Applied GeoSystems 43255 Mission Boulevard, Fremont, CA 94539 (415) 651-1906

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Aug 5 '88 Inst MW 52-9

REPORT
SUBSURFACE
ENVIRONMENTAL INVESTIGATION
at
Exxon Station No. 7-3006
720 High Street
Oakland, California

AGS Job No. 87042-5

Report prepared for

Exxon Company, U.S.A.
P.O. Box 4415
Houston, Texas 77210-4415

by
Applied GeoSystems

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August 5, 1988

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INTRODUCTION

Exxon Company, U.S.A., requested that Applied GeoSystems investigate of the extent of hydrocarbon contamination in the shallow ground-water at the above-referenced site. The purpose of this subsurface environmental investigation was to evaluate potential hydrocarbon contamination in the subsurface soil and ground water with regard to the presence of hydrocarbon product in the tank pit and product-line excavations at the site. This report describes the work conducted during the investigation and presents our interpretations of the data collected, conclusions, and recommendations.

SITE DESCRIPTION AND BACKGROUND

Exxon Station No. 7-3006 is located at 720 High Street in Oakland, California. The location of the site is shown on the Site Vicinity Map, Plate P-1. Three underground storage tanks were situated on the southern portion of the site; these 6,000-, 8,000-, and 10,000-gallon capacity were used for super-unleaded, regular, and unleaded gasoline, respectively. A 1,000-gallon waste-oil tank was located behind the station building. These four tanks were excavated and removed from the site in April 1987 by Exxon's contractor. The approximate locations of the former underground storage tanks and other station facilities are shown on the Generalized Site Plan, Plate P-2. We have no information regarding the condition of the tanks or soil in the tank pits at the time of tank removal.

The station property is bounded by Coliseum Way to the southwest, High Street to the northwest, Alameda Avenue to the south, and a vacant lot to the northeast. Industrial businesses are located southeast of the site. Highway 880 is located west of the site across Coliseum Way and High Street.

PREVIOUS WORK

Applied GeoSystems performed a first phase soil contamination evaluation in April 1987, as summarized in our Report No. 87042-1, dated May 13, 1987. This investigation included evaluation of hydrocarbon contamination in the soil above the underground storage tanks prior to tank removal. Six soil samples were collected from the top portion of the gasoline tank pit. Five of the six soil samples collected contained levels of total volatile hydrocarbon greater than 1,000 parts per million (ppm). Laboratory analysis of a soil sample collected from above the waste-oil tank indicated nondetectable concentrations of total extractable hydrocarbons.

As part of the first-phase soil evaluation, Applied GeoSystems was present during excavation of the trenches by Exxon's contractor (Pacific Southwest Construction and Service) for removal of vapor recovery and product lines. An organic vapor analyzer (OVA) was used to evaluate relative hydrocarbon vapor concentrations of soil in the trenches. Areas of high (over 1,000 ppm) hydrocarbon vapor were found, and a black, petroleum-like soil layer was exposed in the trenches and gasoline-tank pit at a depth of approximately 3 feet. Analytical results of a soil

sample taken from this layer indicated that the soil contained 434 ppm total extractable hydrocarbons. Further sampling and analyses of soil in the trenches was recommended where the OVA readings were greater than 1,000 ppm.

Excavation and removal of the four underground storage tanks, and sampling of the soil beneath the tanks was conducted by Pacific Southwest Construction and Service in April 1987. Applied GeoSystems was not present during removal of the tanks and excavation of the soil from the tank pit.

A soil vapor contaminant survey was performed by EA Engineering, Science, and Technology, Inc., in June 1987. The results of this study are shown in the report enclosed in Appendix A to this report.

A second phase of work at the site was performed by Applied GeoSystems to evaluate and mitigate the hydrocarbon contamination present in the backfill and native soil of the gasoline-tank pit and beneath the former product and vapor recovery lines. A lens of black, petroleum-like material was observed at approximately 14 feet below the ground surface in the southwest wall of the tank pit during excavation and was later observed to seep into

the pit at approximately 12 feet deep. Further excavation to remove this material indicated that this lens became larger away from the tank pit.

During this work, our field geologist was informed by local workers that heavy metals waste had been introduced to the soil and ground water at a nearby industrial site and that some of this waste was dumped on the subject site prior to the existence of the present Exxon station in 1970. As a result, the historic use of the site was investigate, including researching ownership histories of nearby industrial sites and city records to attempt to identify potential waste producers, and performing additional sampling of the soil at the site. Records of the type of material dumped at this site were not found; and, based on telephone conversations with local residents, no information was obtained that would suggest the dumping of material other than trash or rubbish.

Because specific compounds could not be identified from researching previous dumping at the site, a broad range of analyses was performed on a soil sample containing the black, petroleum-like material from the tank pit. Results of the analyses indicated 1) concentrations of heavy metals to be below

total threshold limit concentrations, as specified in Title 22 of the California Administrative Code; 2) purgeable priority pollutants below detection limits, except benzene at 20 ppm, ethylbenzene at 60 ppm, toluene at 40 ppm, and total xylene isomers at 180 ppm; and total oil and grease at 520 ppm. The results of this investigation are included in our Report No. 87042-2, (dated July 10, 1987).

REGIONAL AND SITE HYDROGEOLOGY

The subject site is located less than 1/2-mile from a San Francisco Bay tidal canal (see Plate 2). The direction of ground-water flow at this site is inferred to be to the southwest toward the tidal canal. The earth materials at the site are Quaternary bay deposits composed of silty clay and clay with discontinuous fluvial lenses of silty, gravelly sand. The depth to first ground water ranges between approximately 12-1/2 and 14 feet. According to the California Regional Water Quality Control Board (RWQCB), San Francisco Bay Region, this site is located in a low-sensitivity water-use area. The ground water beneath this site presently is not used as a municipal supply, although it may be in the future.

BOREHOLE DRILLING AND SOIL DESCRIPTION

Drilling and monitoring well construction were performed in two phases: the first phase of drilling occurred in September 1987 and the second phase in May 1988. Well construction permits were acquired from Zone 7 of the Alameda County Flood Control and Water Conservation District prior to drilling at the site. Copies of these permits are included in Appendix B to this report. Underground Service Alert was contacted to locate utility lines on public property adjacent to the site prior to commencing onsite work.

The first phase of soil borehole drilling and monitoring well construction was performed on September 9, 10, 11, and 13, 1987. Borings B-2 through B-8 were drilled with a Mobile B-57 truck-mounted drill rig operated by Datum Exploration Drilling of Pittsburg, California. Steam-cleaned, 8-inch-diameter, continuous-flight, hollow-stem augers were used to drill borings B-2 through B-8 to depths between approximately 23-1/2 to 29 feet.

The second phase of borehole drilling and monitoring well construction was performed on May 12 and 21, 1988. Boring B-1

(MW-1) was drilled with a Mobile B-53 truck-mounted drill rig operated by Kvilhaug Well Drilling and Pump Company, Inc., of Concord, California. Steam-cleaned, 8-inch-diameter, continuous-flight, hollow-stem augers were used to drill boring B-1 to a depth of approximately 29 feet. Boring B-9 was drilled with a CME-55 truck-mounted drill rig operated by HEW Drilling Company, Inc., of Palo Alto, California. Steam-cleaned, 10-inch-diameter, continuous-flight, hollow-stem augers were used to drill boring B-9 to a depth of 33 feet.

Soil samples were collected from the boreholes and described according to the Unified Soil Classification System (Plate P-3). Descriptions of the earth materials encountered in borings B-1 through B-9 are presented on the Logs of Boring (Plates P-4 through P-20 in Appendix C). The earth materials encountered at the site consist primarily of silty clay to sandy clay, with some gravel. A black, silty sand containing a black, petroleum-like substance and having an obvious odor was encountered at approximately 1-1/2 to 3 feet below the ground surface in boring B-1. A more complete description of the near-surface stratigraphy is presented on the boring logs.

The soil cuttings from the boreholes were piled at the site and later removed to a Class III disposal site after laboratory analyses confirmed of hydrocarbon concentrations in the soil samples. No permit for aeration was required because of the small volume of soil.

SOIL SAMPLING

Sixty soil samples were collected and described from borings B-1 through B-9. These samples, labeled as indicated on the boring logs, were collected during drilling at approximately 5-foot intevals. Soil samples were collected by advancing the boring to a point immediately above the sampling depth and then driving a California-modified, split-spoon sampler (2.5-inch-inside-diameter) into the soil through the hollow center of the auger. The sampler was driven 18 inches with a standard 140-pound hammer repeatedly dropped 30 inches. The number of blows necessary to drive the sampler each 6-inch increment was counted and recorded to evaluate the relative consistency of soil materials.

An organic vapor meter (OVM) was used during sampling to measure the organic vapor concentrations in the soil samples. Readings were obtained by placing the rubber cup that skirts the intake

probe flush with the soil in the brass sleeve immediately after opening the sampler. The OVM measurements indicate the relative organic vapor concentrations in soil but cannot be used to assess the absolute concentrations of hydrocarbon contaminants in the soil. The OVM measurements are presented on the boring logs.

The soil samples collected from the deepest unsaturated sample interval were selected for laboratory analysis to evaluate potential hydrocarbon contamination near the top of the saturated zone. The soil samples were removed from the sampler and immediately sealed to be airtight in their brass sleeves with aluminum foil, plastic caps, and tape. The samples were then labeled and placed in iced storage for transport to the laboratory. The field geologist initiated Chain of Custody Records, and the selected samples were delivered to Anametrix, Inc.'s, State-certified laboratory in San Jose, California; NET Pacific, Inc.'s, State-certified laboratory in Santa Rosa, California; and Applied GeoSystems' State-certified laboratory in Fremont, California, for analytical testing. The completed Chain of Custody Records for the tested samples are included in Appendix D to this report.

CONSTRUCTION OF GROUND-WATER MONITORING WELLS

During drilling, ground water was encountered at approximately 11 to 13 feet below the ground surface in the borings. Monitoring wells MW-1 through MW-9 were installed in borings B-1 through B-9, respectively. The well locations were chosen based on the previous ground-water level measurements, laboratory data, and soil vapor survey data. Wells MW-3 and MW-4 were installed on the downgradient portion of the site to evaluate potential contamination levels at the margin of the property. Well MW-9 was constructed in the upgradient portion of the site to evaluate background soil conditions. Wells MW-2, MW-7, and MW-8 were installed downgradient of the waste-oil tank and service islands. Wells were MW-5 and MW-6 installed downgradient of the former underground product-storage tanks, and well MW-1 was constructed offsite in the downgradient direction. The locations of the monitoring wells are shown on Plate P-2.

The monitoring wells were completed with 4-inch-inside-diameter, polyvinyl chloride (PVC) casing. The well casing was set to approximately 29 feet below grade in well MW-1 and approximately 32-1/2 to 35 feet below grade in wells MW-2 through MW-9. The screened intervals of the wells consist of machine-slotted PVC

casing with 0.020-inch-wide slots. The screened casing was set from the total depth of each well to approximately 7-1/2 to 10 feet below the ground surface in wells MW-2 through MW-9 and to approximately 5 feet below the ground surface in well MW-1. Blank PVC casing was set from the top of the screened casing to a few inches below the ground surface in each well. All casing joints are flush-threaded, and no glues, chemical cements, or solvents were used in well construction. The top of each well casing is covered with a slip cap, and the bottom has a threaded end plug.

The annular space of each well was backfilled with No. 3 sorted sand from the total depth of the boring to approximately 2 feet above the top of the screened casing in wells MW-2 through MW-9 and to approximately 6 inches above the top of the screened casing in MW-1. A bentonite plug, approximately 1 foot thick, was placed above the sand as a seal against cement entering the sand pack; and the remaining annulus was backfilled with a slurry of water, neat cement, and 5 percent bentonite to a few inches below the top of the casing. Graphic representations of well construction are shown on the right margins of the boring logs.

A locking well cap or cage was placed over each well head, and an aluminum utility box with a PVC apron was placed flush with the surrounding ground surface using concrete. Each utility box has a watertight seal to protect the well against surface-water infiltration and requires a specially designed wrench to open. This design discourages vandalism and reduces the possibility of accidental disturbance of the well.

WELL DEVELOPMENT AND GROUND-WATER SAMPLING

Following well construction, a water sample for subjective analysis was collected from each monitoring well by gently lowering approximately half the length of a clean Teflon bailer past the air/water interface. Each sample was retrieved and inspected for floating product and product sheen. Product odor was obvious in the samples from wells MW-6 and MW-7. Small product beads and an obvious odor were observed in the sample from well MW-3. A strong odor was obvious and an approximately 2-1/2-foot-thick layer of hydrocarbon product was observed in the sample from well MW-2, and an approximately 1/8 to 1-inch-thick layer of hydrocarbon product was observed in the samples from wells MW-4, MW-5, and MW-8. The results of these and previous subjective analyses are shown on Table 1.

Developing and sampling of the wells was performed in two phases after each phase of drilling was completed. The first phase of sampling was performed on September 15, 1987. Monitoring wells MW-2 through MW-8 were developed by air-surging and were pumped to remove suspended sediment. The wells were purged by pumping approximately three to five well volumes of water. Following purging, the water in the wells was allowed to recover to static levels, and water samples were collected using a Teflon bailer. The bailer was lowered approximately halfway past the air/water interface to collect samples representative of the formation water. Prior to use in each well, the bailer was thoroughly cleaned with Alconox and water.

The second phase of ground-water sampling was performed on May 24 and 31, 1988. Monitoring wells MW-1 and MW-9 were developed by air-surging and were pumped to remove suspended sediment. Monitoring wells MW-1, MW-3, MW-6, MW-7, and MW-9 were purged by pumping approximately three well volumes of water. Following purging, the water in the wells was allowed to recover to approximate static levels, and water samples were collected using a Teflon bailer. The bailer was lowered approximately halfway past the air/water interface to collect samples representative of the formation water. Prior to use in each well, the bailer was

thoroughly cleaned with Alconox and water. Recovery of the wells after purging was generally slow.

The ground-water samples were transferred to laboratory-cleaned, 40-milliliter, volatile organic analysis sample vials; hydrochloric acid was added as a preservative. The vials were then immediately sealed with Teflon-lined caps, labeled, and placed in iced storage for transport to Applied GeoSystems' laboratory for testing. The Chain of Custody Records for the water samples are included in Appendix D to this report.

ANALYTICAL RESULTS OF SOIL AND WATER SAMPLES

Seven soil samples were analyzed for total volatile hydrocarbons (TVH) by modified Environmental Protection Agency (EPA) Method 8015 and the hydrocarbon constituents benzene, ethylbenzene, toluene, and total xylene isomers (BETX) by EPA Method 8020. In addition, three of these samples were analyzed for total extractable hydrocarbons (TEH) by EPA Method 3550.

Two soil samples were analyzed for total petroleum hydrocarbons (TPH) by modified EPA Method 8015 and BETX by modified EPA Method 8020. The analytical results of the soil samples are presented

on Table 2 and on the laboratory data sheets in Appendix D to this report.

Seven water samples collected during the first round of ground-water sampling were analyzed for TVH using modified EPA Method 8015 and BETX using EPA Method 602. Ground-water samples from wells MW-3, MW-4, MW-5, and MW-7 were analyzed for TEH by modified EPA Method 8015. In addition, water samples from wells MW-2, MW-3, MW-4, MW-5, MW-6, and MW-8 were analyzed for organic lead by the California Department of Health Services method following xylene extraction. A water sample collected from well MW-7 was analyzed for purgeable volatile organics by EPA Method 624.

Four of the five water samples collected during the second round of sampling were analyzed for TPH by modified EPA Method 8015 and BETX by EPA Method 8020. In addition, the samples from wells MW-1 and MW-9 were analyzed for purgeable volatile organics by EPA Method 624. A water sample from well MW-7 was analyzed for TEH by modified EPA Method 8015 and for purgeable volatile organics by EPA Method 624. The analytical results of the ground-water samples are presented in Tables 3 through 5 and on the laboratory data sheets in Appendix D to this report.

EVALUATION OF GROUND-WATER FLOW DIRECTION

A Wild NA24 automatic levelling instrument was used to 1) locate each well in reference to an arbitrary datum and 2) measure the differences in elevation between the instrument and the top of each well casing. Measurements were recorded to the nearest 0.001-foot. The depth to the static water level was measured in each monitoring well with a Solinst electric water-level indicator. Measurements of water levels were recorded to the nearest 0.01-foot. Although the depth to water was also measured in monitoring wells MW-2, MW-4, MW-5, and MW-8, these measurements do not represent the water table because of the presence of floating product on the water.

The well-head elevations and ground-water measurements were combined to calculate the difference in water-level elevations between each pair of wells. The results of the survey are presented on Table 6. The ground-water gradient calculated from these measurements is approximately 0.01 (1 foot vertical per 100 feet horizontal) to the southwest. This calculated ground-water flow direction is consistent with the inferred direction of ground-water flow based on local topography. A graphical

interpretation of the ground-water flow across the site at the time of measurement on July 13, 1988, is presented on Plate P-21.

DISCUSSION

Analytical results of soil samples from borings B-1 through B-9 indicate nondetectable to relatively high (2,689 ppm) levels of hydrocarbon contamination in the soil. The highest concentrations were detected in the samples from borings B-3, B-4, and B-6 near the former underground storage tanks, and in boring B-7, near the waste-oil tank. Analytical results of soil samples from offsite boring B-1, and boring B-9, upgradient of the former underground storage tanks, indicated nondetectable to low levels of contamination in the soil. A silty sand containing a black, petroleum-like substance encountered at approximately 1-1/2 to 3 feet below the ground surface in the boring B-1 appeared to be similar to the material encountered in the tank pit during excavation and in the product-line trenches.

Floating product was present in wells MW-2, MW-4, MW-5, and MW-8. Results of laboratory analyses indicate concentrations of hydrocarbons between 0.001 and 29.3 ppm in the ground water in wells MW-1, MW-3, MW-6, and MW-9. Laboratory analysis of a water

sample from well MW-7 near the waste-oil tank indicated 0.19 ppm total extractable hydrocarbons in the ground water. Laboratory analysis of a water sample from well MW-9 indicated nondetectable levels of hydrocarbon contamination, except for toluene at 0.001 ppm, which is below the maximum level for drinking water recommended by the California State Department of Health Services. Analytical results of a water sample from offsite well MW-1 indicated levels of hydrocarbon contamination below the recommended maximum levels for drinking water, except benzene, which was detected at 0.09 ppm.

CONCLUSIONS

Laboratory analyses of soil samples from borings B-1 through B-9 suggest that the majority of the soil contamination at the site is limited in lateral extent to the area downgradient of the underground storage tanks and product lines. Analytical results of soil samples from boring B-1 and water samples from well MW-1 suggest that significant amounts of hydrocarbon contamination have not migrated offsite in the downgradient direction to the area of well MW-1. Floating product is present beneath the site downgradient of the former tank pit area. Floating product present in well MW-8 and contamination previously discovered

during the removal of the product lines suggests that the floating product present in well MW-8 originated from the product lines.

TABLES

TABLE 1
RESULTS OF SUBJECTIVE ANALYSES OF WATER IN WELLS
Exxon Station No. 7-3006
720 High Street
Oakland, California

Well Number	Date	Depth to Water	Floating Product	Sheen	Odor
MW-1	5/24/88	8.33	NONE	NONE	NONE
	7/13/88	9.20	NONE	NONE	NONE
MW-2	9/15/87	12.07	NONE	NONE	NONE
	5/26/88	----	30	HEAVY	STRONG
	7/13/88	10.80	24	HEAVY	STRONG
MW-3	9/15/87	11.95	NONE	NONE	NOTICEABLE
	5/31/88	8.42	BEADS	MODERATE	NOTICEABLE
	7/13/88	9.17	BEADS	MODERATE	NOTICEABLE
MW-4	9/15/87	11.12	NONE	NONE	NONE
	5/26/88	----	1.0	HEAVY	NOTICEABLE
	7/13/88	9.30	1.0	HEAVY	NOTICEABLE
MW-5	9/15/87	11.38	0.25	HEAVY	STRONG
	5/26/88	----	0.12	HEAVY	STRONG
	7/13/88	9.18	0.25	HEAVY	STRONG
MW-6	9/15/87	18.22	NONE	NONE	NOTICEABLE
	5/31/88	8.90	NONE	NONE	NOTICEABLE
	7/13/88	10.70	NONE	NONE	NOTICEABLE
MW-7	9/15/87	11.43	NONE	NONE	NOTICEABLE
	5/31/88	8.88	NONE	NONE	NOTICEABLE
	7/13/88	9.52	NONE	NONE	NONE
MW-8	9/15/87	11.00	0.25	HEAVY	STRONG
	5/26/88	----	0.25	HEAVY	STRONG
	7/13/88	9.00	0.06	HEAVY	STRONG
MW-9	5/24/88	8.45	NONE	NONE	NONE
	7/13/88	9.26	NONE	NONE	NONE

Depth-to-water measurements are in feet below top of casing.
Thickness of floating product is in inches.

TABLE 2
RESULTS OF CHEMICAL ANALYSES OF SOIL SAMPLES
Exxon Station No. 7-3006
720 High Street
Oakland, California

Sample Number	TVH	Benzene	Ethyl-benzene	Toluene	Total Xylenes	TEH
S-7.5-B1	<10	<0.05	<0.15	<0.05	<0.15	25
S-10-B2	9.97	4.14	1.09	0.09	0.38	NA
S-10-B3	2,689	126	41	17	131	4,261
S-10-B4	209.9	14.9	6.4	0.5	11.1	2,938
S-10-B5	90.83	9.27	1.45	0.24	6.62	848
S-10-B6	448.0	5.7	14.1	3.7	63.2	NA
S-10-B7	901.6	26.4	41.4	5.3	54.2	1,338
S-10-B8	0.48	<0.05	<0.05	<0.05	<0.05	NA
S-9-B9	<2*	<0.05	<0.05	<0.05	<0.05	<0.05

Results in parts per million (ppm).
TVH = Total volatile hydrocarbons
TEH = Total extractable hydrocarbons
< Less than the detection limits for the specified method of analysis.
NA = Not analyzed
* = Analyzed for total petroleum hydrocarbons
Sample identification:

S-7.5-B1
- S = Soil sample
- 7.5 = Depth of sample in feet
- B1 = Boring number

TABLE 3
RESULTS OF CHEMICAL ANALYSES OF WATER SAMPLES
Exxon Station No. 7-3006
720 High Street
Oakland, California

Sample Number	TVH	Benzene	Ethyl-benzene	Toluene	Total Xylenes	TEH
September 1987						
W-25-MW2	1.445	0.233	0.056	0.081	0.209	NA
W-25-MW3	2.101	0.360	0.068	1.062	0.298	0.66
W-25-MW4	0.925	0.070	0.010	0.007	0.016	0.74
W-25-MW5	26.66	0.56	1.58	1.71	7.15	37.22
W-25-MW6	2.185	0.060	<0.002	0.003	0.140	NA
W-25-MW7	1.531	0.258	<0.002	0.002	0.042	2.79
W-25-MW8	1.325	0.081	0.042	0.074	0.184	NA
May 1988						
W-11-MW1	0.24	0.09	0.015	0.005	0.025	NA
W-14-MW3	8.7*	3.98	0.24	0.28	0.65	NA
W-15-MW6	29.3*	12.82	1.44	0.55	5.50	NA
W-15-MW7	NA	NA	NA	NA	NA	0.19
W-14-MW9	<0.05	<0.0005	<0.001	0.001	<0.001	NA

Results in parts per million (ppm)
TVH = total volatile hydrocarbons
TEH = total extractable hydrocarbons
* = analyzed for total petroleum hydrocarbons
< = Less than the detection limits for the specified method of analysis.
NA = not analyzed

TABLE 4
RESULTS OF ORGANIC LEAD ANALYSIS
OF WATER SAMPLES
Exxon Station No. 7-3006
720 High Street
Oakland, California

Sample Number	Date	Organic Lead
W-25-MW2	9/17/87	<0.1
W-25-MW3	9/17/87	<0.1
W-25-MW4	9/17/87	<0.1
W-25-MW5	9/17/87	<0.1
W-25-MW6	9/17/87	<0.1
W-25-MW8	9/17/87	<0.1

Results in parts per million (ppm).
< = Less than the detection limits for the specified method of analysis.
Sample identification:

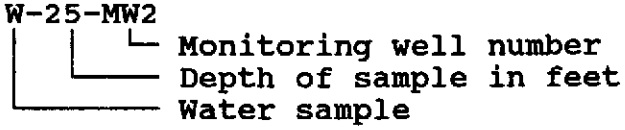


TABLE 5
RESULTS OF VOLATILE ORGANIC COMPOUNDS ANALYSIS
OF WATER SAMPLES
Exxon Station No. 7-3006
720 High Street
Oakland, California

Sample Number	Benzene	Ethyl-benzene	Toluene	Total Xylenes
September 1987				
W-25-MW7	0.2	<0.004	<0.004	<0.004
May 1988				
W-11-MW1	0.074	0.013	0.008	0.032
W-15-MW7	0.3	<0.01	<0.01	<0.01
W-14-MW9	<0.005	<0.005	0.005	0.005

Results in parts per million (ppm).
< = Less than the detection limits for the specified method of analysis.
Compounds are only listed where they were not detected above the detection limit for that compound. See Laboratory data sheets for a list of of nondetectable compounds.
Sample identification:

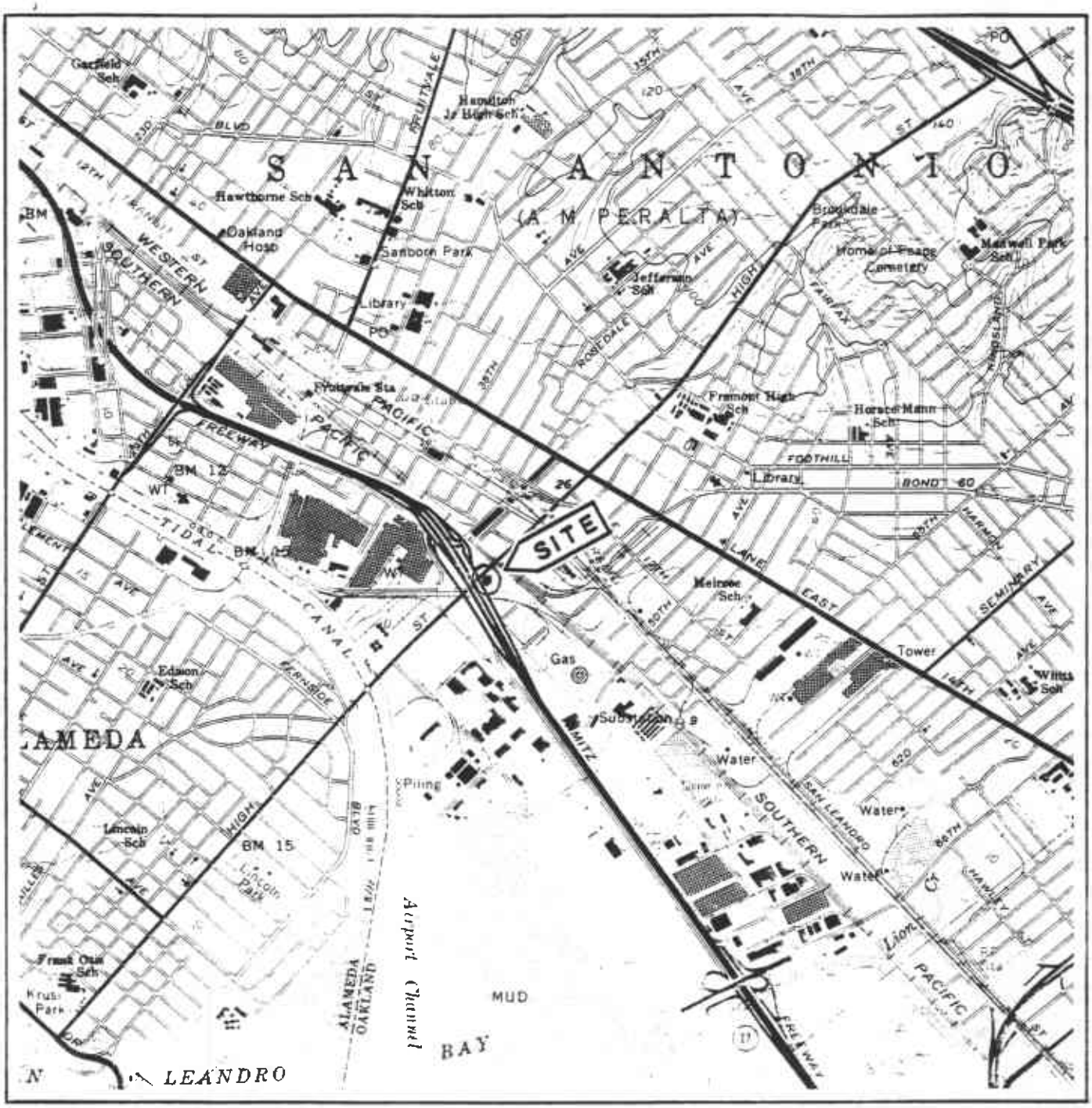
W-25-MW7
- W: Water sample
- 25: Depth of sample in feet
- MW7: Monitoring well number

TABLE 6
DIFFERENCES IN GROUND-WATER ELEVATIONS
IN MONITORING WELLS
Exxon Station No. 7-3006
720 High Street
Oakland, California

Monitoring Well	Date	Static Water Level	Top of Casing Below Datum	Water Level Below Datum
MW-1	5/24/88	8.33	1.96	10.29
	7/13/88	9.20	1.96	11.16
MW-2	9/15/87	12.07*	1.86	13.93
	5/26/88	NM*	1.86	----
	7/13/88	10.80*	1.86	12.66
MW-3	9/15/87	11.95	1.89	13.84
	5/31/88	8.42	1.89	10.31
	7/13/88	9.17	1.89	11.06
MW-4	9/15/87	11.12	2.07	13.19
	5/26/88	NM*	2.07	----
	7/13/88	9.30*	2.07	11.37
MW-5	9/15/87	11.38*	1.57	12.95
	5/26/88	NM*	1.57	----
	7/13/88	9.18*	1.57	10.75
MW-6	9/15/87	18.22	0.56	18.78
	5/31/88	8.90	0.56	9.46
	7/13/88	10.70	0.56	11.26
MW-7	9/15/87	11.43	0.00	11.43
	5/31/88	8.88	0.00	8.88
	7/13/88	9.52	0.00	9.52
MW-8	9/15/87	11.00*	1.38	12.38
	5/26/88	NM*	1.38	----
	7/13/88	9.00*	1.38	10.38
MW-9	5/24/88	8.45	0.19	8.64
	7/13/88	9.26	0.19	9.45

Static water level is measured in feet below top of casing.
NM = Not measured
* Floating product in well.
Datum is an arbitrary elevation corresponding to the top of the highest well casing (MW-7).

PLATES



Source: U.S. Geological Survey
Oakland East
7.5-Minute Quadrangle

N

Approximate Scale

2000 1000 0 2000 4000

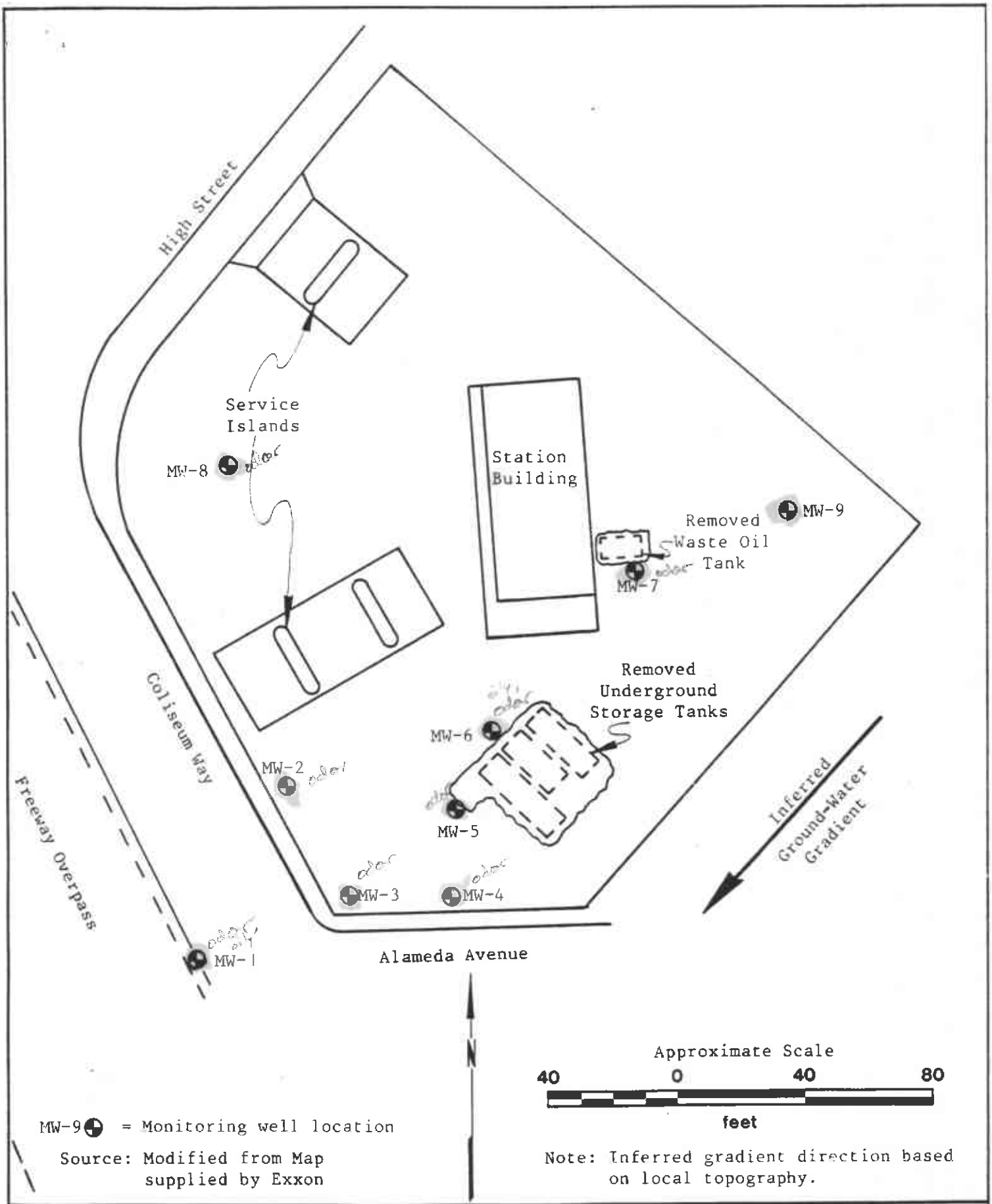
feet

Applied GeoSystems

PROJECT NO. 87042-5

SITE VICINITY MAP
Exxon Station No. 7-3006
720 High Street
Oakland, California

PLATE
P - 1



Applied GeoSystems

PROJECT NO. 87042-5

GENERALIZED SITE PLAN
Exxon Station No. 7-3006
720 High Street
Oakland, California

PLATE
P - 2

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS		LTR	DESCRIPTION	MAJOR DIVISIONS		LTR	DESCRIPTION
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	GW	Well-graded gravels or gravel sand mixtures, little or no fines.	FINE GRAINED SOILS	SILTS AND CLAYS LL<50	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity.
		GP	Poorly-graded gravels or gravel sand mixture, little or no fines			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.
		GM	Silty gravels, gravel-sand-clay mixtures.			OL	Organic silts and organic silt-clays of low plasticity.
		GC	Clayey gravels, gravel-sand-clay mixtures.		SILTS AND CLAYS LL<50	MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts.
	SAND AND SANDY SOILS	SW	Well-graded sands or gravelly sands, little or no fines.			CH	Inorganic clays of high plasticity, fat clays.
		SP	Poorly-graded sands or gravelly sands, little or no fines.			OH	Organic clays of medium to high plasticity.
		SM	Silty sands, sand-silt mixtures.	HIGHLY ORGANIC SOILS		Pt	Peat and other highly organic soils.
		SC	Clayey sands, sand-clay mixtures.				


Depth through which sampler is driven


Relatively undisturbed sample


Missed sample


Ground water level observed in boring

S-10 Sample number


Sand pack


Bentonite annular seal


Neat cement annular seal


Blank PVC


Machine-slotted PVC

BLOW/FT. REPRESENTS THE NUMBER OF BLOWS OF A 140-POUND HAMMER FALLING 30 INCHES TO DRIVE THE SAMPLER THROUGH THE LAST 12 INCHES OF AN 18 INCH PENETRATION.

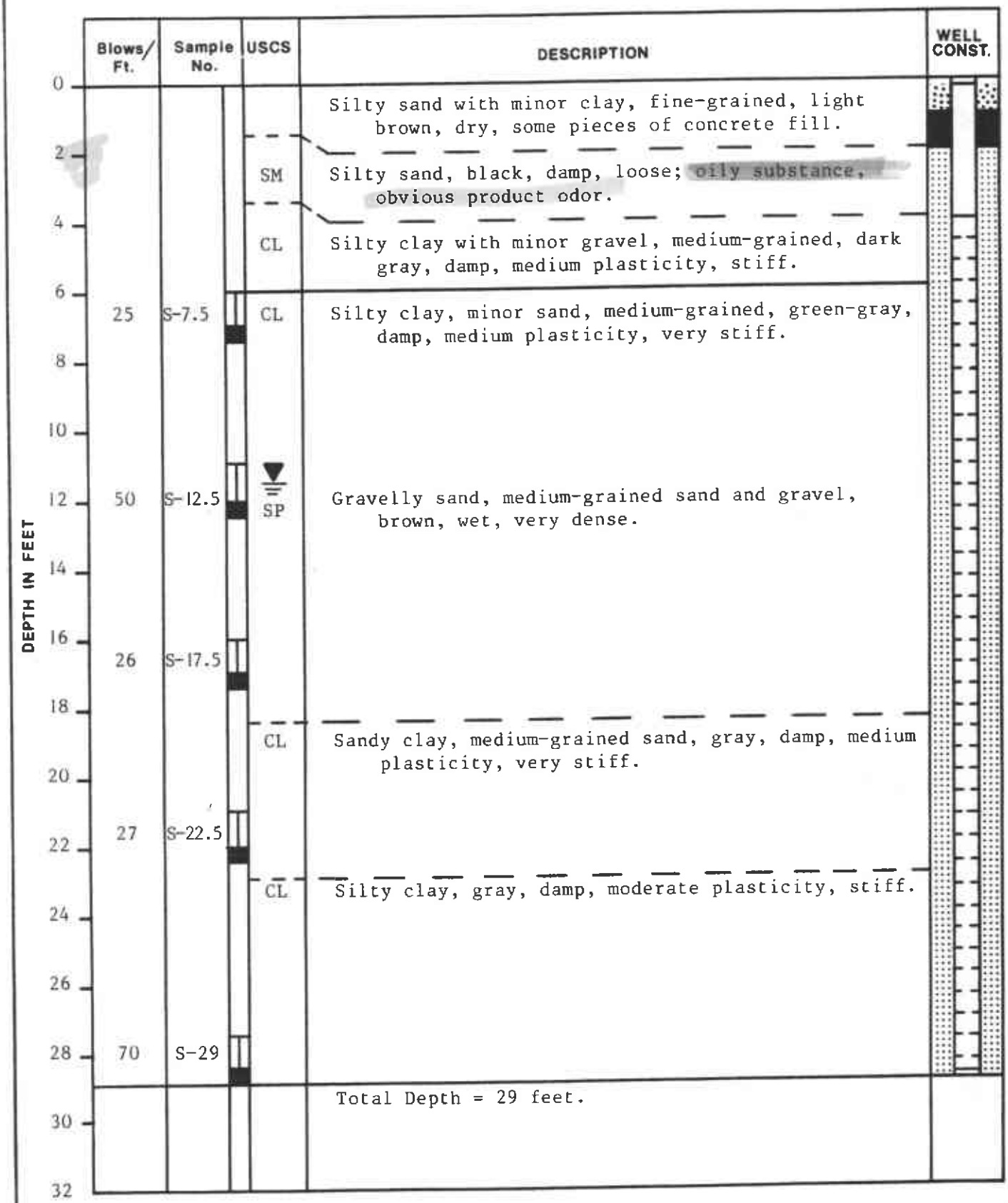
DASHED LINES SEPARATING UNITS ON THE LOG REPRESENT APPROXIMATE BOUNDARIES ONLY. ACTUAL BOUNDARIES MAY BE GRADUAL. LOGS REPRESENT SUBSURFACE CONDITIONS AT THE BORING LOCATION AT THE TIME OF DRILLING ONLY.

Applied GeoSystems

PROJECT NO. 87042-5

UNIFIED SOIL CLASSIFICATION SYSTEM AND SYMBOL KEY
Exxon Station No. 7-3006
720 High Street
Oakland, California

PLATE
P - 3



Applied GeoSystems

LOG OF BORING B-1/MW-1

Exxon Station No. 7-3006

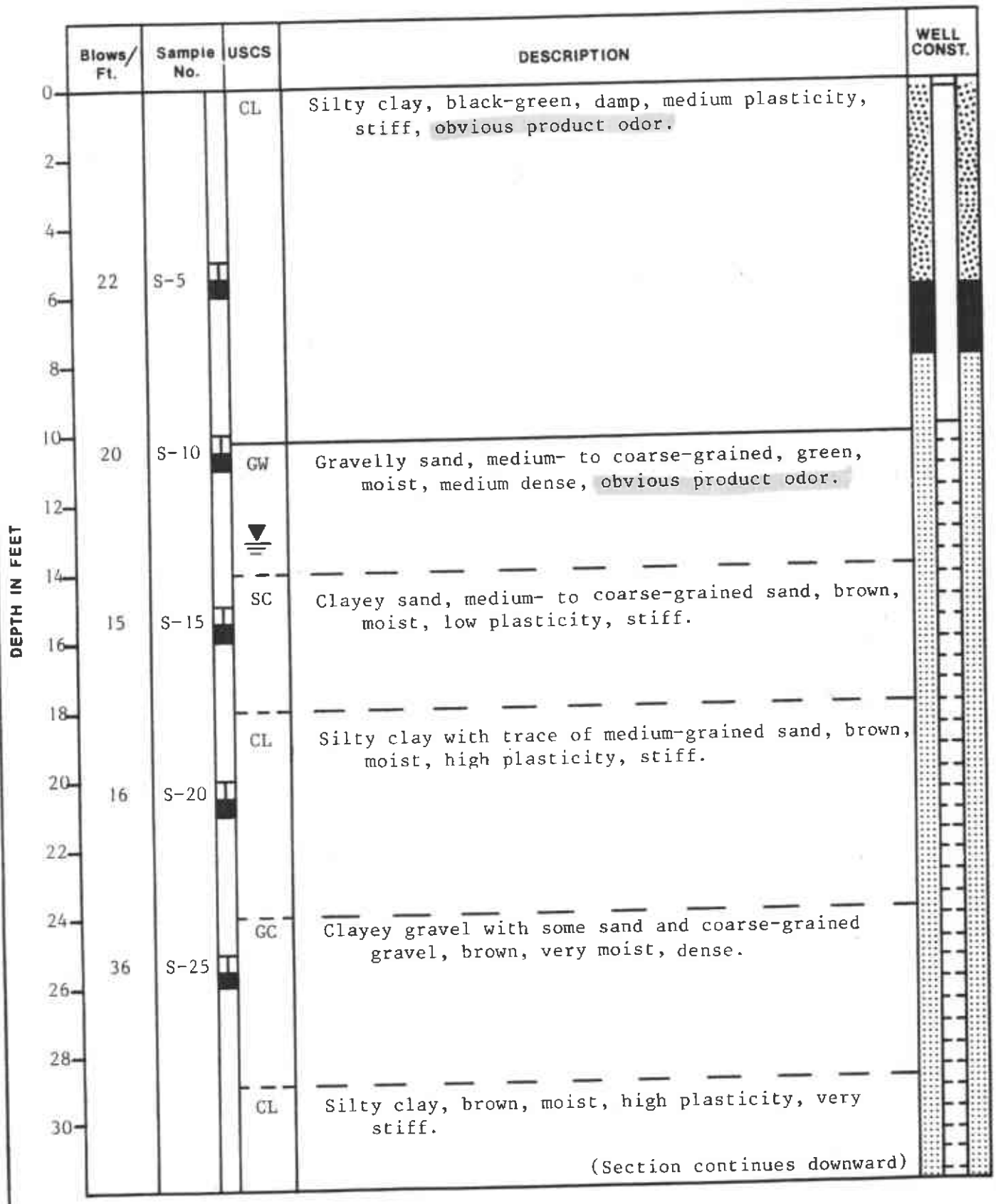
720 High Street

Oakland, California

PLATE

P - 4

PROJECT NO. 87042-5



Applied GeoSystems

LOG OF BORING B-2/MW-2

Exxon Station No. 7-3006

720 High Street

Oakland, California

PLATE

P - 5

PROJECT NO. 87042-5

DEPTH IN FEET	Blows/ Ft.	Sample No.	USCS	DESCRIPTION	WELL CONST.
30	22	S-30	CL	Silty clay, brown, moist, high plasticity, very stiff.	
32					
34					
	19	S-35			
36				Total Depth = 36 feet. Boring terminated at sufficient depth to evaluate contamination above and below ground-water table.	
38					

Applied GeoSystems

PROJECT NO. 87042-5

LOG OF BORING B-2/MW-2

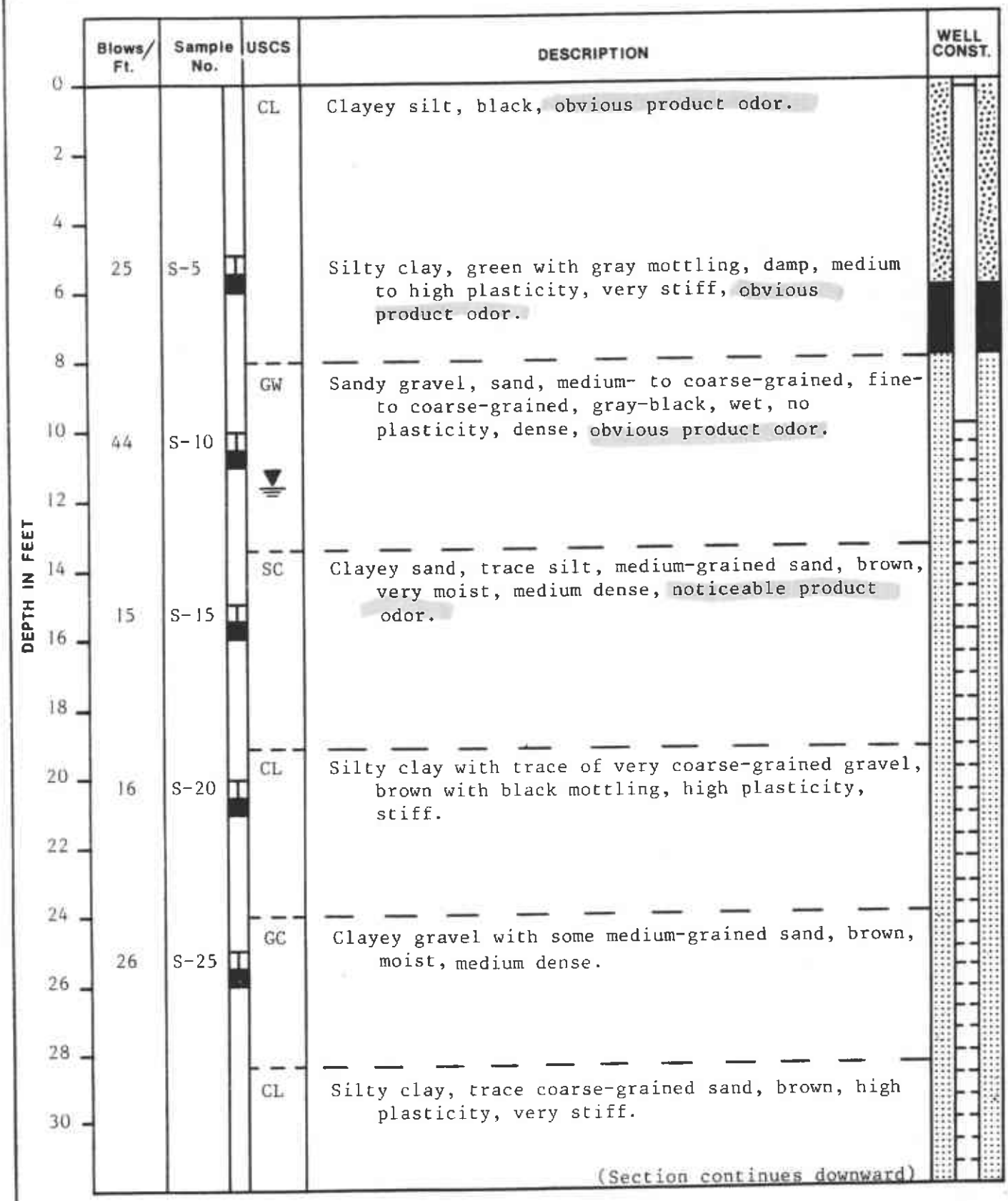
Exxon Station No. 7-3006

720 High Street

Oakland, California

PLATE

P - 6



Applied GeoSystems

LOG OF BORING B-3/MW-3

Exxon Station No. 7-3006
720 High Street
Oakland, California

PLATE
P - 7

PROJECT NO. 87042-5

DEPTH IN FEET	Blows/ Ft.	Sample No.	USCS	DESCRIPTION	WELL CONST.
30	20	S-30	CL	Silty clay, trace coarse-grained sand, brown, high plasticity, very stiff.	
32					
34					
	23	S-35			
36				Total Depth = 36 feet. Boring terminated at sufficient depth to evaluate contamination above and below ground-water table.	
38					
40					

Applied GeoSystems

PROJECT NO. 87042-5

LOG OF BORING B-3/MW-3

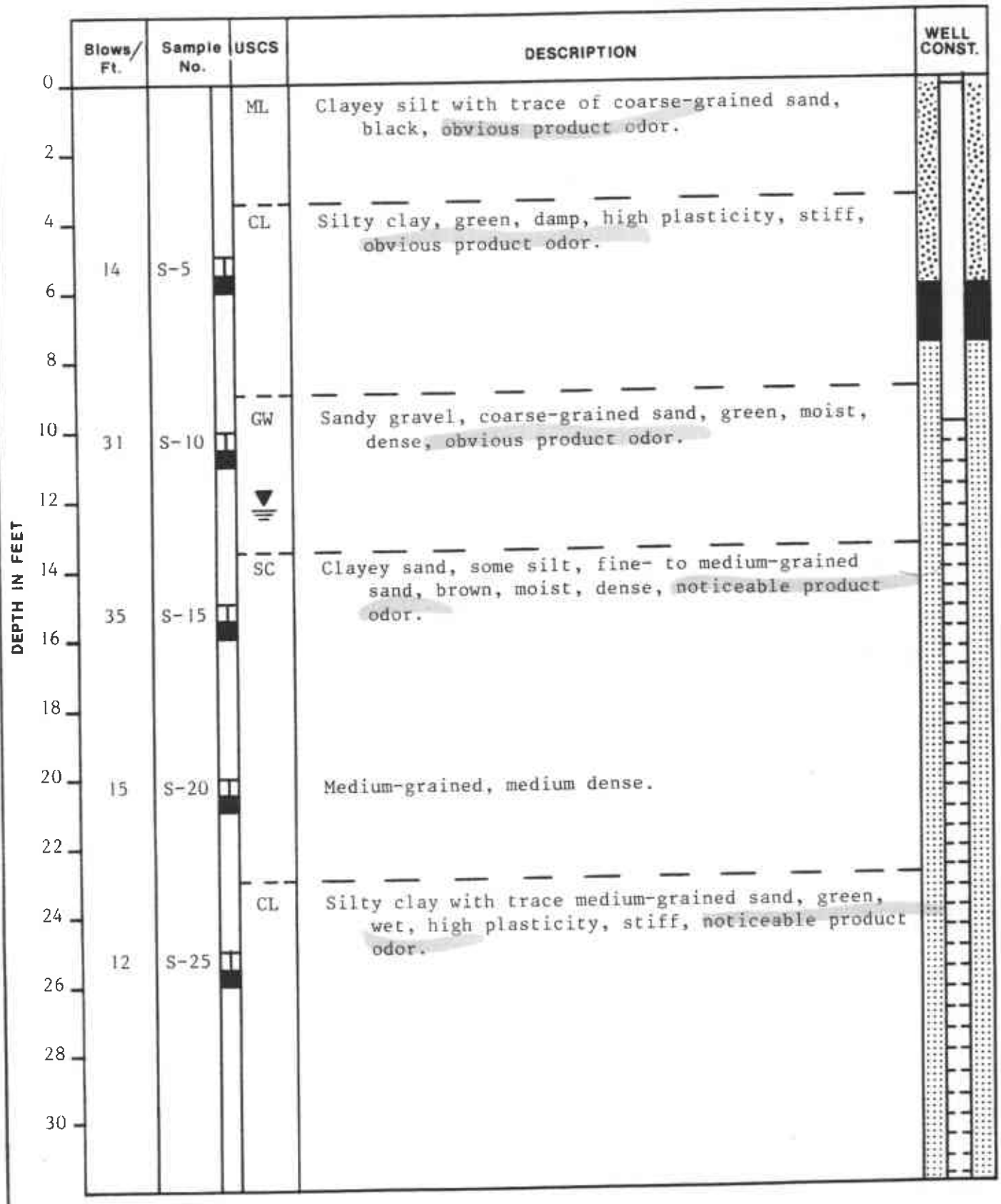
Exxon Station No. 7-3006

720 High Street

Oakland, California

PLATE

P - 8



Applied GeoSystems

PROJECT NO. 87042-5

LOG OF BORING B-4/MW-4

Exxon Station No. 7-3006

720 High Street

Oakland, California

PLATE

P - 9

DEPTH IN FEET	Blows/ Ft.	Sample No.	USCS	DESCRIPTION	WELL CONST.
30	16	S-30	CL	Silty clay, brown, moist, high plasticity, stiff.	
32					
34					
36	20	S-35			
38				Total Depth = 36 feet. Boring terminated at sufficient depth to evaluate contamination above and below ground-water table.	
40					

Applied GeoSystems

LOG OF BORING B-4/MW-4

Exxon Station No. 7-3006

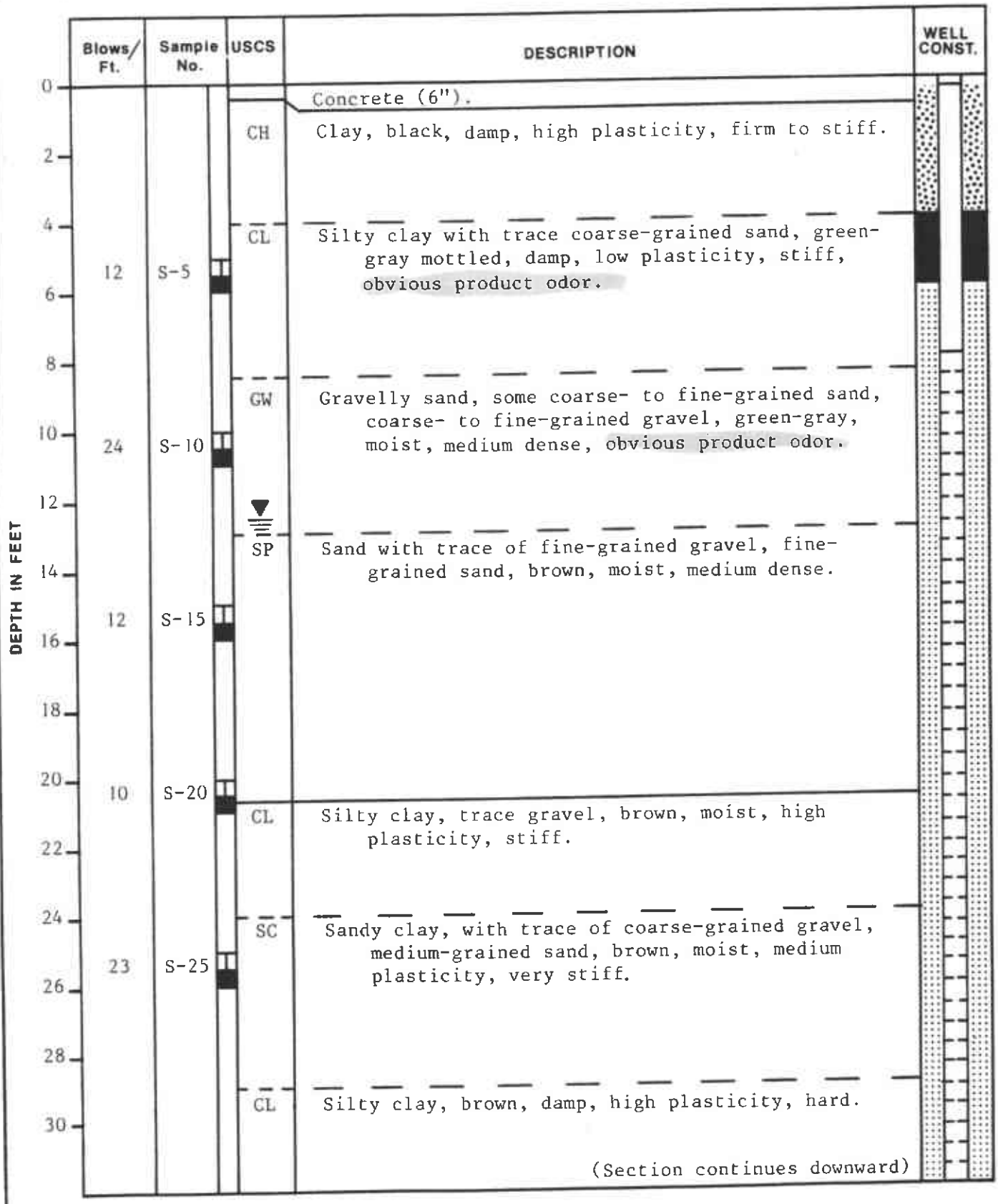
720 High Street

Oakland, California

PLATE

P - 10

PROJECT NO. 87042-5



Applied GeoSystems

PROJECT NO. 87042-5

LOG OF BORING B-5/MW-5

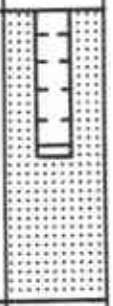
Exxon Station No. 7-3006

720 High Street

Oakland, California

PLATE

P - 11

DEPTH IN FEET	Blows/ Ft.	Sample No.	USCS	DESCRIPTION	WELL CONST.
30	33	S-30	CL	Silty clay, brown, damp, high plasticity, hard.	
32					
34					
	29	s-35			
36				Total Depth = 36 feet. Boring terminated at sufficient depth to evaluate contamination above and below ground-water table.	
38					
40					

Applied GeoSystems

LOG OF BORING B-5/MW-5

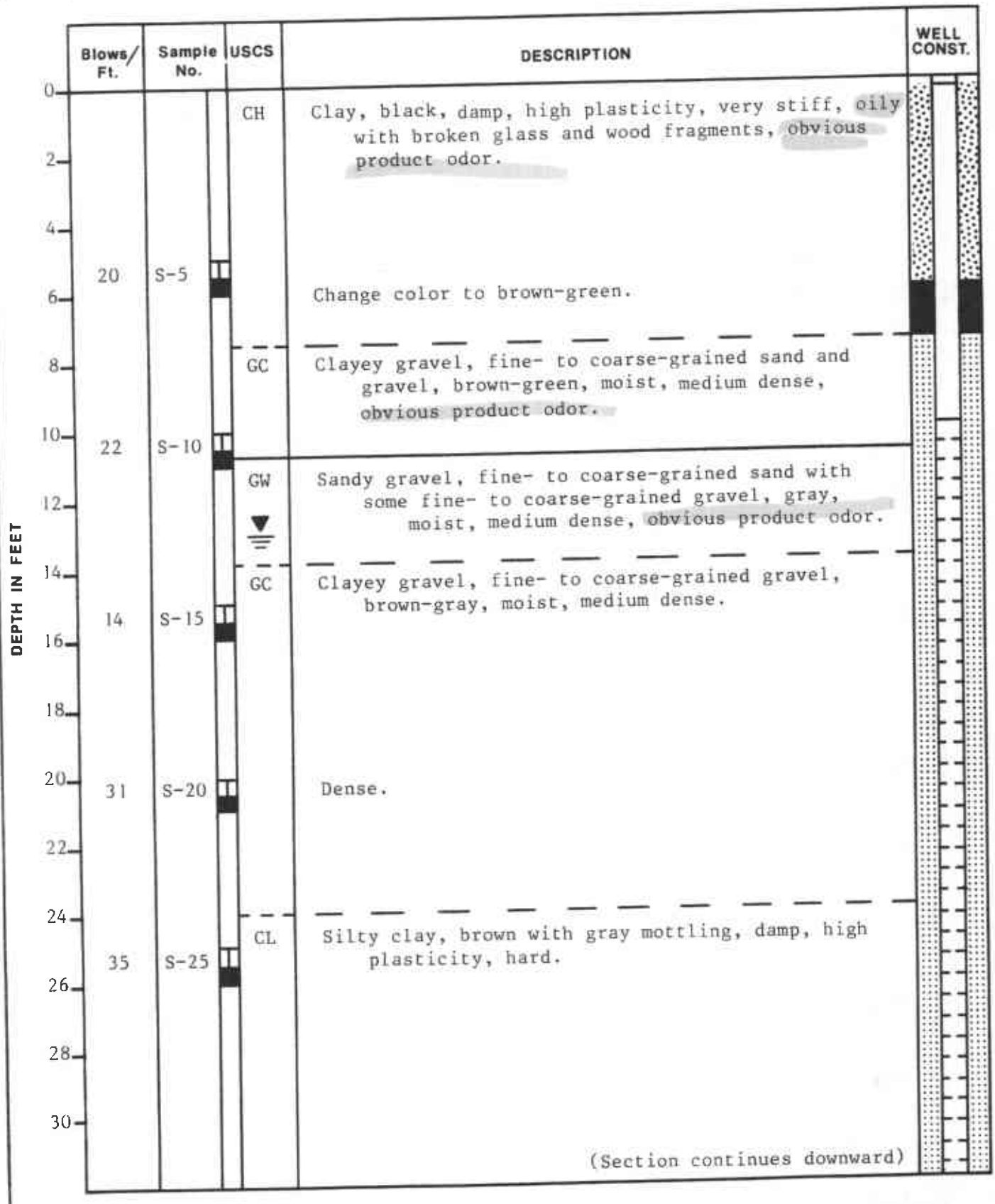
Exxon Station No. 7-3006

720 High Street

Oakland, California

PLATE P - 12

PROJECT NO. 87042-5



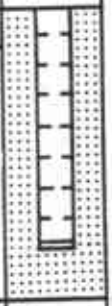
Applied GeoSystems

LOG OF BORING B-6/MW-6

Exxon Station No. 7-3006
720 High Street
Oakland, California

PLATE
P - 13

PROJECT NO. 87042-5

Blows/ Ft.	Sample No.	USCS	DESCRIPTION	WELL CONST.
19	S-30	CL	Silty clay, brown, damp, high plasticity, very stiff.	
15	S-35			
			Total Depth = 36 feet. Boring terminated at sufficient depth to evaluate contamination above and below ground-water table.	

DEPTH IN FEET

30 32 34 36 38 40

Applied GeoSystems

4125 Mowry Blvd. Suite B Fremont, CA 94539 (415) 657-3906

PROJECT NO. 87042-5

LOG OF BORING B-6/MW-6

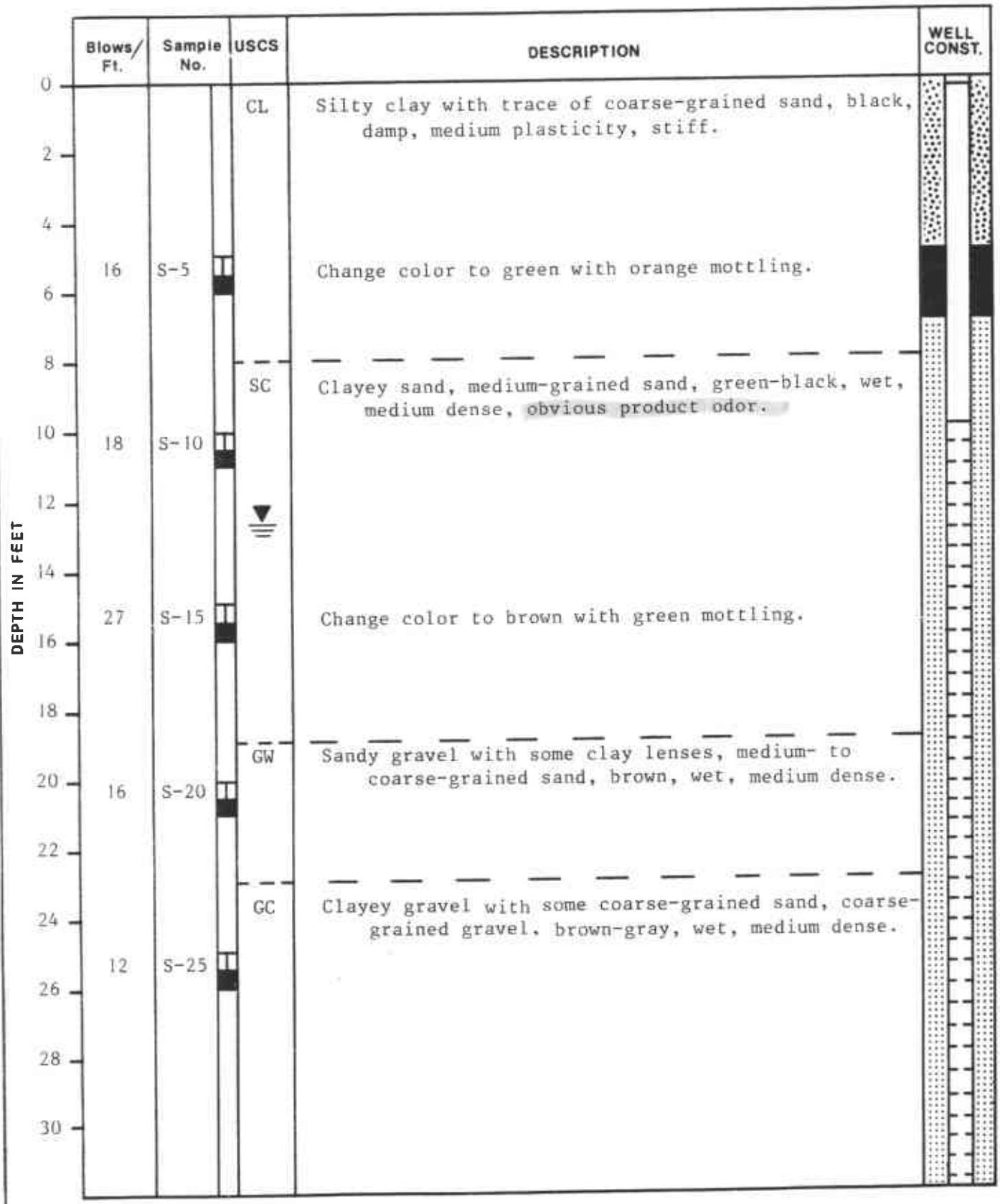
Exxon Station No. 7-3006

720 High Street

Oakland, California

PLATE

P - 14



Applied GeoSystems

LOG OF BORING B-7/MW-7

Exxon Station No. 7-3006
720 High Street
Oakland, California

PLATE
P - 15

PROJECT NO. 87042-5

DEPTH IN FEET	Blows/ Ft.	Sample No.	USCS	DESCRIPTION	WELL CONST.
30	16	S-30	GC	Clayey gravel, fine-grained gravel and clay, brown-white, moist, low plasticity, very stiff.	
32					
34			CL	Silty clay, brown, damp, high plasticity, very stiff	
	20	S-35			
36				Total Depth = 36 feet.	
38				Boring terminated at sufficient depth to evaluate contamination above and below ground-water table.	
40					

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PROJECT NO. 87042-5

LOG OF BORING B-7/MW-7

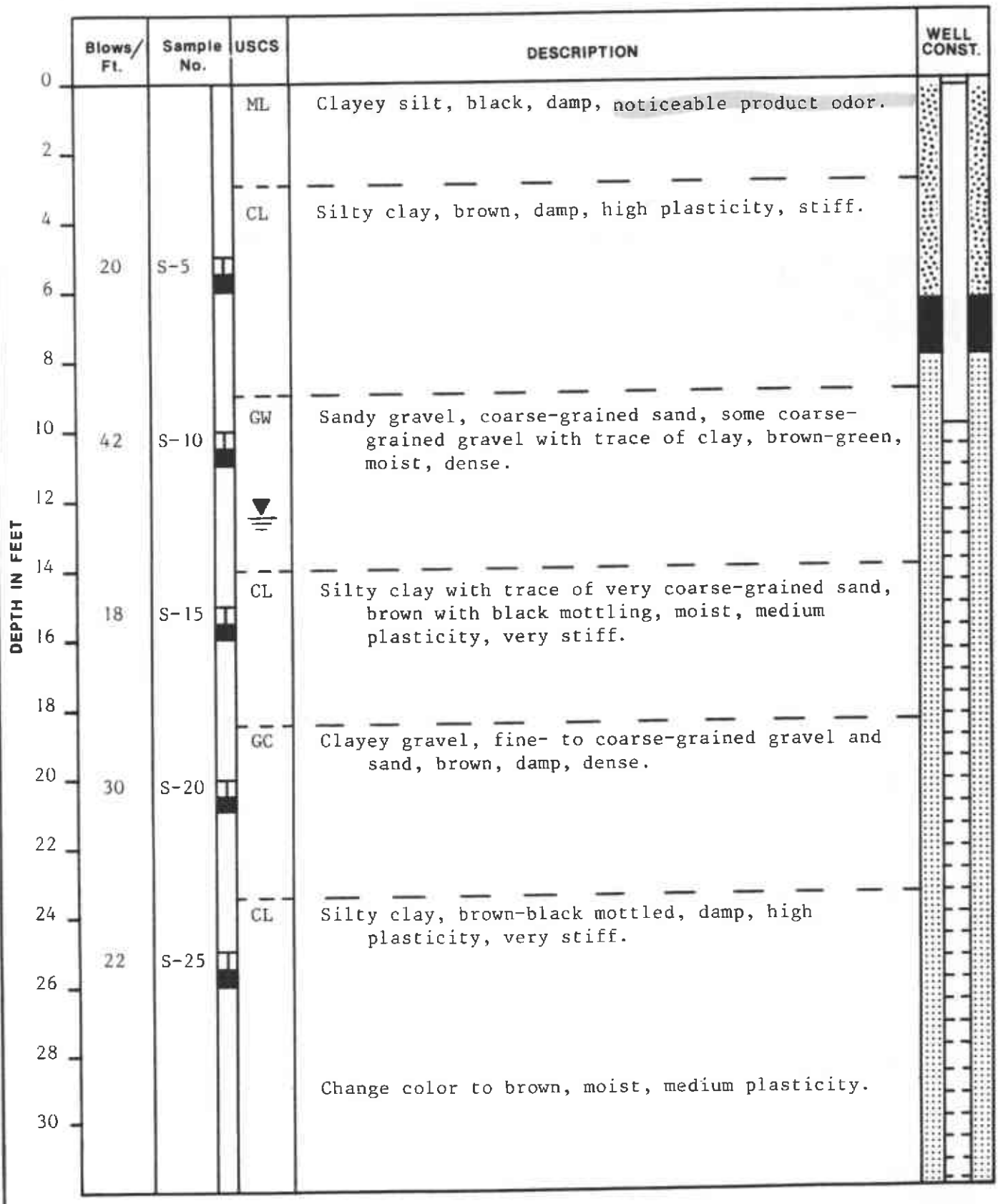
Exxon Station No. 7-3006

720 High Street

Oakland, California

PLATE

P - 16



Applied GeoSystems

PROJECT NO. 2-5

LOG OF BORING B-8/MW-8

Exxon Station No. 7-3006

720 High Street

Oakland, California

PLATE

P - 17

Blows/ Ft.	Sample No.	USCS	DESCRIPTION	WELL CONST.
11	S-30	CL	Silty clay, brown, damp, high plasticity, stiff.	
16	S-35			
			Total Depth = 36 feet. Boring terminated at sufficient depth to evaluate contamination above and below ground-water table.	

DEPTH IN FEET

30
32
34
36
38
40

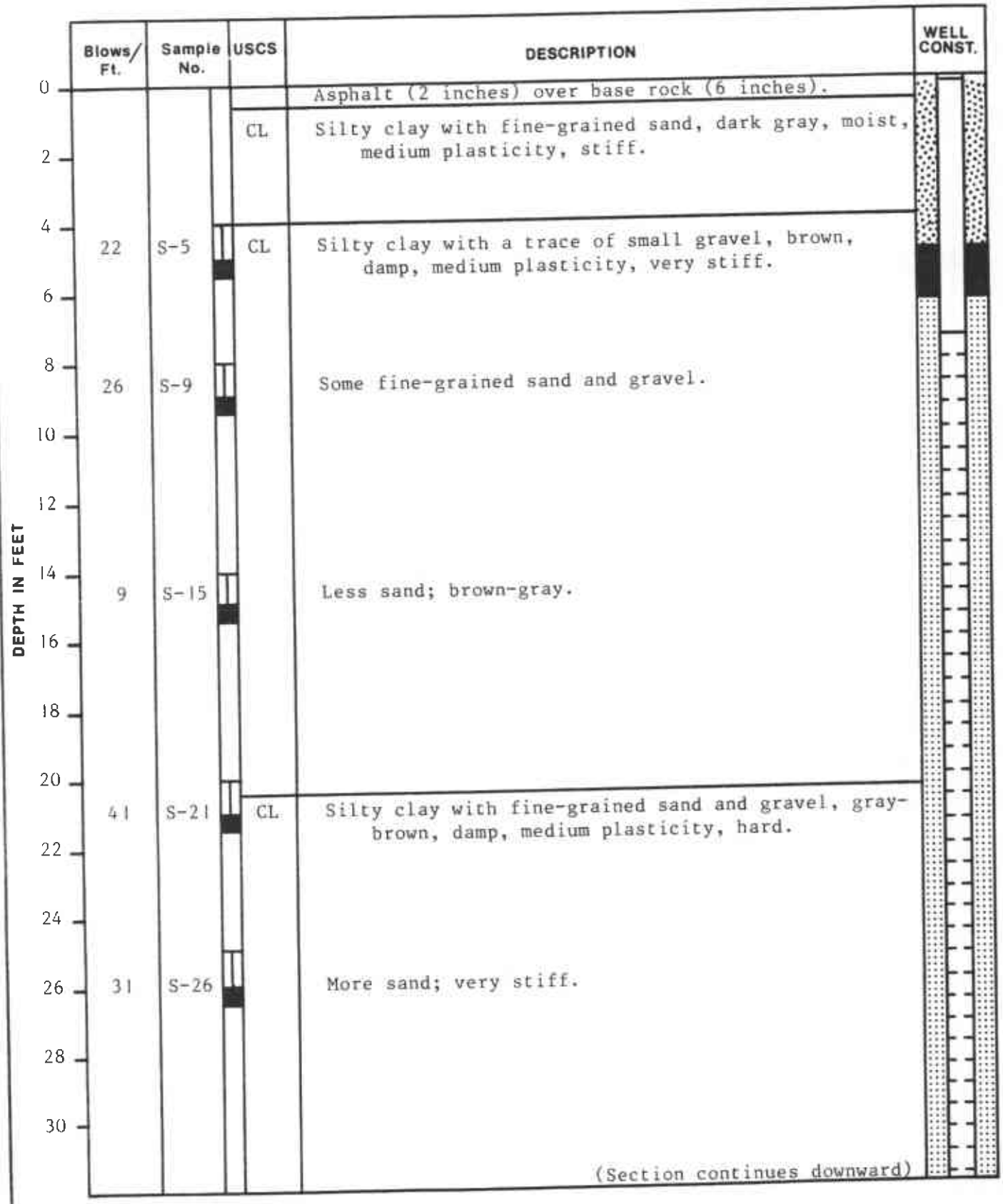
Applied GeoSystems

PROJECT NO. 87042-5

LOG OF BORING ~~B-8/MW-8~~

Exxon Station No. 7-3006
720 High Street
Oakland, California

PLATE
P - 18



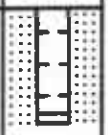
Applied GeoSystems

PROJECT NO. 87042-5

LOG OF BORING B-9/MW-9

Exxon Station No. 7-3006
720 High Street
Oakland, California

PLATE
P - 19

DEPTH IN FEET	Blows/ Ft.	Sample No.	USCS	DESCRIPTION	WELL CONST.
30	20	S-31	CL	Silty clay with fine-grained sand and gravel, gray-brown, damp, medium plasticity, stiff.	
32					
34				Total Depth = 33 feet.	
36					

Applied GeoSystems

4225 Mowry Blvd. Suite B Fremont, CA 94538 (415) 651-7906

PROJECT NO. 87042-5

LOG OF BORING B-9/MW-9

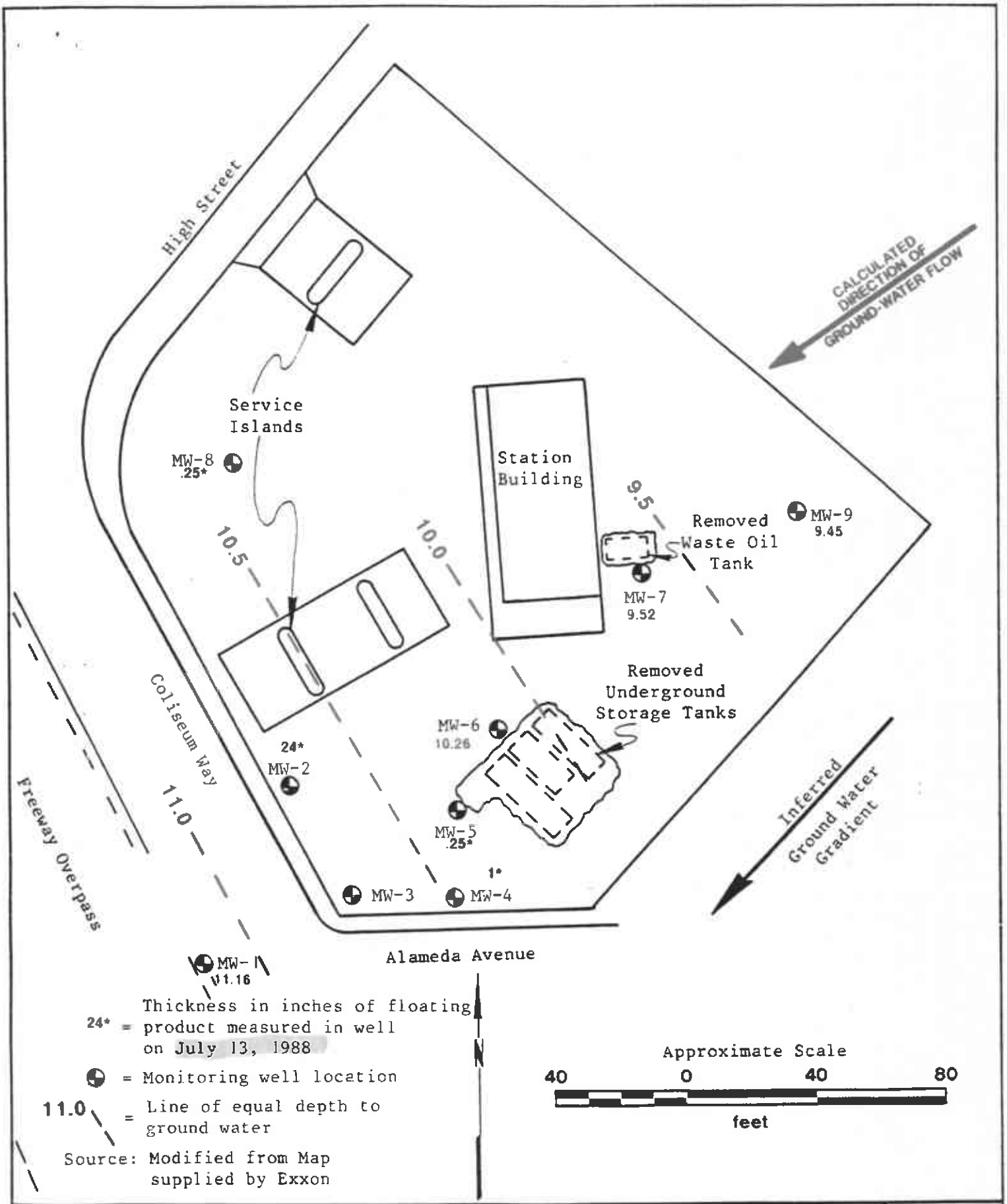
Exxon Station No. 7-3006

720 High Street

Oakland, California

PLATE

P - 20



Applied GeoSystems

PROJECT NO. 87042-5

GROUND-WATER POTENTIOMETRIC SURFACE MAP
Exxon Station No. 7-3006
720 High Street
Oakland, California

PLATE
P - 21

APPENDIX A

EA ENGINEERING,
SCIENCE, AND
TECHNOLOGY, INC.

Western Regional Operations
41 Lafayette Circle
Lafayette, California 94549
(415) 283-7077

6-19

24 June 1987

Mr. Kent Sanderson
Exxon Company, USA
1646 North California Boulevard
Suite 210
Walnut Creek, California 94596

Dear Kent:

Please find enclosed the results of the Soil Vapor Contaminant Assessment (SVCA) of the Exxon RS 7-3006, 720 High Street, Oakland, California.

If you have any questions, please do not hesitate to give me a call.

Sincerely,

Robert M. Gray/BCL

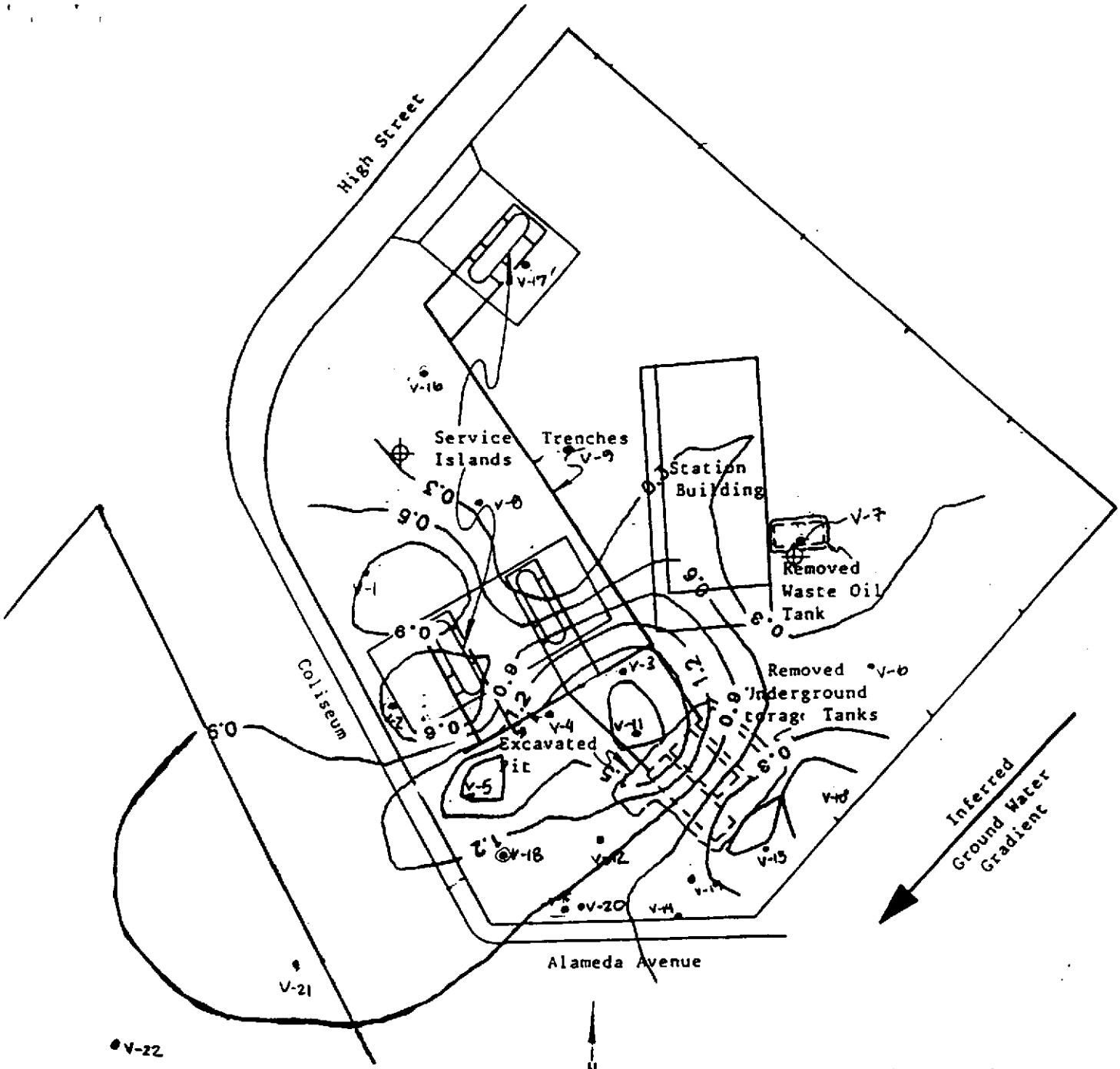
Robert M. Gray

cc: James M. Kerr, Jr., P.G.
RMZ/sls
Enclosures

SOIL VAPOR CONTAMINANT ASSESSMENT
EXXON RS 7-3006
720 High Street, Oakland

VP Location	Depth (ft)	Peaks Prior to Benzene (vs)	Benzene (pm)	Toluene (ppm)	Post Toluene Peaks (vs)
V-1	5.5	30	<1	<1	5
V-2	5.5	<1	<1	<1	<1
V-3	5.5	90	3	1	3
V-4	5.5	50	<1	1.5	4
V-5	5.5	220	3	1.5	2
V-6	5.5	3	1	1	1
V-7	5.5	<1	<1	<1	<1
V-8	5.5	1.5	<1	<1	<1
V-9	5.5	<1	<1	<1	<1
V-10	5.5	<1	<1	<1	<1
V-11	5.5	140	<1	4	80
V-12	6.5	15	3	5	15
V-13	5.5	<1	<1	<1	<1
V-14	5.5	2	<1	2	<1
V-15	5.5	6	<1	<1	<1
V-16	*3.0	<1	<1	<1	<1
V-17	5.5	<1	<1	<1	<1
V-18	5.5	10	<1	3	<1
V-19	5.5	4	<1	3	<1
V-20	5.5	4	<1	2	<1
V-21	5.5	14	<1	<1	<1
V-22	5.5	7	<1	<1	<1
V-19/B	8.5	13			
V-20/B	8.5	24	<1	<1	<1
V-21/B	8.0	500	<1	<1	<1
V-12/B	9.0	200	25	4	50

* Too close to sewerline, so stopped at 3 feet



Modified from Map supplied by EXXON

N

Approximate Scale

40 0 40 80

feet

PRE BENZENE PEAKS (VS) AT 5.6 FT.	GENERALIZED SITE PLAN EXXON Station #7-3006 720 High Street Oakland, California

APPENDIX B

ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

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

GROUNDWATER PROTECTION ORDINANCE PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

(1) LOCATION OF PROJECT 720 HIGH ST. OAKLAND, CALIFORNIA

(2) CLIENT
Name EXXON Company U.S.A.
Address 1646 N. CALIF. #210 Phone 415 945-1966
City Walnut Creek Zip

(3) APPLICANT
Name Applied GeoSystems *
Address 43255 Mission Blvd Phone 415-651-1906
City Fremont, Ca. Zip 94539

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

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

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

WELL PROJECTS
Drill Hole Diameter 10 in. Depth ~35 ft.
Casing Diameter 4 in. Number 8
Surface Seal Depth ~10 ft.
Driller's License No. 480802

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

(7) ESTIMATED STARTING DATE 8/12/87
ESTIMATED COMPLETION DATE 8/15/87

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

APPLICANT'S SIGNATURE [signature] Date 8/3/87

FOR OFFICE USE

PERMIT NUMBER 87186
LOCATION NUMBER ___

Approved Craig A. Mayfield Date 5 Aug 86
Craig A. Mayfield

PERMIT CONDITIONS

Circled Permit Requirements Apply

(A.) GENERAL
1. A permit application should be submitted so as to arrive at the Zone 7 office five days prior to proposed starting date.
2. Notify this office (484-2600) at least one day prior to starting work on permitted work and before placing well seals.
3. Submit to Zone 7 within 60 days after completion of permitted work the original Department of Water Resources Water Well Drillers Report or equivalent for well projects, or bore hole logs and location sketch for geotechnical projects. Permitted work is completed when the last surface seal is placed or the last boring is completed.
4. Permit is void if project not begun within 90 days of approval date.

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

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

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

E. WELL DESTRUCTION. See attached.

*Applied Geo Systems Representative:
Mr. Charles Ard

91986

ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

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

GROUNDWATER PROTECTION ORDINANCE PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

(1) LOCATION OF PROJECT 720 HIGH ST. OAKLAND, CA

(2) CLIENT
Name Exxon Company, U.S.A.
Address 1646 N. California Blvd Phone 415 945-1966
City Walnut Creek Zip 94596

(3) APPLICANT
Name Applied GeoSystems
Address 43255 Mission Blvd. Phone 651-1906
City Fremont, Ca Zip 94539

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

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

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

WELL PROJECTS
Drill Hole Diameter 10 in. Depth ~35 ft.
Casing Diameter 4 in. Number 2
Surface Seal Depth ~10 ft.
Driller's License No. 384467

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

(7) ESTIMATED STARTING DATE 5-11-88
ESTIMATED COMPLETION DATE 5-12-88

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

APPLICANT'S SIGNATURE Greg Barclay Date 5-9-88

FOR OFFICE USE

PERMIT NUMBER 88175
LOCATION NUMBER ___

Approved Wyman Hong Date 10 May 88
Wyman Hong

PERMIT CONDITIONS

Circled Permit Requirements Apply

(A.) GENERAL
1. A permit application should be submitted so as to arrive at the Zone 7 office five days prior to proposed starting date.
2. Notify this office (484-2600) at least one day prior to starting work on permitted work and before placing well seals.
3. Submit to Zone 7 within 60 days after completion of permitted work the original Department of Water Resources Water Well Drillers Report or equivalent for well projects, or bore hole logs and location sketch for geotechnical projects. Permitted work is completed when the last surface seal is placed or the last boring is completed.
4. Permit is void if project not begun within 90 days of approval date.

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

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

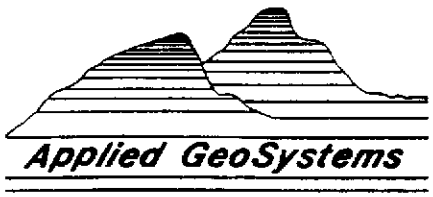
D. CATHODIC. Fill hole above anode zone with concrete placed by tremie, or equivalent.

E. WELL DESTRUCTION. See attached.

91986

APPENDIX C

CHAIN OF CUSTODY RECORD



43255 Mission Blvd. Suite B Fremont, CA 94539 (415) 651-1906

SAMPLER (signature): William Stiver

Phone:

LABORATORY: Applied GeoSystems

TURNAROUND TIME: 2 weeks

Project Leader: C. Aird

Phone No.

SHIPPING INFORMATION:

Shipper

Address

Date Shipped

Service Used

Airbill No. Cooler No.

Relinquished by: (signatures)	Received by: (signatures)	Date	Time
William Stiver			
	Received for laboratory by:	9-11-87	11:00

LABORATORY SHOULD SIGN UPON RECEIPT AND RETURN A COPY OF THIS FORM WITH THE LABORATORY RESULTS

Sample No.	Site Identification	Date Sampled	Analyses Requested	Sample Condition Upon Receipt
S-10-B2	87042-3	9/10/87	TVH - BETX	ICED
S-10-B3			TVH-BETX, TEH	
S-10-B4			TVH-BETX, TEH	
S-10-B5			TVH-BETX, TEH	
S-10-B6			TVH - BETX	
S-10-B8			TVH - BETX	
S-10-B7	87042-3	9/10/87	TEH, TVH-BETX	

Applied GeoSystems 43255 Mission Blvd. Suite B Fremont, CA 94539 (415) 651-1906

RECORD OF ANALYSIS

Date 9-18-87

Applied GeoSystems
43255 Mission Blvd.
Fremont, CA. 94539

Attention: Charles L. Ard

Date Received: 9-11-87
Date Analyzed: 9-16-87

Laboratory# 8709S076

Procedure:

The soil samples referenced on the attached Chain-of-Custody were analyzed for the presence and concentration of Benzene, Ethyl-Benzene, Toluene, and Xylenes (BETX) and for Total Volatile Hydrocarbons (TVH) by EPA method 8020. The samples were concentrated on a Tekmar LSC-2 and ALS automatic sampler prior to injection into a 5890 Hewlett Packard gas chromatograph fitted with a Photo-Ionization detector (PID) and a Flame Ionization detector (FID). The limit of detection for these samples is 0.05 milligrams/kilogram (parts per million = ppm).

The results are presented in the table below:

SAMPLE	SITE	BENZENE	ETHYL BENZENE	TOLUENE	TOTAL XYLENES	TVH
S-10-B2	87042-3	4.14	1.09	0.09	0.38	9.97
S-10-B5	87042-3	9.27	1.45	0.24	6.62	90.83
S-10-B8	87042-3	ND	ND	ND	ND	0.48

Results in milligrams/kilogram (parts per million = ppm).
ND=Non Detectable - Less than 0.05 milligrams/kilogram (ppm).

Tia Tran, Chemist

Applied GeoSystems is a State of California, Department of Health Services Certified Hazardous Waste Testing Laboratory (No. 153).

Applied GeoSystems 43255 Mission Blvd. Suite B Fremont, CA 94539 (415) 651-1906

RECORD OF ANALYSIS

Date 9-18-87

Applied GeoSystems
43255 Mission Blvd.
Fremont, CA. 94539

Attention: Charles L. Ard

Date Received: 9-11-87 Laboratory# 8709S077
Date Analyzed: 9-16-87

Procedure:

The soil sample referenced on the attached Chain-of-Custody was analyzed for the presence and concentration of Benzene, Ethyl-Benzene, Toluene, and Xylenes (BETX) and for Total Volatile Hydrocarbons (TVH) by EPA method 8020. The sample was concentrated on a Tekmar LSC-2 and ALS automatic sampler prior to injection into a 5890 Hewlett Packard gas chromatograph fitted with a Photo-Ionization detector (PID) and a Flame Ionization detector (FID). The limit of detection for this sample is 1.0 milligram/kilogram (parts per million = ppm).

The results are presented in the table below:

SAMPLE	SITE	BENZENE	ETHYL BENZENE	TOLUENE	TOTAL XYLENES	TVH
S-10-B3	87042-3	126	41	17	131	2689

Results in milligrams/kilogram (parts per million = ppm).

Tia Tran, Chemist

Applied GeoSystems is a State of California, Department of Health Services Certified Hazardous Waste Testing Laboratory (No. 153).

Applied GeoSystems 43255 Mission Blvd. Suite B Fremont, CA 94539 (415) 651-1906

RECORD OF ANALYSIS

Date 9-18-87

Applied GeoSystems
43255 Mission Blvd.
Fremont, CA. 94539

Attention: Charles L. Ard

Date Received: 9-11-87
Date Analyzed: 9-16-87

Laboratory# 8709S078

Procedure:

The soil samples referenced on the attached Chain-of-Custody were analyzed for the presence and concentration of Benzene, Ethyl-Benzene, Toluene, and Xylenes (BETX) and for Total Volatile Hydrocarbons (TVH) by EPA method 8020. The samples were concentrated on a Tekmar LSC-2 and ALS automatic sampler prior to injection into a 5890 Hewlett Packard gas chromatograph fitted with a Photo-Ionization detector (PID) and a Flame Ionization detector (FID). The limit of detection for these samples is 0.5 milligrams/kilogram (parts per million = ppm).

The results are presented in the table below:

SAMPLE	SITE	BENZENE	ETHYL BENZENE	TOLUENE	TOTAL XYLENES	TVH
S-10-B4	87042-3	14.9	6.4	0.5	11.1	209.9
S-10-B6	87042-3	5.7	14.1	3.7	63.2	448.0
S-10-B7	87042-3	26.4	41.4	5.3	54.2	901.6

Results in milligrams/kilogram (parts per million = ppm).

Tia Tran, Chemist

Applied GeoSystems is a State of California, Department of Health Services Certified Hazardous Waste Testing Laboratory (No. 153).

Applied GeoSystems 43255 Mission Blvd. Suite B Fremont, CA 94539 (415) 651-1906

RECORD OF ANALYSIS

Date 9-18-87

Applied GeoSystems
43255 Mission Blvd.
Fremont, CA. 94539

Attention: Charles L. Ard

Date Received: 9-11-87
Date Analyzed: 9-17-87

Laboratory# 8709DS12

Procedure:

The soil samples were analyzed for high boiling point hydrocarbons by EPA method 3550 for soil extraction. The samples were injected into a 5890 Hewlett Packard gas chromatograph fitted with a Flame Ionization detector (FID). The limit of detection for these samples is 10 milligrams/kilogram (parts per million = ppm).

The results are presented in the table below:

SAMPLE	SITE	TOTAL EXTRACTABLE HYDROCARBONS
S-10-B3	87042-3	4261
S-10-B4	87042-3	2938

Results in milligrams/kilogram (parts per million = ppm).

Tia Tran, Chemist

Applied GeoSystems is a State of California, Department of Health Services Certified Hazardous Waste Testing Laboratory (No. 153).

Applied GeoSystems 43255 Mission Blvd. Suite B Fremont, CA 94539 (415) 651-1906

RECORD OF ANALYSIS

Date 9-18-87

Applied GeoSystems
43255 Mission Blvd.
Fremont, CA. 94539

Attention: Charles L. Ard

Date Received: 9-11-87
Date Analyzed: 9-17-87

Laboratory# 8709DS13

Procedure:

The soil samples were analyzed for high boiling point hydrocarbons by EPA method 3550 for soil extraction. The samples were injected into a 5890 Hewlett Packard gas chromatograph fitted with a Flame Ionization detector (FID). The limit of detection for these samples is 5 milligrams/kilogram (parts per million = ppm).

The results are presented in the table below:

SAMPLE	SITE	TOTAL EXTRACTABLE HYDROCARBONS
S-10-B5	87042-3	848
S-10-B7	87042-3	1338

Results in milligrams/kilogram (parts per million = ppm).

Tia Tran, Chemist

Applied GeoSystems is a State of California, Department of Health Services Certified Hazardous Waste Testing Laboratory (No. 153).

CHAIN OF CUSTODY RECORD

Applied GeoSystems

43255 Mission Blvd. Suite B Fremont, CA 94539 (415) 651-1906

SAMPLER (signature): James Orr

Phone: 415 651-1906

LABORATORY: 707-526-7200
NET PACIFIC (ANATEC LABS)
435 Tesconi Circle
Santa Rosa, CA 95401

TURNAROUND TIME: 2 weeks

Project Leader: Greg Barclay

Phone No. 415 651-1906

SHIPPING INFORMATION:

Shipper

Address

Date Shipped

Service Used

Airbill No. Cooler No.

Relinquished by: (signatures)	Received by: (signatures)	Date	Time
James Orr	Greg Barclay	5-23-88	
[signature]		5/23/88	4:00p
	Received for laboratory by:		

LABORATORY SHOULD SIGN UPON RECEIPT AND RETURN A COPY OF THIS FORM WITH THE LABORATORY RESULTS

Sample No.	Site Identification	Date Sampled	Analyses Requested	Sample Condition Upon Receipt
S-7½-B1	87042-5	5-21-88	TPH & BETX	ICED

NATIONAL ENVIRONMENTAL TESTING, INC.

NET Pacific, Inc.
435 Tesconi Circle
Santa Rosa, CA 95401
Tel: (707) 526-7800
Fax: (707) 526-8623

Formerly: ANATEC Labs, Inc.

Greg Barclay
Applied GeoSystems
43255 Mission Blvd. Ste. B
Fremont, CA 94539

06-28-88
NET Pacific Log No: 3254 (-1)
Series No: 499/016
Client Ref: Site ID 87042-5

Subject: Analytical Results for One Soil Sample Identified as "S-7.5-B1 Site ID 87042-5" Received 05-23-88.

Dear Mr. Barclay:

Analysis of the sample referenced above has been completed. Results are presented following this page.

Please feel welcome to contact us should you have questions regarding procedures or results.

Submitted by:

Kim Hansard
Project Chemist

Approved by:

B. J. Kimble, Ph.D.
Program Manager

/sm
Enc: Sample Custody Document

Parameter	MDL[a]	Results	Units
SAMPLE DESCRIPTION: S-7.5-B1 Site ID 87042-5 05-21-88			
LAB NO.: (-10312)			
PETROLEUM HYDROCARBONS			
Volatile, as Gasoline	10	ND[b]	mg/Kg[c]
Extractable,			
as Motor Oil	10	ND	mg/Kg
as Diesel Fuel	10	25	mg/Kg
Benzene	0.05	ND	mg/Kg
Ethylbenzene	0.15	ND	mg/Kg
Toluene	0.05	ND	mg/Kg
Xylenes, total	0.15	ND	mg/Kg

[a]MDL--Method detection limit.
[b]ND--Not detected at the listed method detection limit.
[c]mg/Kg--Data are expressed in units of milligrams analyte per kilogram sample, as-received basis.

CHAIN OF CUSTODY RECORD

Applied GeoSystems
43255 Mission Blvd. Suite B Fremont, CA 94539 (415) 651-1906

SAMPLER (signature): Jim Cline

Phone: 415 651-1906

LABORATORY:
Applied GeoSystems
43255 Mission Blvd.
Fremont, CA 94539

TURNAROUND TIME: 2 wk.

Project Leader: Greg Barclay

Phone No. 415 651-1906

SHIPPING INFORMATION:

Shipper

Address

Date Shipped

Service Used

Airbill No. Cooler No.

Relinquished by: (signatures)	Received by: (signatures)	Date	Time
	Greg Barclay	5-13-88	4:30
	Received for laboratory by:	5-13-88	1635

LABORATORY SHOULD SIGN UPON RECEIPT AND RETURN A COPY OF THIS FORM WITH THE LABORATORY RESULTS

Sample No.	Site Identification	Date Sampled	Analyses Requested	Sample Condition Upon Receipt
5-9-89	97042-5	5-12-88	TPH, BEX	KED

Applied GeoSystems 43255 Mission Boulevard, Fremont, CA 94539 (415) 651-1906

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ANALYSIS REPORT

0212lab.frm

Report Prepared for:
Applied GeoSystems
43255 Mission Blvd.
Fremont, CA 94539
Attention: Greg J. Barclay

Date Received: 5-13-88
Laboratory Number: 05036S01
Project: 87042-5
Sample: S-9-B9
Matrix: Soil

Parameter	Result (mg/kg)	Result (mg/L)	Detection Limit (mg/kg)	Detection Limit (mg/L)	Date Analyzed	Notes
TVH as Gasoline						NR
TPH as Gasoline	ND		2		05-24-88	
TEH as Diesel						NR
Benzene	ND		0.05		05-24-88	
Toluene	ND		0.05		05-24-88	
Ethylbenzene	ND		0.05		05-24-88	
Total Xylenes	ND		0.05		05-24-88	

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

PROCEDURES

TVH/BTEX--Total volatile hydrocarbons (TVH) and benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction according to EPA Method 5030 followed by analysis by a EPA Method 8020/602 (modified for TVH) which uses a gas chromatograph (GC) equipped with a photo-ionization detector (PID) and a flame-ionization detector (FID) in series. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

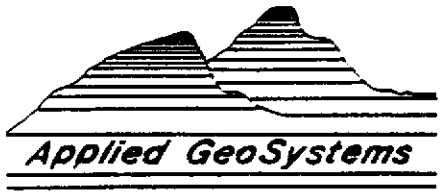
TPH--Total petroleum hydrocarbons (low-to-medium boiling points) are measured by extraction according to EPA Method 5030 followed by analysis by a modified EPA Method 8015 which uses a GC equipped with an FID. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TEH--Total extractable hydrocarbons (high boiling points) are measured by extraction according to EPA Method 3550 for soils or EPA Method 3510 for water followed by a modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Tia Tran, Laboratory Supervisor

6-01-88
Date Reported

CHAIN OF CUSTODY RECORD



43255 Mission Blvd Suite B Fremont, CA 94539 (415) 651-1906

SAMPLER (signature): William Stevens

Phone:

LABORATORY: Applied GeoSystems

TURNAROUND TIME: 2 weeks

Attention: C. ARD

Phone No. 415-651-1906

SHIPPING INFORMATION:

Shipper

Address

Date Shipped

Service Used

Airbill No. Cooler No.

Relinquished by: (signatures)	Received by: (signatures)	Date	Time
William Stevens			
	Received for laboratory by: [signature]	9-17-87	10:00

LABORATORY SHOULD SIGN UPON RECEIPT AND RETURN A COPY OF THIS FORM WITH THE LABORATORY RESULTS

Sample No.	Site Identification	Date Sampled	Analyses Requested	Sample Condition Upon Receipt
W25MW2	87042-3	9/15/87	TVH - BETX	ICED
W25MW3			TVH - BETX	
W25MW4			TVH - BETX	
W25MW5			TVH - BETX	
W25MW6			TVH - BETX	
W25MW7			TEH, TVH, BETX	
W25MW8	"	"	TVH - BETX	"

Applied GeoSystems 43255 Mission Blvd. Suite B Fremont, CA 94539 (415) 651-1906

RECORD OF ANALYSIS

Date 10-02-87

Applied GeoSystems
43255 Mission Blvd.
Fremont, CA. 94539

Attention: Charles L. Ard

Date Received: 9-17-87
Date Analyzed: 9-29-87

Laboratory# 8709W149

Procedure:

The water samples referenced on the attached Chain-of-Custody were analyzed for the presence and concentration of Benzene, Ethyl-Benzene, Toluene, and Xylenes (BETX) and for Total Volatile Hydrocarbons (TVH) by EPA method 602. The samples were concentrated on a Tekmar LSC-2 and ALS automatic sampler prior to injection into a 5890 Hewlett Packard gas chromatograph fitted with a Photo-Ionization detector (PID) and a Flame Ionization detector (FID). The limit of detection for these samples is 0.002 milligrams/liter (parts per million = ppm).

The results are presented in the table below:

SAMPLE	SITE	BENZENE	ETHYL BENZENE	TOLUENE	TOTAL XYLENES	TVH
W-25-MW2	87042-3	0.233	0.056	0.081	0.209	1.445
W-25-MW3	87042-3	0.360	0.068	1.062	0.298	2.101
W-25-MW4	87042-3	0.070	0.010	0.007	0.016	0.925
W-25-MW6	87042-3	0.060	ND	0.003	0.140	2.185
W-25-MW7	87042-3	0.258	ND	0.002	0.042	1.531
W-25-MW8	87042-3	0.081	0.042	0.074	0.184	1.325

Results in milligrams/liter (parts per million = ppm).
ND=Non Detectable - Less than 0.002 milligrams/liter (ppm).

Tia Tran, Chemist
Applied GeoSystems is a State of California, Department of Health Services Certified Hazardous Waste Testing Laboratory (No. 153).

Applied GeoSystems 43255 Mission Blvd. Suite B Fremont, CA 94539 (415) 651-1906

RECORD OF ANALYSIS

Date 10-02-87

Applied GeoSystems
43255 Mission Blvd.
Fremont, CA. 94539

Attention: Charles L. Ard

Date Received: 9-17-87 Laboratory# 8709W152
Date Analyzed: 9-29-87

Procedure:

The water sample referenced on the attached Chain-of-Custody was analyzed for the presence and concentration of Benzene, Ethyl-Benzene, Toluene, and Xylenes (BETX) and for Total Volatile Hydrocarbons (TVH) by EPA method 602. The sample was concentrated on a Tekmar LSC-2 and ALS automatic sampler prior to injection into a 5890 Hewlett Packard gas chromatograph fitted with a Photo-Ionization detector (PID) and a Flame Ionization detector (FID). The limit of detection for this sample is 0.05 milligrams/liter (parts per million = ppm).

The results are presented in the table below:

SAMPLE	SITE	BENZENE	ETHYL BENZENE	TOLUENE	TOTAL XYLENES	TVH
W-25-MW5	87042-3	0.56	1.58	1.71	7.15	26.66

Results in milligrams/liter (parts per million = ppm).

Tia Tran, Chemist

Applied GeoSystems is a State of California, Department of Health Services Certified Hazardous Waste Testing Laboratory (No. 153).

Applied GeoSystems 43255 Mission Blvd. Suite B Fremont, CA 94539 (415) 651-1906

RECORD OF ANALYSIS

Date 10-02-87

Applied GeoSystems
43255 Mission Blvd.
Fremont, CA. 94539

Attention: Charles L. Ard

Date Received: 9-17-87
Date Analyzed: 10-01-87

Laboratory# 8709DW41

Procedure:

The water samples were analyzed for high boiling point hydrocarbons by EPA method 3510 for water extraction. The samples were injected into a 5890 Hewlett Packard gas chromatograph fitted with a Flame Ionization detector (FID). The limit of detection for these samples is 0.05 milligrams/liter (parts per million = ppm).

The results are presented in the table below:

SAMPLE	SITE	TOTAL EXTRACTABLE HYDROCARBONS
W-25-MW3	87042-3	0.66
W-25-MW4	87042-3	0.74
W-25-MW5	87042-3	37.22
W-25-MW7	87042-3	2.79

Results in milligrams/liter (parts per million = ppm).

Tia Tran, Chemist

Applied GeoSystems is a State of California, Department of Health Services Certified Hazardous Waste Testing Laboratory (No. 153).

CHAIN OF CUSTODY RECORD

FREMONT
JUL 15 1988
RECEIVED

Applied GeoSystems

43255 Mission Blvd Suite B Fremont, CA 94539 (415) 651-1906

SAMPLER (signature): William [signature]

Phone:

LABORATORY:
TRACE ANALYSIS
3423 Investment, Hayward
783-6960

TURNAROUND TIME: 2 weeks

Project Leader: C. Ard

Phone No.

SHIPPING INFORMATION:

Shipper

Address

Date Shipped

Service Used

Airbill No. Cooler No.

Relinquished by: (signatures)	Received by: (signatures)	Date	Time
William [signature]			
	Received for laboratory by: [signature] TAL	9/18/87	3:45 pm

LABORATORY SHOULD SIGN UPON RECEIPT AND RETURN A COPY OF THIS FORM WITH THE LABORATORY RESULTS

Sample No.	Site Identification	Date Sampled	Analyses Requested	Sample Condition Upon Receipt
W25MW2	87042-3	9/17/87	Organic lead	ICED
W25MW3	↓	↓	↓	↓
W25MW4				
W25MW5				
W25MW6				
W25MW7			Purgeable Organics (624)	
W25MW8	↓	↓	Organic lead	↓
				no extra peaks 9/21/87 JS

Trace Analysis Laboratory, Inc.
3423 Investment Boulevard, #8 • Hayward, California 94545 *(415) 783-6960*

TAL

DATE: 10/9/87

LOG NO.: 5211

DATE SAMPLED: 9/17/87

DATE RECEIVED: 9/18/87

CUSTOMER: Applied GeoSystems

REQUESTER: Charles Ard

PROJECT: No. 87042-3

Sample Type: Water

Method and Constituent	Units	W25MW2 Concentration	W25MW2 Detection Limit	W25MW3 Concentration	W25MW3 Detection Limit
DHS Method: Organic Pb	mg/l	< 0.1	0.1	< 0.1	0.1
		W25MW4		W25MW5	
DHS Method: Organic Pb	mg/l	< 0.1	0.1	< 0.1	0.1
		W25MW6		W25MW8	
DHS Method: Organic Pb	mg/l	< 0.1	0.1	< 0.1	0.1

The samples were analyzed by the DHS method following xylene extraction.

DATE: 10/9/87
LOG NO.: 5211
DATE SAMPLED: 9/17/87
DATE RECEIVED: 9/18/87
PAGE: Two

Sample Type: Water

Method and Constituent	Units	W25MW7 Concentration	Detection Limit
EPA Method 8240:			
Chloromethane	mg/l	< 0.004	0.004
Bromomethane	mg/l	< 0.004	0.004
Vinyl chloride	mg/l	< 0.004	0.004
Chloroethane	mg/l	< 0.004	0.004
Methylene chloride	mg/l	< 0.004	0.004
Trichlorofluoromethane	mg/l	< 0.004	0.004
1,1-Dichloroethene	mg/l	< 0.004	0.004
1,1-Dichloroethane	mg/l	< 0.004	0.004
trans-1,2-Dichloroethene	mg/l	< 0.004	0.004
Chloroform	mg/l	< 0.004	0.004
1,2-Dichloroethane	mg/l	< 0.004	0.004
1,1,1-Trichloroethane	mg/l	< 0.004	0.004
Carbon tetrachloride	mg/l	< 0.004	0.004
Bromodichloromethane	mg/l	< 0.004	0.004
1,2-Dichloropropane	mg/l	< 0.004	0.004
trans-1,3-Dichloropropene	mg/l	< 0.004	0.004
Trichloroethene	mg/l	< 0.004	0.004
Benzene	mg/l	0.2	0.004
Dibromochloromethane	mg/l	< 0.004	0.004
1,1,2-Trichloroethane	mg/l	< 0.004	0.004
cis-1,3-Dichloropropene	mg/l	< 0.004	0.004
2-Chloroethylvinyl ether	mg/l	< 0.004	0.004
Bromoform	mg/l	< 0.004	0.004
1,1,2,2-Tetrachloroethane	mg/l	< 0.004	0.004
Tetrachloroethene	mg/l	< 0.004	0.004
Toluene	mg/l	< 0.004	0.004
Chlorobenzene	mg/l	< 0.004	0.004
Ethyl benzene	mg/l	< 0.004	0.004
1,3-Dichlorobenzene	mg/l	< 0.004	0.004

DATE: 10/9/87
LOG NO.: 5211
DATE SAMPLED: 9/17/87
DATE RECEIVED: 9/18/87
PAGE: Three

Sample Type: Water

Method and Constituent	Units	W25MW7 Concentration	Detection Limit
EPA Method 8240 (continued):			
1,2-Dichlorobenzene	mg/l	< 0.004	0.004
1,4-Dichlorobenzene	mg/l	< 0.004	0.004
5 Extra Peaks:			
Methyl Cyclohexane	mg/l	< 0.01	0.01
1-Propenyl benzene	mg/l	0.010	0.01
1-Ethyl-2, 3 dimethyl benzene	mg/l	0.02	0.01
2,3-Dihydro-1 methyl 1 H-indene	mg/l	0.010	0.01
1 Ethenyl 3-ethylbenzene mixed with 1 ethenyl 4-ethylbenzene	mg/l	0.04	0.01

Roland X. Tao

For: Hugh R. McLean
Supervisory Chemist

HRM:mln

CHAIN OF CUSTODY RECORD

Applied GeoSystems
43255 Mission Blvd. Suite B Fremont, CA 94539 (415) 651-1906

SAMPLER (signature): James R. Cline

Phone: (415) 651-1906

LABORATORY: APPLIED GEOSYSTEMS

TURNAROUND TIME: 2 WEEK

Project Leader: GREG BARCLAY

Phone No. (415) 651-1906

SHIPPING INFORMATION:

Shipper

Address

Date Shipped

Service Used

Airbill No. Cooler No.

Relinquished by: (signatures)	Received by: (signatures)	Date	Time
James R. Cline	Greg Barclay	6/1/88	
	Received for laboratory by:	6-1-88	930

LABORATORY SHOULD SIGN UPON RECEIPT AND RETURN A COPY OF THIS FORM WITH THE LABORATORY RESULTS

Sample No.	Site Identification	Date Sampled	Analyses Requested	Sample Condition Upon Receipt
W-14-MW3	87042-5	5-31-88	TPH, BTEX	HCl & Iced
W-15-MW6	87042-5	5-31-88	TPH, BTEX	HCl & Iced

Applied GeoSystems 43255 Mission Boulevard, Fremont, CA 94539 (415) 651-1906

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ANALYSIS REPORT

0212lab.frm

Report Prepared for:
Applied GeoSystems
43255 Mission Blvd.
Fremont, CA 94539
Attention: Greg J. Barclay

Date Received: 6-01-88
Laboratory Number: 06002W01
Project: 87042-5
Sample: W-14-MW3
Matrix: Water

Parameter	Result (mg/kg)	Result (mg/L)	Detection Limit (mg/kg)	Detection Limit (mg/L)	Date Analyzed	Notes
TVH as Gasoline						NR
TPH as Gasoline		8.7		0.5	06-09-88	
TEH as Diesel						NR
Benzene		3.98		0.05	06-09-88	
Toluene		0.28		0.05	06-09-88	
Ethylbenzene		0.24		0.05	06-09-88	
Total Xylenes		0.65		0.05	06-09-88	

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

PROCEDURES

TVH/BTEX--Total volatile hydrocarbons (TVH) and benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction according to EPA Method 5030 followed by analysis by a EPA Method 8020/602 (modified for TVH) which uses a gas chromatograph (GC) equipped with a photo-ionization detector (PID) and a flame-ionization detector (FID) in series. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TPH--Total petroleum hydrocarbons (low-to-medium boiling points) are measured by extraction according to EPA Method 5030 followed by analysis by a modified EPA Method 8015 which uses a GC equipped with an FID. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TEH--Total extractable hydrocarbons (high boiling points) are measured by extraction according to EPA Method 3550 for soils or EPA Method 3510 for water followed by a modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Tia Tran, Laboratory Supervisor

6-21-88
Date Reported

Applied GeoSystems 43255 Mission Boulevard, Fremont, CA 94539 (415) 651-1906

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ANALYSIS REPORT

0212lab.frm

Report Prepared for:
Applied GeoSystems
43255 Mission Blvd.
Fremont, CA 94539
Attention: Greg J. Barclay

Date Received: 6-01-88
Laboratory Number: 06002W02
Project: 87042-5
Sample: W-15-MW6
Matrix: Water

Parameter	Result (mg/kg)	Result (mg/L)	Detection Limit (mg/kg)	Detection Limit (mg/L)	Date Analyzed	Notes
TVH as Gasoline						NR
TPH as Gasoline		29.3		0.5	06-09-88	
TEH as Diesel						NR
Benzene		12.82		0.05	06-09-88	
Toluene		0.55		0.05	06-09-88	
Ethylbenzene		1.44		0.05	06-09-88	
Total Xylenes		5.50		0.05	06-09-88	

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

PROCEDURES

TVH/BTEX--Total volatile hydrocarbons (TVH) and benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction according to EPA Method 5030 followed by analysis by a EPA Method 8020/602 (modified for TVH) which uses a gas chromatograph (GC) equipped with a photo-ionization detector (PID) and a flame-ionization detector (FID) in series. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TPH--Total petroleum hydrocarbons (low-to-medium boiling points) are measured by extraction according to EPA Method 5030 followed by analysis by a modified EPA Method 8015 which uses a GC equipped with an FID. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TEH--Total extractable hydrocarbons (high boiling points) are measured by extraction according to EPA Method 3550 for soils or EPA Method 3510 for water followed by a modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Tia Tran, Laboratory Supervisor

6-21-88
Date Reported

CHAIN OF CUSTODY RECORD

Applied GeoSystems

43255 Mission Blvd. Suite B Fremont, CA 94539 (415) 651-1906

SAMPLER (signature): Jim Cline

Phone: 415 651-1906

LABORATORY:
Anametrix, Inc.
1961 Concourse Drive, Suite E
San Jose, CA 95131

TURNAROUND TIME: 2 wk.

Project Leader: Greg Barclay

Phone No. 415 651-1906

SHIPPING INFORMATION:

Shipper
Address
Date Shipped
Service Used
Airbill No. Cooler No.

Relinquished by: (signatures)	Received by: (signatures)	Date	Time
James R. Cline	Greg Barclay		
	Tghi Alvarado	6-2-88	14:00
	Received for laboratory by: Darine Sch	6-2-88	14:30

LABORATORY SHOULD SIGN UPON RECEIPT AND RETURN A COPY OF THIS FORM WITH THE LABORATORY RESULTS

Sample No.	Site Identification	Date Sampled	Analyses Requested	Sample Condition Upon Receipt
W-15-MW7	87042-5	5-31-88	EPA 624/TEH	HCl & ICED

ANAMETRIX, INC.
LABORATORY SERVICES
ENVIRONMENTAL • ANALYTICAL CHEMISTRY
1961 CONCOURSE DRIVE, SUITE E • SAN JOSE, CA 95131 • (408) 432-8192

Greg Barclay
Applied GeoSystems
43255 Mission Blvd., Ste. B
Fremont, CA 94539

June 15, 1988
Work Order Number 8806010
Date Received 06/02/88
Project No. 87042-5

Dear Mr. Barclay:

One water sample was received for analysis of volatiles by GC/MS, and total extractable hydrocarbons as diesel by GC, using the following EPA method(s):

ANAMETRIX I.D.	SAMPLE I.D.	METHOD(S)
8806010-01	87042-5 W-15-MW7	624/8015

RESULTS

See enclosed data sheets, Pages 2 thru 3.

EXTRA COMPOUNDS

See enclosed data sheet, Page 4.

QUALITY ASSURANCE REPORTS

See enclosed data sheet, Page 5.

If there is any more that we can do, please give us a call. Thank you for using ANAMETRIX, INC.

Sincerely,

Burt Sutherland

Burt Sutherland
Laboratory Manager

BWS/dg

ORGANIC ANALYSIS DATA SHEET - EPA METHOD 624/8240

ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 87042-5 W-5-MW7
Matrix : WATER
Date sampled : 05-31-88
Date analyzed: 06-08-88
Dilut. factor: 2

Anametrix I.D. : 8806010-01
Analyst : TC
Supervisor : BWS
Date released : 06-15-88
Instrument ID : F1

CAS #	Compound Name	Reporting Limit (ug/l)	Amount Found (ug/l)
74-87-3	* Chloromethane	20	BRL
75-01-4	* Vinyl Chloride	20	BRL
74-83-9	* Bromomethane	20	BRL
75-00-3	* Chloroethane	20	BRL
75-69-4	* Trichlorofluoromethane	10	BRL
75-35-4	* 1,1-Dichloroethene	10	BRL
76-13-1	# Trichlorotrifluoroethane	10	BRL
67-64-1	**Acetone	40	BRL
75-15-0	**Carbondisulfide	10	BRL
75-09-2	* Methylene Chloride	10	BRL
156-60-5	* Trans-1,2-Dichloroethene	10	BRL
75-34-3	* 1,1-Dichloroethane	10	BRL
78-93-3	**2-Butanone	40	BRL
156-59-2	* Cis-1,2-Dichloroethene	10	BRL
67-66-3	* Chloroform	10	BRL
71-55-6	* 1,1,1-Trichloroethane	10	BRL
56-23-5	* Carbon Tetrachloride	10	BRL
71-43-2	* Benzene	10	300
107-06-2	* 1,2-Dichloroethane	10	BRL
79-01-6	* Trichloroethene	10	BRL
78-87-5	* 1,2-Dichloropropane	10	BRL
75-27-4	* Bromodichloromethane	10	BRL
110-75-8	* 2-Chloroethylvinylether	10	BRL
108-05-4	**Vinyl Acetate	20	BRL
10061-02-6	* Trans-1,3-Dichloropropene	10	BRL
108-10-1	**4-Methyl-2-Pentanone	20	BRL
108-88-3	* Toluene	10	BRL
10061-01-5	* cis-1,3-Dichloropropene	10	BRL
79-00-5	* 1,1,2-Trichloroethane	10	BRL
127-18-4	* Tetrachloroethene	10	BRL
591-78-6	**2-Hexanone	20	BRL
124-48-1	* Dibromochloromethane	10	BRL
108-90-7	* Chlorobenzene	10	BRL
100-41-4	* Ethylbenzene	10	BRL
1330-20-7	**Total Xylenes	10	BRL
100-42-5	**Styrene	10	BRL
75-25-2	* Bromoform	10	BRL
79-34-5	* 1,1,2,2-Tetrachloroethane	10	BRL
541-73-1	* 1,3-Dichlorobenzene	10	BRL
106-46-7	* 1,4-Dichlorobenzene	10	BRL
95-50-1	* 1,2-Dichlorobenzene	10	BRL

CAS #	Surrogate Compounds	Limits	% Recovery
17060-07-0	1,2-Dichloroethane-d4	84-132%	104%
2037-26-5	Toluene-d8	85-124%	102%
460-00-4	p-Bromofluorobenzene	74-116%	89%

* A Method 624 priority pollutant compound (Federal Register, 10/26/84)
** A compound on the U.S. EPA CLP Hazardous Substance List (HSL)
# A compound added by Anametrix, Inc. BRL : Below reporting limit.

ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS
ANAMETRIX, INC. (408) 629-1132

Sample I.D.	: 87042-5 W-15-MW7	Anametrix I.D.	: 8806010-01
Matrix	: WATER	Analyst	: MT
Date sampled	: 05-31-88	Supervisor	: [illegible]
Date anl. TVH	: NA	Date released	: 06-15-88
Date ext. TEH	: 06-03-88	Date ext. TOG	: NA
Date anl. TEH	: 06-08-88	Date anl. TOG	: NA

CAS #	Compound Name	Reporting Limit (ug/l)	Amount Found (ug/l)
	TEH as Diesel	50	190

BRL - Below reporting limit.
TVH - Total Volatile Hydrocarbons is determined by modified EPA 8015 with either headspace or purge and trap.
TEH - Total Extractable Hydrocarbons is determined by modified EPA 8015 with direct injection.
TOG - Total Oil & Grease is determined by Standard Method 503E.
BTEX- Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow CRWQCB Region 2 guidelines.

ORGANICS ANALYSIS DATA SHEET - TENTATIVELY IDENTIFIED COMPOUNDS
ANAMETRIX, INC. (408) 629-1132

Sample I.D.	: 87042-5 W-5-MW7	Anametrix I.D.	: 8806010-01
Matrix	: WATER	Analyst	: TC
Date Sampled	: 05-31-88	Supervisor	: BWS
Analyzed VOA	: 06-08-88	Date Released	: 06-15-88
Dilution VOA	: 1:2		
Analyzed SV	: NA		
Dilution SV	: NA		

	CAS #	Scan#	Volatile Fraction Compound Name	Det. Limit ppb	Amt. Found ppb
1	763-29-1	254	2-methyl-1-pentene	10	10
2	16538-89-9	675	(1-methylpropyl)cyclooctane	10	<10
3	98-82-8	1009	(1-methylethyl)benzene	10	20
4	103-65-1	1087	propylbenzene	10	10
5	824-22-6	1461	2,3-dihydro-4-methyl-1H-indene	10	40
6				10	
7				10	
8				10	
9				10	
10				10	

	CAS #	Scan#	Semivolatile Fraction Compound Name	Det. Limit ppb	Amt. Found ppb
1				10	
2				10	
3				10	
4				10	
5				10	
6				10	
7				10	
8				10	
9				10	
10				10	
11				10	
12				10	
13				10	
14				10	
15				10	
16				10	
17				10	
18				10	
19				10	
20				10	

Tentatively identified compounds are significant chromatographic peaks (TICs) other than priority pollutants. TIC spectra are compared with entries in the National Bureau of Standards mass spectral library. Identification is made by following US EPA guidelines and acceptance criteria. TICs are quantitated by using the area of the nearest internal standard and assuming a response factor of one (1). Values calculated are ESTIMATES ONLY.

ORGANIC ANALYSIS DATA SHEET - EPA METHOD 624/8240

ANAMETRIX, INC. (408) 432-8192

Sample I.D.	: METHOD BLANK	Anametrix I.D.	: 1CB0608V001
Matrix	: WATER	Analyst	: TC
Date sampled	: NA	Supervisor	: BWS
Date analyzed	: 06-08-88	Date released	: 06-15-88
Dilut. factor	: NONE	Instrument ID	: F1

CAS #	Compound Name	Reporting Limit (ug/l)	Amount Found (ug/l)
74-87-3	* Chloromethane	10	BRL
75-01-4	* Vinyl Chloride	10	BRL
74-83-9	* Bromomethane	10	BRL
75-00-3	* Chloroethane	10	BRL
75-69-4	* Trichlorofluoromethane	5	BRL
75-35-4	* 1,1-Dichloroethene	5	BRL
76-13-1	# Trichlorotrifluoroethane	5	BRL
67-64-1	**Acetone	20	24
75-15-0	**Carbondisulfide	5	BRL
75-09-2	* Methylene Chloride	5	BRL
156-60-5	* Trans-1,2-Dichloroethene	5	BRL
75-34-3	* 1,1-Dichloroethane	5	BRL
78-93-3	**2-Butanone	20	BRL
156-59-2	* Cis-1,2-Dichloroethene	5	BRL
67-66-3	* Chloroform	5	BRL
71-55-6	* 1,1,1-Trichloroethane	5	BRL
56-23-5	* Carbon Tetrachloride	5	BRL
71-43-2	* Benzene	5	BRL
107-06-2	* 1,2-Dichloroethane	5	BRL
79-01-6	* Trichloroethene	5	BRL
78-87-5	* 1,2-Dichloropropane	5	BRL
75-27-4	* Bromodichloromethane	5	BRL
110-75-8	* 2-Chloroethylvinylether	5	BRL
108-05-4	**Vinyl Acetate	10	BRL
10061-02-6	* Trans-1,3-Dichloropropene	5	BRL
108-10-1	**4-Methyl-2-Pentanone	10	BRL
108-88-3	* Toluene	5	BRL
10061-01-5	* cis-1,3-Dichloropropene	5	BRL
79-00-5	* 1,1,2-Trichloroethane	5	BRL
127-18-4	* Tetrachloroethene	5	BRL
591-78-6	**2-Hexanone	10	BRL
124-48-1	* Dibromochloromethane	5	BRL
108-90-7	* Chlorobenzene	5	BRL
100-41-4	* Ethylbenzene	5	BRL
1330-20-7	**Total Xylenes	5	BRL
100-42-5	**Styrene	5	BRL
75-25-2	* Bromoform	5	BRL
79-34-5	* 1,1,2,2-Tetrachloroethane	5	BRL
541-73-1	* 1,3-Dichlorobenzene	5	BRL
106-46-7	* 1,4-Dichlorobenzene	5	BRL
95-50-1	* 1,2-Dichlorobenzene	5	BRL

CAS #	Surrogate Compounds	Limits	% Recovery
17060-07-0	1,2-Dichloroethane-d4	84-132%	106%
2037-26-5	Toluene-d8	85-124%	107%
460-00-4	p-Bromofluorobenzene	74-116%	94%

* A Method 624 priority pollutant compound (Federal Register, 10/26/84)

** A compound on the U.S. EPA CLP Hazardous Substance List (HSL)

\# A compound added by Anametrix, Inc. BRL : Below reporting limit.

CHAIN OF CUSTODY RECORD

Anametrix
8805118

Applied GeoSystems
43255 Mission Blvd. Suite B Fremont, CA 94539 (415) 651-1906

SAMPLER (signature): James R. Cline
Phone: (415) 651-1906

LABORATORY: 408 432-8192
Anametrix Lab
2754 Aiello Drive
San Jose, CA 95111
TURNAROUND TIME: 2 weeks
Project Leader: GREG BARCLAY
Phone No. (415) 651-1906

SHIPPING INFORMATION:
Shipper
Address
Date Shipped
Service Used
Airbill No. **Cooler No.**

Relinquished by: (signatures)	Received by: (signatures)	Date	Time
James R. Cline	Greg Barclay	5/25/88	7:30 am
	Lyle Memarzadeh	5/25/88	10:35
	Received for laboratory by: Narine Lyle	5-25-88	12:20

LABORATORY SHOULD SIGN UPON RECEIPT AND RETURN A COPY OF THIS FORM WITH THE LABORATORY RESULTS

Sample No.	Site Identification	Date Sampled	Analyses Requested	Sample Condition Upon Receipt
(4) W-14-MW9	87042-5	5-24-88	TPH, BETX, EPA 624	HCl + Iced Bub.
(4) W-11-MW11	87042-5	5-24-88	TPH, BETX, EPA 624	HCl + Iced ↓

ANAMETRIX, INC.
LABORATORY SERVICES
ENVIRONMENTAL • ANALYTICAL CHEMISTRY
1961 CONCOURSE DRIVE, SUITE E • SAN JOSE, CA 95131 • (408) 432-8192

Greg Barclay
Applied GeoSystems
43255 Mission Blvd., Ste. B
Fremont, CA 94539

June 9, 1988
Work Order Number 8805118
Date Received 05/25/88
Project No. 87042-5

Dear Mr. Barclay:

Two water samples were received for analysis of volatiles by GC/MS, and total volatile hydrocarbons as gasoline by GC, using the following EPA method(s):

ANAMETRIX I.D.	SAMPLE I.D.	METHOD(S)
8805118-01	87042-5 W-14-MW9	624/8015/8020
-02	" W-11-MW1	"

RESULTS

See enclosed data sheets, Pages 2 thru 5.

EXTRA COMPOUNDS

See enclosed data sheet, Page 6.

QUALITY ASSURANCE REPORTS

See enclosed data sheet, Page 7.

If there is any more that we can do, please give us a call. Thank you for using ANAMETRIX, INC.

Sincerely,

Burt Sutherland

Burt Sutherland
Laboratory Director

BWS/dg

ORGANIC ANALYSIS DATA SHEET - EPA METHOD 624/8240
ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 87042-5 W-14-MW9
Matrix : WATER
Date sampled : 05-24-88
Date analyzed: 06-03-88
Dilut. factor: NONE

Anametrix I.D. : 8805118-01
Analyst : TC
Supervisor : BWS
Date released : 06-08-88
Instrument ID : F1

CAS #	Compound Name	Reporting Limit (ug/l)	Amount Found (ug/l)
74-87-3	* Chloromethane	10	BRL
75-01-4	* Vinyl Chloride	10	BRL
74-83-9	* Bromomethane	10	BRL
75-00-3	* Chloroethane	10	BRL
75-69-4	* Trichlorofluoromethane	5	BRL
75-35-4	* 1,1-Dichloroethene	5	BRL
76-13-1	# Trichlorotrifluoroethane	5	BRL
67-64-1	**Acetone	20	BRL
75-15-0	**Carbondisulfide	5	BRL
75-09-2	* Methylene Chloride	5	BRL
156-60-5	* Trans-1,2-Dichloroethene	5	BRL
75-34-3	* 1,1-Dichloroethane	5	BRL
78-93-3	**2-Butanone	20	BRL
156-59-2	* Cis-1,2-Dichloroethene	5	BRL
67-66-3	* Chloroform	5	BRL
71-55-6	* 1,1,1-Trichloroethane	5	BRL
56-23-5	* Carbon Tetrachloride	5	BRL
71-43-2	* Benzene	5	BRL
107-06-2	* 1,2-Dichloroethane	5	BRL
79-01-6	* Trichloroethene	5	BRL
78-87-5	* 1,2-Dichloropropane	5	BRL
75-27-4	* Bromodichloromethane	5	BRL
110-75-8	* 2-Chloroethylvinylether	5	BRL
108-05-4	**Vinyl Acetate	10	BRL
10061-02-6	* Trans-1,3-Dichloropropene	5	BRL
108-10-1	**4-Methyl-2-Pentanone	10	BRL
108-88-3	* Toluene	5	BRL
10061-01-5	* cis-1,3-Dichloropropene	5	BRL
79-00-5	* 1,1,2-Trichloroethane	5	BRL
127-18-4	* Tetrachloroethene	5	BRL
591-78-6	**2-Hexanone	10	BRL
124-48-1	* Dibromochloromethane	5	BRL
108-90-7	* Chlorobenzene	5	BRL
100-41-4	* Ethylbenzene	5	BRL
1330-20-7	**Total Xylenes	5	BRL
100-42-5	**Styrene	5	BRL
75-25-2	* Bromoform	5	BRL
79-34-5	* 1,1,2,2-Tetrachloroethane	5	BRL
541-73-1	* 1,3-Dichlorobenzene	5	BRL
106-46-7	* 1,4-Dichlorobenzene	5	BRL
95-50-1	* 1,2-Dichlorobenzene	5	BRL

CAS #	Surrogate Compounds	Limits	% Recovery
17060-07-0	1,2-Dichloroethane-d4	84-132%	109%
2037-26-5	Toluene-d8	85-124%	102%
460-00-4	p-Bromofluorobenzene	74-116%	98%

* A Method 624 priority pollutant compound (Federal Register, 10/26/84)
** A compound on the U.S. EPA CLP Hazardous Substance List (HSL)
\# A compound added by Anametrix, Inc. BRL : Below reporting limit.

ORGANIC ANALYSIS DATA SHEET - EPA METHOD 624/8240

ANAMETRIX, INC. (408) 432-8192

Sample I.D.	: 87042-5 W-11-MW1	Anametrix I.D.	: 8805118-02
Matrix	: WATER	Analyst	: TC
Date sampled	: 05-24-88	Supervisor	: BWS
Date analyzed	: 06-03-88	Date released	: 06-08-88
Dilut. factor	: NONE	Instrument ID	: F1

CAS #	Compound Name	Reporting Limit (ug/l)	Amount Found (ug/l)
74-87-3	* Chloromethane	10	BRL
75-01-4	* Vinyl Chloride	10	BRL
74-83-9	* Bromomethane	10	BRL
75-00-3	* Chloroethane	10	BRL
75-69-4	* Trichlorofluoromethane	5	BRL
75-35-4	* 1,1-Dichloroethene	5	BRL
76-13-1	# Trichlorotrifluoroethane	5	BRL
67-64-1	**Acetone	20	BRL
75-15-0	**Carbondisulfide	5	BRL
75-09-2	* Methylene Chloride	5	BRL
156-60-5	* Trans-1,2-Dichloroethene	5	BRL
75-34-3	* 1,1-Dichloroethane	5	BRL
78-93-3	**2-Butanone	20	BRL
156-59-2	* Cis-1,2-Dichloroethene	5	BRL
67-66-3	* Chloroform	5	BRL
71-55-6	* 1,1,1-Trichloroethane	5	BRL
56-23-5	* Carbon Tetrachloride	5	BRL
71-43-2	* Benzene	5	74
107-06-2	* 1,2-Dichloroethane	5	BRL
79-01-6	* Trichloroethene	5	BRL
78-87-5	* 1,2-Dichloropropane	5	BRL
75-27-4	* Bromodichloromethane	5	BRL
110-75-8	* 2-Chloroethylvinylether	5	BRL
108-05-4	**Vinyl Acetate	10	BRL
10061-02-6	* Trans-1,3-Dichloropropene	5	BRL
108-10-1	**4-Methyl-2-Pentanone	10	BRL
108-88-3	* Toluene	5	8
10061-01-5	* cis-1,3-Dichloropropene	5	BRL
79-00-5	* 1,1,2-Trichloroethane	5	BRL
127-18-4	* Tetrachloroethene	5	BRL
591-78-6	**2-Hexanone	10	BRL
124-48-1	* Dibromochloromethane	5	BRL
108-90-7	* Chlorobenzene	5	BRL
100-41-4	* Ethylbenzene	5	13
1330-20-7	**Total Xylenes	5	32
100-42-5	**Styrene	5	BRL
75-25-2	* Bromoform	5	BRL
79-34-5	* 1,1,2,2-Tetrachloroethane	5	BRL
541-73-1	* 1,3-Dichlorobenzene	5	BRL
106-46-7	* 1,4-Dichlorobenzene	5	BRL
95-50-1	* 1,2-Dichlorobenzene	5	BRL

CAS #	Surrogate Compounds	Limits	% Recovery
17060-07-0	1,2-Dichloroethane-d4	84-132%	107%
2037-26-5	Toluene-d8	85-124%	104%
460-00-4	p-Bromofluorobenzene	74-116%	96%

* A Method 624 priority pollutant compound (Federal Register, 10/26/84)

** A compound on the U.S. EPA CLP Hazardous Substance List (HSL)

\# A compound added by Anametrix, Inc. BRL : Below reporting limit.

ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS
ANAMETRIX, INC. (408) 629-1132

Sample I.D.	: 87042-5 W-14-MW9	Anametrix I.D.	: 8805118-01
Matrix	: WATER	Analyst	:
Date sampled	: 05-24-88	Supervisor	:
Date anl. TVH	: 06-03-88	Date released	: 06-08-88
Date ext. TEH	: NA	Date ext. TOG	: NA
Date anl. TEH	: NA	Date anl. TOG	: NA

CAS #	Compound Name	Reporting Limit (ug/l)	Amount Found (ug/l)
71-43-2	Benzene	0.5	BRL
108-88-3	Toluene	1	1
100-41-4	Ethylbenzene	1	BRL
1330-20-7	Total Xylenes	1	BRL
	TVH as Gasoline	50	BRL

BRL - Below reporting limit.
TVH - Total Volatile Hydrocarbons is determined by modified EPA 8015 with either headspace or purge and trap.
TEH - Total Extractable Hydrocarbons is determined by modified EPA 8015 with direct injection.
TOG - Total Oil & Grease is determined by Standard Method 503E.
BTEX- Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow CRWQCB Region 2 guidelines.

ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS
ANAMETRIX, INC. (408) 629-1132

Sample I.D.	: 87042-5 W-11-MW1	Anametrix I.D.	: 8805118-02
Matrix	: WATER	Analyst	:
Date sampled	: 05-24-88	Supervisor	:
Date anl. TVH	: 06-03-88	Date released	: 06-08-88
Date ext. TEH	: NA	Date ext. TOG	: NA
Date anl. TEH	: NA	Date anl. TOG	: NA

CAS #	Compound Name	Reporting Limit (ug/l)	Amount Found (ug/l)
71-43-2	Benzene	0.5	90
108-88-3	Toluene	1	5
100-41-4	Ethylbenzene	1	15
1330-20-7	Total Xylenes	1	25
	TVH as Gasoline	50	240

BRL - Below reporting limit.
TVH - Total Volatile Hydrocarbons is determined by modified EPA 8015 with either headspace or purge and trap.
TEH - Total Extractable Hydrocarbons is determined by modified EPA 8015 with direct injection.
TOG - Total Oil & Grease is determined by Standard Method 503E.
BTEX- Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow CRWQCB Region 2 guidelines.

ORGANICS ANALYSIS DATA SHEET - TENTATIVELY IDENTIFIED COMPOUNDS
ANAMETRIX, INC. (408) 629-1132

Sample I.D.	: 87042-5 W-11-MW1	Anametrix I.D.	: 8805118-02
Matrix	: WATER	Analyst	: JC
Date Sampled	: 05-24-88	Supervisor	: BDS
Analyzed VOA	: 06-03-88	Date Released	: 06-08-88
Dilution VOA	: NONE		
Analyzed SV	: NA		
Dilution SV	: NA		

	CAS #	Scan#	Volatile Fraction Compound Name	Det. Limit ppb	Amt. Found ppb
1	78-78-4	147	2-methylbutane	5	20
2	107-83-5	179	2-methylpentane	5	10
3	96-37-7	252	methylcyclopentane	5	5
4	611-14-3	1111	1-ethyl-2-methylbenzene	5	5
5	95-63-6	1196	1,2,4-trimethylbenzene	5	10
6				5	
7				5	
8				5	
9				5	
10				5	

	CAS #	Scan#	Semivolatile Fraction Compound Name	Det. Limit ppb	Amt. Found ppb
1				10	
2				10	
3				10	
4				10	
5				10	
6				10	
7				10	
8				10	
9				10	
10				10	
11				10	
12				10	
13				10	
14				10	
15				10	
16				10	
17				10	
18				10	
19				10	
20				10	

Tentatively identified compounds are significant chromatographic peaks (TICs) other than priority pollutants. TIC spectra are compared with entries in the National Bureau of Standards mass spectral library. Identification is made by following US EPA guidelines and acceptance criteria. TICs are quantitated by using the area of the nearest internal standard and assuming a response factor of one (1). Values calculated are ESTIMATES ONLY.

ORGANIC ANALYSIS DATA SHEET - EPA METHOD 624/8240

ANAMETRIX, INC. (408) 432-8192

Sample I.D.	: METHOD BLANK	Anametrix I.D.	: 1CB0603V000
Matrix	: WATER	Analyst	: TC
Date sampled	: NA	Supervisor	: BWS
Date analyzed	: 06-03-88	Date released	: 06-08-88
Dilut. factor	: NONE	Instrument ID	: F1

CAS #	Compound Name	Reporting Limit (ug/l)	Amount Found (ug/l)
74-87-3	* Chloromethane	10	BRL
75-01-4	* Vinyl Chloride	10	BRL
74-83-9	* Bromomethane	10	BRL
75-00-3	* Chloroethane	10	BRL
75-69-4	* Trichlorofluoromethane	5	BRL
75-35-4	* 1,1-Dichloroethene	5	BRL
76-13-1	# Trichlorotrifluoroethane	5	BRL
67-64-1	**Acetone	20	20
75-15-0	**Carbondisulfide	5	BRL
75-09-2	* Methylene Chloride	5	6
156-60-5	* Trans-1,2-Dichloroethene	5	BRL
75-34-3	* 1,1-Dichloroethane	5	BRL
78-93-3	**2-Butanone	20	BRL
156-59-2	* Cis-1,2-Dichloroethene	5	BRL
67-66-3	* Chloroform	5	BRL
71-55-6	* 1,1,1-Trichloroethane	5	BRL
56-23-5	* Carbon Tetrachloride	5	BRL
71-43-2	* Benzene	5	BRL
107-06-2	* 1,2-Dichloroethane	5	BRL
79-01-6	* Trichloroethene	5	BRL
78-87-5	* 1,2-Dichloropropane	5	BRL
75-27-4	* Bromodichloromethane	5	BRL
110-75-8	* 2-Chloroethylvinylether	5	BRL
108-05-4	**Vinyl Acetate	10	BRL
10061-02-6	* Trans-1,3-Dichloropropene	5	BRL
108-10-1	**4-Methyl-2-Pentanone	10	BRL
108-88-3	* Toluene	5	BRL
10061-01-5	* cis-1,3-Dichloropropene	5	BRL
79-00-5	* 1,1,2-Trichloroethane	5	BRL
127-18-4	* Tetrachloroethene	5	BRL
591-78-6	**2-Hexanone	10	BRL
124-48-1	* Dibromochloromethane	5	BRL
108-90-7	* Chlorobenzene	5	BRL
100-41-4	* Ethylbenzene	5	BRL
1330-20-7	**Total Xylenes	5	BRL
100-42-5	**Styrene	5	BRL
75-25-2	* Bromoform	5	BRL
79-34-5	* 1,1,2,2-Tetrachloroethane	5	BRL
541-73-1	* 1,3-Dichlorobenzene	5	BRL
106-46-7	* 1,4-Dichlorobenzene	5	BRL
95-50-1	* 1,2-Dichlorobenzene	5	BRL

CAS #	Surrogate Compounds	Limits	% Recovery
17060-07-0	1,2-Dichloroethane-d4	84-132%	105%
2037-26-5	Toluene-d8	85-124%	110%
460-00-4	p-Bromofluorobenzene	74-116%	103%

* A Method 624 priority pollutant compound (Federal Register, 10/26/84)
** A compound on the U.S. EPA CLP Hazardous Substance List (HSL)
\# A compound added by Anametrix, Inc. BRL : Below reporting limit.

April 27, 1988
87042-5S

Mr. Jim Kerr
Exxon Company, U.S.A.
Environmental Engineering
P.O. Box 4415
Houston, Texas 77210-4415

Subject: Status Letter on Exxon Station No. 7-3006, 720 High Street in Oakland, California.

Mr. Kerr:

As you requested, this letter summarizes our conversation on April 14, 1988, regarding the present status of work at the subject site. The proposal for the Phase III subsurface environmental investigation, dated June 12, 1987, was previously submitted to Mr. Kent Sanderson of Exxon Company, U.S.A. A construction contract (No. 87770938) was issued on June 16, 1987, for this work.

In addition to the work outlined in the proposal, we recommend that one offsite well be installed to help evaluate the extent of hydrocarbon contamination in the ground water in the interpreted downgradient direction from the former underground storage tanks. Further, as you requested, we will install a monitoring well in the upgradient direction of the product tanks to monitor background ground-water conditions. As we discussed during our meeting on April 14, 1988, we recommend that water in the proposed monitoring wells be sampled and tested for hydrocarbon contaminants and purgeable volatile organics. Water in the other monitoring wells at the site should be sampled and tested for hydrocarbon contamination.

Presently, the initial construction contract amount of $27,876 has been exceeded due mainly to the installation of two additional 4-inch-diameter monitoring wells, which were requested by Exxon but were not included in the original construction contract, and additional time spent to obtain an encroachment permit from the City of Oakland to authorize access for drilling equipment to install the proposed offsite monitoring well. We estimate the cost for constructing the two proposed monitoring wells, sampling the nine existing and proposed wells at the site, and preparing a report summarizing both the data collected during this investigation and the proposed work will be approximately $16,500.

Enclosed with this letter is a copy of the proposal and budget for installing and sampling two 4-inch-diameter monitoring wells, sampling the seven existing monitoring wells at the site, and preparing a report. Please do not hesitate to call if you have any questions.

Sincerely,
Applied GeoSystems

Greg Barclay
Project Geologist