum hydrocarbons as diesel (high boiling points) are measured by extraction using EPA Method 3550 for soils and EPA Method 3510 for water, followed by modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Laboratory Representative

November 5, 1991
Date Reported

APPLIED ANALYTICAL

Environmental Laboratories

42501 Albrae St., Suite 100
Fremont, CA 94538
Bus: (510) 623-0775
Fax: (510) 651-2233

ANALYSIS REPORT

1020lab.frm

Attention:	Mr. Bart Britton	Date Sampled:	11-05-91
	EGC	Date Received:	11-06-91
	2495 Industrial Pkwy West	BTEX Analyzed:	11-06-91
	Hayward, CA 94545	TPHg Analyzed:	11-06-91
Project:	AGS 19505-L, Project #E189-02	TPHd Analyzed:	NR
	Station #720, San Leandro	Matrix:	Water

	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPHg	TPHd
	ppb	ppb	ppb	ppb	ppb	ppb
Detection Limit:	0.5	0.5	0.5	0.5	50	100
SAMPLE Laboratory Identification						
MW-6 W1111042	ND	ND	ND	ND	120	NR

ppb = parts per billion = µg/L = micrograms per liter.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not requested.

ANALYTICAL PROCEDURES

BTEX– Benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction using EPA Method 5030 followed by analysis using EPA Method 8020/602, which utilizes a gas chromatograph (GC) equipped with a photoionization detector (PID) and a flame-ionization detector (FID) in series.

TPHg–Total petroleum hydrocarbons as gasoline (low-to-medium boiling points) are measured by extraction using EPA Method 5030, followed by analysis using modified EPA Method 8015, which utilizes a GC equipped with an FID.

TPHd–Total petroleum hydrocarbons as diesel (high boiling points) are measured by extraction using EPA Method 3550 for soils and EPA Method 3510 for water, followed by modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Laboratory Representative

November 8, 1991
Date Reported

Ultramar Inc.

CHAIN OF CUSTODY REPORT

094175

BEACON

Beacon Station No.	Sampler (Print Name)	ANALYSES									Date	Form No.
720	BART BRITTON										10-24-91	1 of 1
Project No.	**Sampler (Signature)**											
E189-02												
Project Location	**Affiliation**											
SAN LEANDRO	EGC											

Sample No./Identification	Date	Time	Lab No.	BTEX	TPH (gasoline)	TPH (diesel)					No. of Containers	REMARKS
MW7	10-17-91	1050		X	X						3	PLEASE SEND
MW8	10-24-91	1115		X	X						3	RESULTS TO
												JOHN PHILLIPS
												4229 Northgate Blvd. Suite #3
												Sacramento, CA 95834

	Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time
(1)	EGC	10-24	3:35		10/24	3:35
(3)	Wayne Eich	10-25		Wayne Eich	10-25	16:10
(2)		10/24	16:11	Express-it X742	10-25	930

Report To:
RELINQUISHED BY EXPRESS-IT X742
10-25 930
10/25/91

Bill to: ULTRAMAR INC.
525 West Third Street
Hanford, CA 93230
Attention: _____

WHITE: Return to Client with Report YELLOW: Laboratory Copy PINK: Originator Copy

32 8003 1/90

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Ultramar Inc.

CHAIN OF CUSTODY REPORT

BEACON

094201

Beacon Station No.	Sampler (Print Name)			ANALYSES									Date	Form No.
720	BART BRITTON												11-5-91	1 of 1
Project No.	Sampler (Signature)													
E189-02														
Project Location	Affiliation													
SAN LEANDRO	EGC													
Sample No./Identification	Date	Time	Lab No.	BTEX	TPH (gasoline)	TPH (diesel)						No. of Containers	REMARKS	
MW-6	11-5-91	1420		X	X									

Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time
EGC	11-5-91	1609		11/5	410
Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time
AND	11/5	502	EXPRESS-IT	11/5	1700
Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time
EXPRESS-11	11/6	1135		11/6/91	

Report To:

Bill to: ULTRAMAR INC.
525 West Third Street
Hanford, CA 93230
Attention: _____

WHITE: Return to Client with Report YELLOW: Laboratory Copy PINK: Originator Copy

32 8003 1/90

APPLIED ANALYTICAL

Environmental Laboratories

42501 Albrae St., Suite 100
Fremont, CA 94538
Bus: (510) 623-0775
Fax: (510) 651-2233

ANALYSIS REPORT

1020lab.frm

Attention:	Mr. John Phillips	Date Sampled:	10-10-91
	EGC	Date Received:	10-10-91
	2495 Industrial Pkwy., West	BTEX Analyzed:	10-21-91
	Hayward, CA 94545	TPHg Analyzed:	10-21-91
Project:	19505-L, Station # 720	TPHd Analyzed:	NR
	Project #E189-02, San Leandro	Matrix:	Soil

	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPHg	TPHd
	ppm	ppm	ppm	ppm	ppm	ppm
Detection Limit:	0.005	0.005	0.005	0.005	1.0	10
SAMPLE Laboratory Identification						
MW6 #1 S1110295	ND	ND	ND	ND	ND	NR
MW6 #2 S1110296	ND	ND	ND	ND	ND	NR
MW6 #3 S1110297	ND	0.035	0.011	0.047	11	NR
MW6 #4 S1110298	ND	ND	ND	ND	ND	NR
MW6 #5 S1110299	ND	ND	ND	ND	ND	NR

ppm = parts per million = mg/kg = milligrams per kilogram.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not requested.

ANALYTICAL PROCEDURES

BTEX– Benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction using EPA Method 5030 followed by analysis using EPA Method 8020/602, which utilizes a gas chromatograph (GC) equipped with a photoionization detector (PID) and a flame-ionization detector (FID) in series.

TPHg–Total petroleum hydrocarbons as gasoline (low-to-medium boiling points) are measured by extraction using EPA Method 5030, followed by analysis using modified EPA Method 8015, which utilizes a GC equipped with an FID.

TPHd–Total petroleum hydrocarbons as diesel (high boiling points) are measured by extraction using EPA Method 3550 for soils and EPA Method 3510 for water, followed by modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Laboratory Representative

October 23, 1991
Date Reported

APPLIED ANALYTICAL LABORATORY IS CERTIFIED BY THE STATE OF CALIFORNIA DEPARTMENT OF HEALTH SERVICES AS A HAZARDOUS WASTE TESTING LABORATORY
(Certification No. E1211)

ultramar inc.

CHAIN OF CUSTODY REPORT

BEACON

094137

Beacon Station No.	Sampler (Print Name)	Date	Form No.
720	JOHN M. PHILLIPS	10·10·91	1 of 1
Project No.	**Sampler (Signature)**		
E189-02	John M Phillips		
Project Location	**Affiliation**		
1088 MARINA BLVD. SAN LEANDRO	EGC.		

Sample No./Identification	Date	Time	Lab No.	BTEX	TPH (gasoline)	TPH (diesel)	ORGANIC LEAD	No. of Containers	REMARKS
MW6 #1	10·10·91	8:45		✓	✓			1	
MW6 #2	"	9:00		✓	✓			1	
MW6 #3	"	9:15		✓	✓			1	
MW6 #4	"	9:30		✓	✓			1	
MW6 #5	"	9:45		✓	✓			1	
C-1, C-1, C-1, C-1	"	10:20		✓	✓		✓	4	24 HOUR RUSH THIS SAMPLE ONLY

Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time
John M. Phillips EGC	10/10	10:54	Frank Stewart	10/10	10:50
Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time
Frank Stewart	10/10/91	11:10	Anthony Green	10/10/91	11:00
Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time

Report To: JOHN M. PHILLIPS
4229 NORTHGATE BLVD. SUITE 3
SACRAMENTO CA 95834
(916) 925 4789

Bill to: ULTRAMAR INC.
525 West Third Street
Hanford, CA 93230
Attention: Mr TERRENCE FOX

WHITE: Return to Client with Report YELLOW: Laboratory Copy PINK: Originator Copy

32 8003 1 90

APPLIED ANALYTICAL

Environmental Laboratories

42501 Albrae St., Suite 100
Fremont, CA 94538
Bus: (510) 623-0775
Fax: (510) 651-2233

ANALYSIS REPORT

1020lab.frm

Attention:	Mr. John Phillips	Date Sampled:	10-10-91
	EGC	Date Received:	10-11-91
	2495 Industrial Pkwy West	BTEX Analyzed:	10-24-91
	Hayward, CA 94545	TPHg Analyzed:	10-24-91
Project:	19505-L, Station # 720	TPHd Analyzed:	NR
	Project #E189-02, San Leandro	Matrix:	Soil

	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPHg	TPHd
	ppm	ppm	ppm	ppm	ppm	ppm
Detection Limit:	0.005	0.005	0.005	0.005	1.0	10
SAMPLE Laboratory Identification						
MW7 #1 S1110406	ND	ND	ND	ND	ND	NR
MW7 #2 S1110407	ND	ND	ND	ND	ND	NR
MW7 #3 S1110408	ND	ND	ND	ND	ND	NR
MW7 #4 S1110409	ND	ND	ND	ND	ND	NR
MW7 #5 S1110410	ND	ND	ND	ND	ND	NR

ppm = parts per million = mg/kg = milligrams per kilogram.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not requested.

ANALYTICAL PROCEDURES

BTEX– Benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction using EPA Method 5030 followed by analysis using EPA Method 8020/602, which utilizes a gas chromatograph (GC) equipped with a photoionization detector (PID) and a flame-ionization detector (FID) in series.

TPHg–Total petroleum hydrocarbons as gasoline (low-to-medium boiling points) are measured by extraction using EPA Method 5030, followed by analysis using modified EPA Method 8015, which utilizes a GC equipped with an FID.

TPHd--Total petroleum hydrocarbons as diesel (high boiling points) are measured by extraction using EPA Method 3550 for soils and EPA Method 3510 for water, followed by modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Laboratory Representative

October 25, 1991
Date Reported

APPLIED ANALYTICAL

Environmental Laboratories

42501 Albrae St., Suite 100
Fremont, CA 94538
Bus: (510) 623-0775
Fax: (510) 651-2233

ANALYSIS REPORT

1020lab.frm

Attention:	Mr. John Phillips	Date Sampled:	10-10-91
	EGC	Date Received:	10-11-91
	2495 Industrial Pkwy West	BTEX Analyzed:	10-24-91
	Hayward, CA 94545	TPHg Analyzed:	10-24-91
Project:	19505-L, Station # 720	TPHd Analyzed:	NR
	Project #E189-02, San Leandro	Matrix:	Soil

	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPHg	TPHd
	ppm	ppm	ppm	ppm	ppm	ppm
Detection Limit:	0.005	0.005	0.005	0.005	1.0	10
SAMPLE Laboratory Identification						
MW7 #6 S1110411	ND	ND	ND	ND	ND	NR

ppm = parts per million = mg/kg = milligrams per kilogram.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not requested.

ANALYTICAL PROCEDURES

BTEX– Benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction using EPA Method 5030 followed by analysis using EPA Method 8020/602, which utilizes a gas chromatograph (GC) equipped with a photoionization detector (PID) and a flame-ionization detector (FID) in series.

TPHg–Total petroleum hydrocarbons as gasoline (low-to-medium boiling points) are measured by extraction using EPA Method 5030, followed by analysis using modified EPA Method 8015, which utilizes a GC equipped with an FID.

TPHd–Total petroleum hydrocarbons as diesel (high boiling points) are measured by extraction using EPA Method 3550 for soils and EPA Method 3510 for water, followed by modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Laboratory Representative

October 25, 1991
Date Reported

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CHAIN OF CUSTODY REPORT

BEACON

094140

Beacon Station No.	Sampler (Print Name)	ANALYSES										Date	Form No.
#720	JOHN M. PHILLIPS											10-11-91	1 of [illegible]
Project No.	**Sampler (Signature)**												
E189-02	John M. Phillips												
Project Location	**Affiliation**												
1088 MARINA BLVD. SAN LEANDRO	EGC												

Sample No./Identification	Date	Time	Lab No.	BTEX	TPH (gasoline)	TPH (diesel)						No. of Containers	REMARKS
MW7 #1	10-10-91	1:45		✓	✓							1	
MW7 #2	"	1:55		✓	✓							1	
MW7 #3	"	2:05		✓	✓							1	
MW7 #4	"	2:15		✓	✓							1	
MW7 #5	"	2:25		✓	✓							1	
MW7 #6	"	2:35		✓	✓							1	

Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time
John M. Phillips	10-11-91	1:30	J. Depenning	10/11	1330
Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time
J. Depenning	10/11	1500	Ken Bowen	10/11	1558
Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time

Report To: JOHN M. PHILLIPS
EGC INC.
4229 NORTHGATE BLVD STE #3
SACRAMENTO CA 95834

Bill to: ULTRAMAR INC.
525 West Third Street
Hanford, CA 93230
Attention: Terry Fox

WHITE: Return to Client with Report YELLOW: Laboratory Copy PINK: Originator Copy

32-8003 1/90

APPLIED ANALYTICAL

Environmental Laboratories

42501 Albrae St., Suite 100
Fremont, CA 94538
Bus: (510) 623-0775
Fax: (510) 651-2233

ANALYSIS REPORT

1020lab.frm

Attention:	Mr. John Phillips	Date Sampled:	10-11-91
	EGC	Date Received:	10-11-91
	2495 Industrial Pkwy West	BTEX Analyzed:	10-24-91
	Hayward, CA 94545	TPHg Analyzed:	10-24-91
Project:	19505-L, Station # 720	TPHd Analyzed:	NR
	Project #E189-02, San Leandro	Matrix:	Soil

	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPHg	TPHd
	ppm	ppm	ppm	ppm	ppm	ppm
Detection Limit:	0.005	0.005	0.005	0.005	1.0	10
SAMPLE						
Laboratory Identification						
MW8 #1 S1110412	ND	0.010	ND	0.011	ND	NR
MW8 #2 S1110413	ND	ND	ND	0.008	ND	NR
MW8 #3 S1110414	0.012	ND	ND	0.027	ND	NR
MW8 #4 S1110415	0.67	4.8	3.3	20	290	NR
MW8 #5 S1110416	0.014	0.056	0.020	0.15	2.6	NR

ppm = parts per million = mg/kg = milligrams per kilogram.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not requested.

ANALYTICAL PROCEDURES

BTEX– Benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction using EPA Method 5030 followed by analysis using EPA Method 8020/602, which utilizes a gas chromatograph (GC) equipped with a photoionization detector (PID) and a flame-ionization detector (FID) in series.

TPHg–Total petroleum hydrocarbons as gasoline (low-to-medium boiling points) are measured by extraction using EPA Method 5030, followed by analysis using modified EPA Method 8015, which utilizes a GC equipped with an FID.

TPHd–Total petroleum hydrocarbons as diesel (high boiling points) are measured by extraction using EPA Method 3550 for soils and EPA Method 3510 for water, followed by modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Laboratory Representative

October 29, 1991
Date Reported

APPLIED ANALYTICAL

Environmental Laboratories

42501 Albrae St., Suite 100
Fremont, CA 94538
Bus: (510) 623-0775
Fax: (510) 651-2233

ANALYSIS REPORT

1020lab.frm

Attention:	Mr. John Phillips	Date Sampled:	10-11-91
	EGC	Date Received:	10-11-91
	2495 Industrial Pkwy West	BTEX Analyzed:	10-24-91
	Hayward, CA 94545	TPHg Analyzed:	10-24-91
Project:	19505-L, Station # 720	TPHd Analyzed:	NR
	Project #E189-02, San Leandro	Matrix:	Soil

	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPHg	TPHd
	ppm	ppm	ppm	ppm	ppm	ppm
Detection Limit:	0.005	0.005	0.005	0.005	1.0	10
SAMPLE Laboratory Identification						
MW8 #6 S1110417	ND	ND	ND	0.010	ND	NR

ppm = parts per million = mg/kg = milligrams per kilogram.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not requested.

ANALYTICAL PROCEDURES

BTEX– Benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction using EPA Method 5030 followed by analysis using EPA Method 8020/602, which utilizes a gas chromatograph (GC) equipped with a photoionization detector (PID) and a flame-ionization detector (FID) in series.

TPHg–Total petroleum hydrocarbons as gasoline (low-to-medium boiling points) are measured by extraction using EPA Method 5030, followed by analysis using modified EPA Method 8015, which utilizes a GC equipped with an FID.

TPHd–Total petroleum hydrocarbons as diesel (high boiling points) are measured by extraction using EPA Method 3550 for soils and EPA Method 3510 for water, followed by modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Laboratory Representative

October 29, 1991
Date Reported

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CHAIN OF CUSTODY REPORT

BEACON

094147

Beacon Station No.	Sampler (Print Name)			ANALYSES									Date	Form No.
#720	JOHN M. PHILLIPS												10-11-91	2 of 2
Project No.	Sampler (Signature)													
E189-02	John M. Phillips													
Project Location	Affiliation													
1088 MARINA BLVD. SAN LEANDRO	E.G.C.													
Sample No./Identification	Date	Time	Lab No.	BTEX	TPH (gasoline)	TPH (diesel)							No. of Containers	REMARKS
MW8 #1	10-11-91	10:00		✓	✓								1	
MW8 #2	"	10:10		✓	✓								1	
MW8 #3	"	10:20		✓	✓								1	
MW8 #4	"	10:30		✓	✓								1	
MW8 #5	"	10:40		✓	✓								1	
MW8 #6	"	10:50		✓	✓								1	

Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time
John M. Phillips	10-11-91	1:30	J Bergenning	10/11	1330
Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time
J Bergenning	10/11	1550	Ken Brown	10/11	1550
Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time

Report To: JOHN M. PHILLIPS
EGC INC
4229 NORTHGATE BLVD STE 3
SACRAMENTO CA 95834

Bill to: ULTRAMAR INC.
525 West Third Street
Hanford, CA 93230
Attention: TERRY FOX

WHITE: Return to Client with Report YELLOW: Laboratory Copy PINK: Originator Copy

32-8003 1/90

MOBILE CHEM LABS INC.

5021 Blum Road, Suite 3 • Martinez, CA 94553
Phone (415) 372-3700 • Fax (415) 372-6955

E189-02\011852

Applied GeoSystems, Inc.
42501 Albrae Street, Suite 100
Fremont, CA 94639
ATTN: Laura Kuck
Project Manager

Date Sampled: 10-10-91
Date Received: 10-10-91
Date Reported: 10-11-91

ORGANIC LEAD

Sample Number	Sample Description	Detection Limit ppm	SOIL RESULTS ppm
	Project No.: E189-02 Beacon Station #720		
B101001	C1 Composite	0.5	<0.5

QA/QC: Sample blank is none detected
Spike Recovery is 94%
Duplicate Deviation is 4.1%

Note: California LUFT 12/87
(ppm) = (mg/kg)

MOBILE CHEM LABS

for Ronald G. Evans
Lab Director

RESNA

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

PROJECT NO.	PROJECT NAME/SITE
E189-02	Beacon Station #720

SAMPLERS (SIGN) / (PRINT)

SAMPLE IDENTIFICATION	DATE	TIME	COMP	GRAB	PRES. USED	ICED	NO. CONTAINERS	SAMPLE TYPE	BTEX (602/8020)	TPHg (8015)	TPHd (8015)	TOG 418.1/5520	601/8010	624/8240	625/8270	X Organic Pb	REMARKS
C-1, C-1, C-1, C-1 (composite)	10-10-91		X				1	S								X	

ANALYSIS REQUESTED

P.O. #:

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:
Anthony Enero	10-10-91	1:00	
RELINQUISHED BY:	DATE	TIME	RECEIVED BY:
RELINQUISHED BY:	DATE	TIME	RECEIVED BY:
RELINQUISHED BY:	DATE	TIME	RECEIVED BY LABORATORY:

LABORATORY: Mobile Chem

REQUESTED TURNAROUND TIME: 24 hrs

RECEIPT CONDITION:

PLEASE SEND RESULTS TO:

APPLIED ANALYTICAL
4501 Albrae Street
Fremont, CA 94538

PROJECT MANAGER: L. Kuck / John Phillips

GENERAL NOTES

DESCRIPTIVE SOIL CLASSIFICATION:

Soil Classification is based on the Unified Soil Classification System and ASTM Designations D-2487 and D-2488. Coarse Grained Soils have more than 50% of their dry weight retained on a #200 sieve; they are described as: boulders, cobbles, gravel or sand. Fine Grained Soils have less than 50% of their dry weight retained on a #200 sieve; they are described as: clays, if they are plastic, and silts if they are slightly plastic or non-plastic. Major constituents may be added as modifiers and minor constituents may be added according to the relative proportions based on grain size. In addition to gradation, coarse grained soils are defined on the basis of their relative in-place density and fine grained soils on the basis of their consistency. Example: Clay with sand, trace gravel, stiff (CL); silty sand, trace gravel, medium dense (SM).

CONSISTENCY OF FINE-GRAINED SOILS:

Unconfined Compressive Strength, Qu, psf	Consistency
< 500	Very Soft
500 - 1,000	Soft
1,001 - 2,000	Medium
2,001 - 4,000	Stiff
4,001 - 8,000	Very Stiff
8,001 - 16,000	Hard
> - 16,000	Very Hard

RELATIVE DENSITY OF COARSE-GRAINED SOILS:

N-Blows/ft.	Relative Density
0-3	Very Loose
4-9	Loose
10-29	Medium Dense
30-49	Dense
50-80	Very Dense
80+	Extremely Dense

RELATIVE PROPORTIONS OF SAND AND GRAVEL:

Descriptive Term(s) (of Components Also Present in Sample)	Percent of Dry Weight
Trace	< 15
With	15 - 29
Modifier	> 30

RELATIVE PROPORTIONS OF FINES:

Descriptive Term(s) (of Components Also Present in Sample)	Percent of Dry Weight
Trace	< 5
With	5 - 12
Modifier	> 12

GRAIN SIZE TERMINOLOGY:

Major Component of Sample	Size Range
Boulders	Over 12 in. (300mm)
Cobbles	12 in. to 3 in. (300mm) to 75mm)
Gravel	3 in. to #4 sieve (75mm to 4.75mm)
Sand	#4 to #200 sieve (4.75mm to 0.075mm)
Silt or Clay	Passing #200 sieve (0.075mm)