Chevron

Chevron

July 22, 1994

Chevron U.S.A. Products Company
2410 Camino Ramon
San Ramon, CA 94583
P.O. Box 5004
San Ramon, CA 94583-0804

Marketing Department
Phone 510 842 9500

Ms. Eva Chu
Alameda County Health Care Services
Department of Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94501

Re: Former Chevron Service Station #9-2621
7667 Amador Valley Boulevard, Dublin, CA

Dear Ms. Chu:

Enclosed is the Comprehensive Site Evaluation and Proposed Future Action Plan dated June 23, 1994, prepared by our consultant Weiss Associates for the above referenced site.

As we discussed, Chevron is currently in the process of evaluating a large number of our sites to determine what activities are necessary to move them to a "no further action" or "closure" point. The enclosed document summarizes all data gathered to date and proposes scientifically based remedial actions to guide all future work at this site.

We would like to schedule a meeting with yourself and any other individuals or agencies you feel appropriate to discuss this document. I will contact you by telephone during the next week to set up such a meeting.

If you have any questions or comments, please do not hesitate to call me at (510) 842-8134 or Kenneth Kan at (510) 842-8752.

Sincerely,
CHEVRON U.S.A. PRODUCTS COMPANY

Mark A. Miller
Site Assessment and Remediation Engineer

Enclosure

cc: Mr. Kenneth Kan, Office
Mr. Kevin Graves, RWQCB - Bay Area
Ms. B.C. Owen

Mr. Jerry Lemm
J.L. Lemm & Associates
5506 Sunol Boulevard, Suite 203
Pleasanton, CA 94566-7779

File: 9-2621 WP1

11^05 - 12^29 : 1.3

Weiss Associates

COMPREHENSIVE SITE EVALUATION AND PROPOSED FUTURE ACTION PLAN

at

Former Chevron Service Station 9-2621
7667 Amador Valley Boulevard
Dublin, California

prepared for

Chevron U.S.A. Products Company
P.O. Box 5004
San Ramon, California 94583-0804

check -
① any SS collected from B-10 at capillarige?
② aquifer confined? Borings 1-4 to 10' depth did not indicate water in boring
③ check again near B-10 - want MW at this location (to 20' depth)
④ MW-4 not necessarily DG, rather could be cross gradient if flow is to E, SE. Check other pot gradient calc.
⑤ investigate silty sand, silty gravel layer, which may be the water bearing zone

June 23, 1994

Weiss Associates

COMPREHENSIVE SITE EVALUATION AND PROPOSED FUTURE ACTION PLAN

at

Former Chevron Service Station 9-2621
7667 Amador Valley Boulevard
Dublin, California

prepared by

Weiss Associates
5500 Shellmound Street
Emeryville, CA 94608

Cynthia N. Okano
Staff Engineer

Alison W. Watts
Senior Staff Geologist

Weiss Associates work for Chevron U.S.A. Products Company, P.O. Box 5004, San Ramon, California, was conducted under my supervision. To the best of my knowledge, the data contained herein are true and accurate and satisfy the specified scope of work prescribed by the client for this project. The data, findings, recommendations, specifications, or professional opinions were prepared solely for the use of Chevron U.S.A. in accordance with generally accepted professional engineering and geologic practice. We make no other warranty, either expressed or implied, and are not responsible for the interpretation by others of these data.

Eric M. Nichols June 23, 1994
Registered Civil Engineer
No. 42695

APPENDICES

CONTENTS

SUMMARY

The Chevron site at 7667 Amador Valley Boulevard, Dublin, California is a former Chevron Service Station. The station was abandoned in 1976, and all of the aboveground structures, three underground storage tanks, one waste oil tank, and associated product piping were removed from the site. During the removal of the underground storage tanks, 15-20 gallons of gasoline were spilled into the tank pit. The product was removed the next day. The site is currently developed as a medical and optometry clinic. Subsurface investigation began in 1992 and although total petroleum hydrocarbons as gasoline (TPH-G) and benzene were detected in ground water immediately downgradient of the spill location, no hydrocarbons have been detected in an offsite, downgradient well. Data collected during subsurface investigations demonstrate that:

- ***All source areas have been removed from the site:*** The 15-20 gallons of gasoline were removed from the tank pit, and it was concluded that the spill was the only source of hydrocarbons as no leaks were observed during inspection of the tanks.

- ***The site has been remediated to the extent feasible:*** The underground tanks and product piping were removed from the site. Analysis of soil samples collected from the vicinity of the former underground tanks and dispenser islands indicate that no significant hydrocarbon concentrations remain in the soil.

- ***The plume is contained by natural processes, and no significant plume migration has occurred.*** Samples collected from the offsite well located downgradient of the site indicate that the plume has not migrated offsite beyond Amador Valley Boulevard, although hydrocarbons have been present in the site subsurface for at least 18 years.

Therefore, we submit that:

- The remaining hydrocarbons present at the site are contained in the vicinity of the site, and do not present a threat to human health or to the quality of the surrounding aquifer; and

- All economically and technically feasible measures have been taken to mitigate the contaminant plume.

And we request that the Alameda County Department of Environmental Health (ACDEH) allow a gradual reduction and subsequent suspension of well sampling, and consider establishing a non-attainment zone encompassing the eastern portion of this site.

APPENDICES

INTRODUCTION

At the request of Chevron U.S.A (Chevron), Weiss Associates has prepared this site evaluation for former Chevron Service Station 9-2621, located at 7667 Amador Valley Boulevard, Dublin, California. The objective of this evaluation is to: 1) provide a comprehensive summary of all investigative and remedial actions performed at the site to date; 2) determine whether the site meets the Regional Water Quality Control Board - San Francisco Bay Region (RWQCB) criteria for establishment of a non-attainment zone; and 3) outline a recommended future action plan. This summary presents background on the site investigation and remediation, discusses each RWQCB criterion for establishing a non-attainment zone, and outlines the proposed future action plan. The site-specific information presented in this evaluation is compiled from the reports listed in the reference section.

SITE HISTORY

SITE SETTING

The former service station is located in a mixed commercial and residential area at the intersection of Starward Drive and Amador Valley Boulevard in Dublin, California (Appendix A). The site is currently developed as the Amador Valley Medical Clinic and an optometry clinic. The surrounding topography generally slopes eastward and the site is about 350 ft above mean sea level (msl). Dublin Creek, located about three quarters of a mile south of the site, flows to the southwest into the San Francisco Bay.

A survey of wells within one mile of the site identified 27 wells used for domestic, municipal, industrial, and ground water monitoring purposes (Appendix A). Only two of the wells located

potentially downgradient of the site are water supply wells, and both of these wells are located more than one-half mile from the site. It is not known if either of these supply wells are now in use.

SITE INVESTIGATION

1976 Underground Storage Tank Removal and Station Demolition: As part of the service station demolition in 1976, three underground tanks were removed (Appendix A). No leaks were observed in the tanks, however, all of the product was not extracted from the tanks prior to removal, and about 15 to 20 gallons of gasoline spilled into the approximately 8 ft deep tank pit. The spilled product was removed the next day. All pump islands and associated product piping, and the waste oil tank were removed during the demolition.

1992 Site Assessment: In July 1992, RESNA conducted a site assessment for the Amador Valley Medical Clinic, the present occupants of the site. The assessment included a review of geologic and hydrogeologic information and a spill location survey. No spill sites were located within a one-half mile radius of the site.

1992 Subsurface Investigation: In October 1992, RESNA conducted a subsurface investigation for the Amador Valley Medical Clinic. RESNA drilled borings B-1, B-2, B-3, and B-4 in the vicinity of the former underground tanks and dispenser islands (Appendix A). B-4 was installed at an angle to collect a sample from beneath the existing site building. Soil samples from about 10 ft depth from borings B-1 and B-4 contained up to 0.018 ppm benzene, up to 24 ppm total petroleum hydrocarbons as diesel (TPH-D), and between 11 and 65 ppm TPH-G. All analytical results for soil are included in Appendix B.

1993 Subsurface Investigation: In March 1993, Chevron retained Pacific Environmental Group, Inc. (PEG) to drill six temporary borings, HP-1 through HP-6 (Appendix A). No hydrocarbons, volatile organic compounds (VOCs), or semi-volatile organic compounds (SVOCs) were detected in soil samples collected at about 5 ft depth from boring HP-1, near the former waste oil tank, and no hydrocarbons were detected in soil from the about 5 ft depth from boring HP-2 through HP-4 (Appendix B). Soil samples were not collected from HP-5 and HP-6. Benzene concentrations ranged from 4 to 8 parts per billion (ppb) in ground water samples collected from HP-2 through HP-6.

Ground water samples collected from borings HP-4, HP-5, and HP-6 contained 4,500, 730, and 5,500 ppb TPH-G, respectively. All analytical results for ground water are included in Appendix B.

1993 Additional Subsurface Investigation: In September 1993, RESNA drilled borings B-5, B-6, B-7, and B-8, as part of an additional subsurface investigation for Chevron (Appendix A). The borings were converted to monitoring wells MW-1 through MW-4. No benzene or TPH-G were detected in soil or ground water samples from the four borings (Appendix B).

1994 Additional Subsurface Investigation: In March 1994, RESNA drilled borings B-9 and B-10. Boring B-9 was converted to monitoring well MW-5. Boring B-10 was converted to a temporary well, and a ground water sample was collected. TPH-G was detected in water collected from MW-5 at a concentration of 770 ppb, and benzene was detected at 1.4 ppb. TPH-G was detected in the water sample collected from B-10 at a concentration of 23,000 ppb, and benzene was detected at 120 ppb. This sample was collected from a temporary well, and these analytic results are less reliable than data collected from a properly developed monitoring well. MW-1 through MW-4 were re-sampled at this time and no hydrocarbon constituents were detected in any of these wells (Appendix B).

REMEDIAL ACTIONS

The underground storage tanks, pump islands, associated product piping, and the 15-20 gallons of product spilled into the tank pit during the 1976 station demolition have been removed. The absence of detectable hydrocarbons in MW-4 indicates that any remaining hydrocarbons are contained in the vicinity of the site, and have not migrated to MW-4 in the 18 years since the potential source of hydrocarbons was removed.

EVALUATION OF NON-ATTAINMENT ZONE CRITERIA AND FUTURE ACTION PLAN

DISCUSSION OF NON-ATTAINMENT ZONE CRITERIA

The configuration of the remaining hydrocarbon plume and the site hydrogeologic and chemical conditions indicate that this site is a candidate for reduced action and establishment of a non-attainment zone. In the following section, each criterion specified by the RWQCB for establishment of a non-attainment zone is considered for the subject site.

Criteria a. The Discharger has demonstrated (e.g., pump tests, ground water monitoring, transport modeling) and will verify (e.g., ground water monitoring) that no significant pollution migration will occur due to hydrogeologic or chemical characteristics.

Site Hydrogeology: The site is underlain from ground surface to the total explored depth of 19 ft by clayey silt and silty clay, with lesser amounts of clayey sand and sandy clay (Appendix C). The sediments are predominantly low permeability clayey material, except the silty gravel and gravelly sand identified in boring log B-6 (MW-2) and silty sand intervals encountered in B-7 (MW-3) and B-9 (MW-5). The 5-ft thick silty gravel and gravelly sand encountered in B-6 occurs between about 13.5 and 18.5 ft below ground surface (bgs) and is over- and underlain by clayey silt. The silty sand encountered in B-7 occurs primarily above the water table, from about 5 to 8 ft bgs, and the silty sand encountered in B-9 occurs from 12.5 ft bgs to the total depth of the boring at 17 ft bgs. Because most of the borings drilled were terminated between about 10 and 12 ft bgs, it is unclear whether these higher permeability sediments are laterally extensive beneath the site.

Site Hydrology: The depths to water measured in wells MW-1, MW-2, MW-3, MW-4 and MW-5 range from about 5 to 8 ft and the interpreted ground water flow direction is to the east-southeast (Appendix B). The hydraulic gradient is about 0.007 ft per ft. could aquifer be confined?

Plume Location: Hydrocarbons in ground water reside in the eastern area of the site, and extend offsite towards Amador Valley Boulevard. No hydrocarbons have been detected in downgradient well

MW-4, cross-gradient well MW-1, or upgradient wells MW-2 and MW-3. No floating hydrocarbons have ever been detected at the site.

Plume Stability: Hydrocarbons have been present in ground water at this site since at least 1976, however, no hydrocarbons have been detected in downgradient well MW-4. The predominantly low permeability, clay-rich sediments have probably contained the plume, slowing migration sufficiently to allow natural attenuation mechanisms, including sorption, dispersion, volatilization through the unsaturated zone, and/or chemical and biological activity to degrade the hydrocarbons beneath the site.

A more detailed description of the hydrogeology and ground water chemistry at the site can be found in the subsurface investigation reports listed in the reference section.

Criteria b. Adequate source removal and/or isolation is undertaken to limit future migration of pollutants to ground water.

Source Removal: The apparent source of hydrocarbons was the gasoline spill into the tank pit during the 1976 service station demolition. The gasoline was removed and the underground tanks were inspected and reported to be in good condition. No hydrocarbons have been detected at concentrations greater than 65 ppm in soil collected from any of the 13 onsite borings.

Criteria c. Dissolved phase cleanup is not appropriate or cost-effective due to limited water quality impacts or human health risks.

Excavation: The underground tanks and product piping were removed from the site. Analysis of soil samples collected from the vicinity of the former underground tanks and dispenser islands indicate that hydrocarbons are not present in the soil at concentrations exceeding 65 parts per million (ppm). No free-floating product has been detected in any of the site borings or wells.

Ground Water and Soil Vapor Extraction: Ground water extraction and treatment combined with soil vapor extraction and treatment is a common and highly effective technology for controlling and remediating ground water hydrocarbon plumes. Ground water/soil vapor extraction is initially very effective at reducing plume mass and concentrations. However, it has been demonstrated that

hydrocarbon concentrations in low permeability sediments eventually approach "asymptotic" conditions, apparently because the hydrocarbon mass extracted by the system is balanced by hydrocarbon diffusion and desorption from low permeability materials in the plume. The low permeability, clay-rich sediments encountered at this site make the site unsuitable for ground water or soil vapor extraction.

Air Sparging: Air sparging might theoretically enhance clean-up by encouraging biological degradation of hydrocarbons in both the unsaturated and saturated zones. However, the apparently slow rate of migration of the plume indicates that sufficient bioactivity is already occurring at the site.

In summary, results for the site to date indicate that the remediation which has been performed at the site has removed as much of the hydrocarbons as is technically and economically feasible.

Criteria d. An acceptable plan is submitted for containing and managing the remaining human health and environmental risks, if any, posed by residual soil and ground water pollution.

Our plan for containing and managing the remaining risks posed by residual hydrocarbons at this site includes: 1) notification of the existence of a residual plume to the Alameda County Flood Control and Water Conservation District (Zone 7); 2) continued ground water monitoring for hydrocarbons within, and downgradient of, the plume for a limited period of time; and, 3) a contingency plan to be implemented if monitoring indicates significant downgradient migration and/or increasing concentrations in the plume.

Zone 7 Notification: Zone 7 regulates the installation and permitting of drinking water wells in this area. Notification will ensure that the potential risks from the remaining hydrocarbon plume are considered before a water supply well permit is issued for this site, or for adjacent sites.

Our proposed ground water monitoring schedule and contingency plan is presented in the future action plan below.

FUTURE ACTION PLAN

Continued Ground Water Monitoring: Currently, the five wells at the site are monitored quarterly for hydrocarbons. Our plan for ensuring that compliance with cleanup goals will be maintained at the downgradient plume boundary is to:

1) Discontinue sampling wells MW-1 through MW-3. These wells are located upgradient or cross-gradient of the former source areas, and samples collected from these wells have not contained any detectable hydrocarbon concentrations.

2) Monitor and sample wells MW-4 and MW-5 quarterly through 1995 and annually in 1996 to confirm the results of recent sampling. Since a hydrocarbon plume has been present at this site for at least 18 years, and has not migrated to the vicinity of MW-4 in that time, it is unlikely that extended additional monitoring will contribute any significant additional information.

Contingency Plan: "Baseline" and "trigger" concentrations have been defined for well MW-4 and MW-5. Should monitoring indicate that "trigger" concentrations are met or exceeded, a contingency plan for re-initiating ground water monitoring will go into effect. Details of the contingency plan are presented in Appendix D.

CONCLUSIONS

Data collected at the site demonstrate the following points;

- The source of hydrocarbons was a 1976 product spill into the tank pit; the gasoline was promptly removed;
- The spill affected low permeability, capillary-fringe sediments in a localized area only;
- The sediments encountered beneath the site are predominantly low permeability, clayey material.
- No cost-effective technologies exist that might significantly accelerate cleanup of this plume.
- Hydrocarbons have been present in the subsurface at this site for at least 18 years. In that time the contaminant plume has not migrated to MW-4, located approximately 150 feet downgradient of the site. If flow is E, SE, how is MW-4 downgradient? It's more cross gradient

This site is a potential candidate for establishing a non-attainment zone. Setting the downgradient plume boundary as the point of compliance with maximum concentration levels (MCLs) will allow natural processes to continue to contain and slowly degrade the plume. The proposed monitoring and contingency plan will ensure that the risks posed by the residual plume are contained and managed.

We request that the ACDEH and the RWQCB accept that drinking water standards cannot be attained at this site, and consider redefining the zone of compliance to exclude the onsite plume, contained in the eastern portion of this property. We will continue to monitor the non-attainment zone boundary at downgradient well MW-4 for one more year to further confirm the historical stability of the plume location.

REFERENCE LIST

RESNA Industries Inc., July 1992. Environmental Assessment, Amador Valley Medical Clinic, 7667 Amador Valley Boulevard, Dublin, California, 4 pp. plus figures and attachments.

RESNA Industries Inc., October 1992. Subsurface Investigation, Amador Valley Medical Clinic, 7667 Amador Valley Boulevard, Dublin, California, 4 pp. plus figures and attachments.

Pacific Environmental Group, Inc., April 1993. Subsurface Investigation, Former Chevron Service Station 9-2621, 7667 Amador Valley Boulevard, Dublin, California, 4 pp. plus figures and attachments.

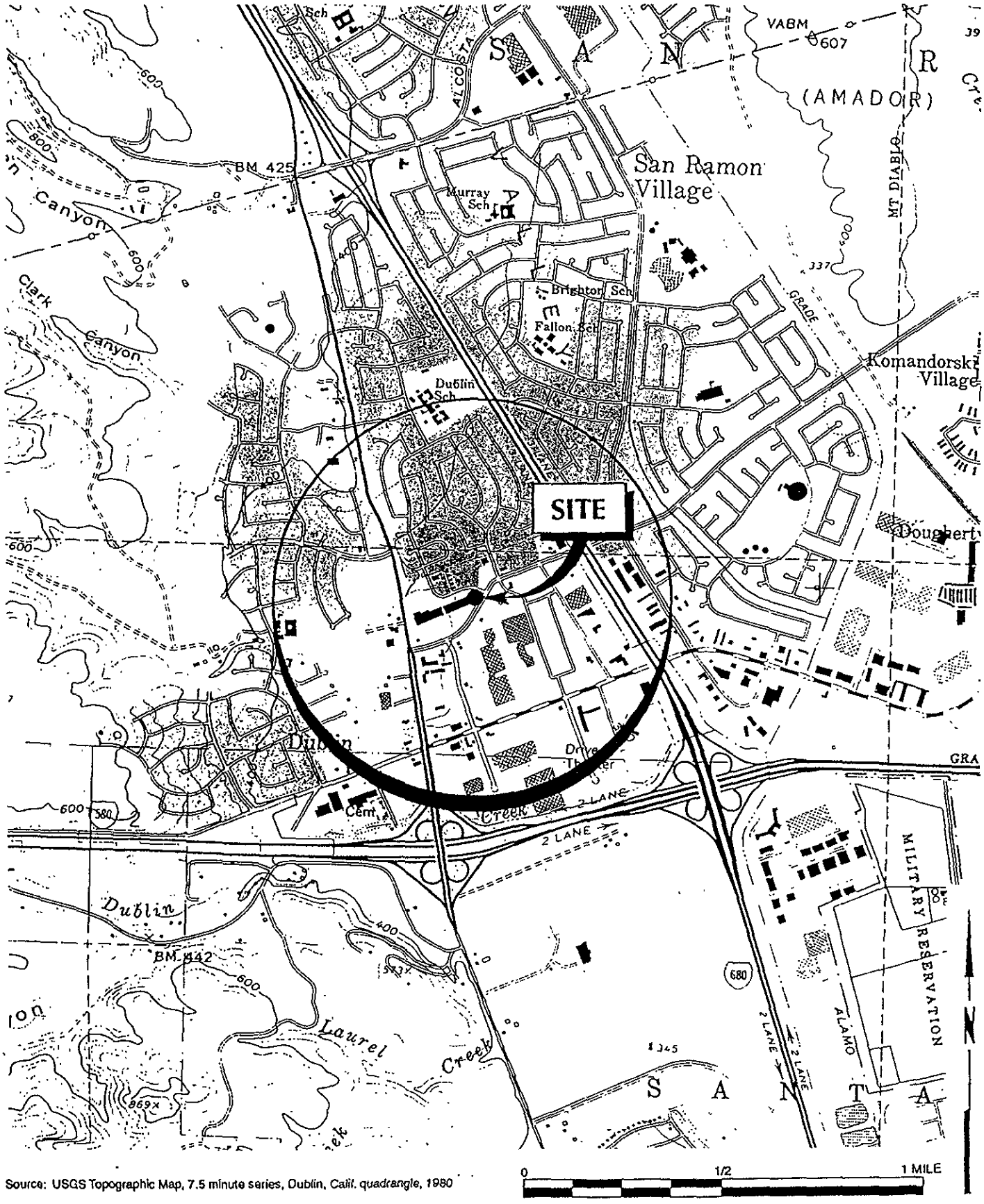
RESNA Industries Inc., November 1993. Additional Subsurface Environmental Investigation, Former Chevron Service Station 9-2621, 7667 Amador Valley Boulevard, Dublin, California, 7 pp. plus figures and attachments.

RESNA Industries Inc., April 1994. Additional Subsurface Environmental Investigation, Former Chevron Service Station 9-2621, 7667 Amador Valley Boulevard, Dublin, California, 7 pp. plus figures and attachments.

RWQCB, June 1994. Ground Water Basin Plan Amendments, 23 pp. plus tables and attachments.

APPENDIX A

FIGURES



Source: USGS Topographic Map, 7.5 minute series, Dublin, Calif. quadrangle, 1980

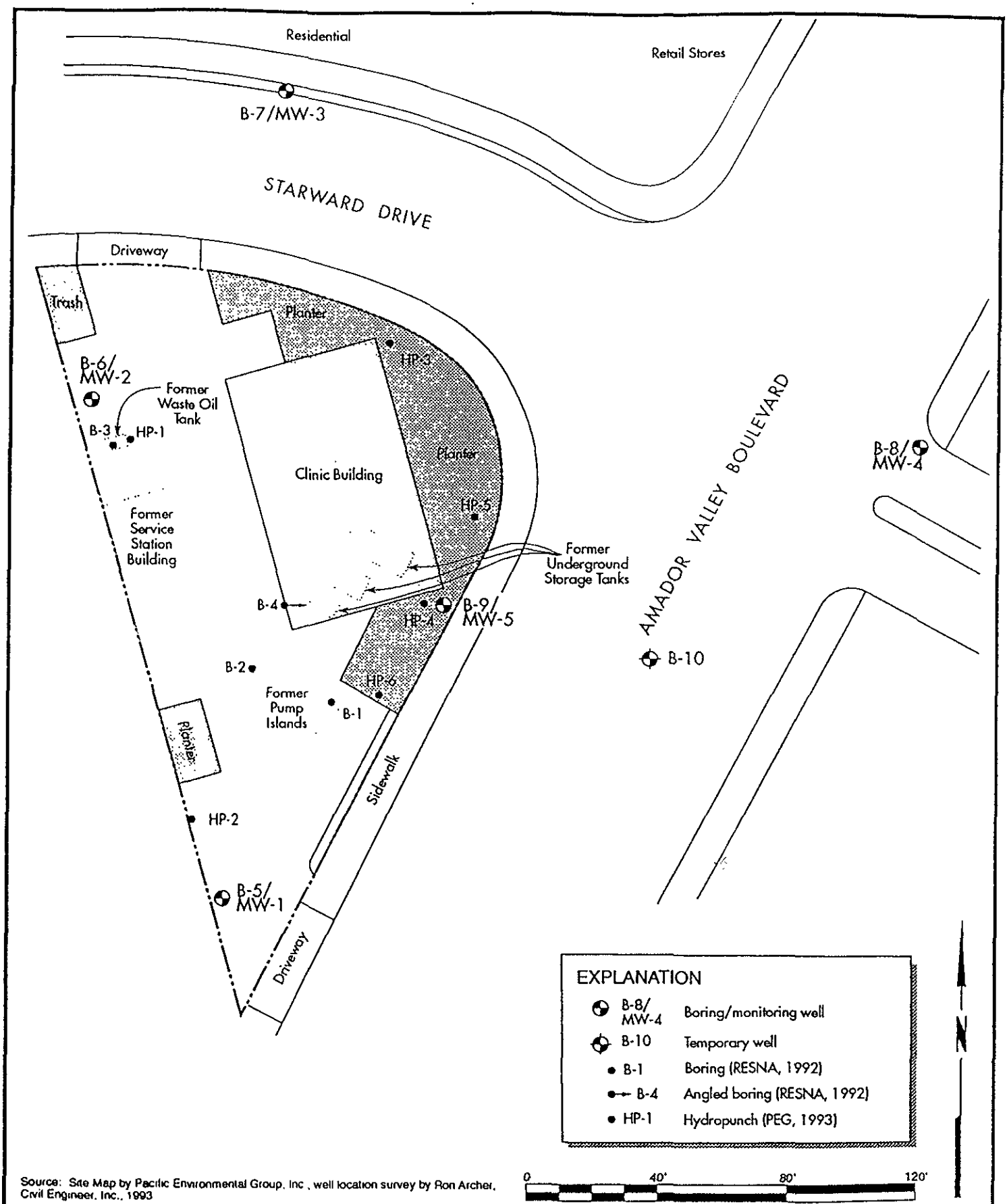
RESNA

PROJECT NO. 170111.01 | 6/93

SITE VICINITY MAP

Amador Valley Medical Center
7667 Amador Valley Boulevard
Dublin, California

PLATE 1



Source: Site Map by Pacific Environmental Group, Inc., well location survey by Ron Archer, Civil Engineer, Inc., 1993

RESNA

PROJECT NO. 170111.02

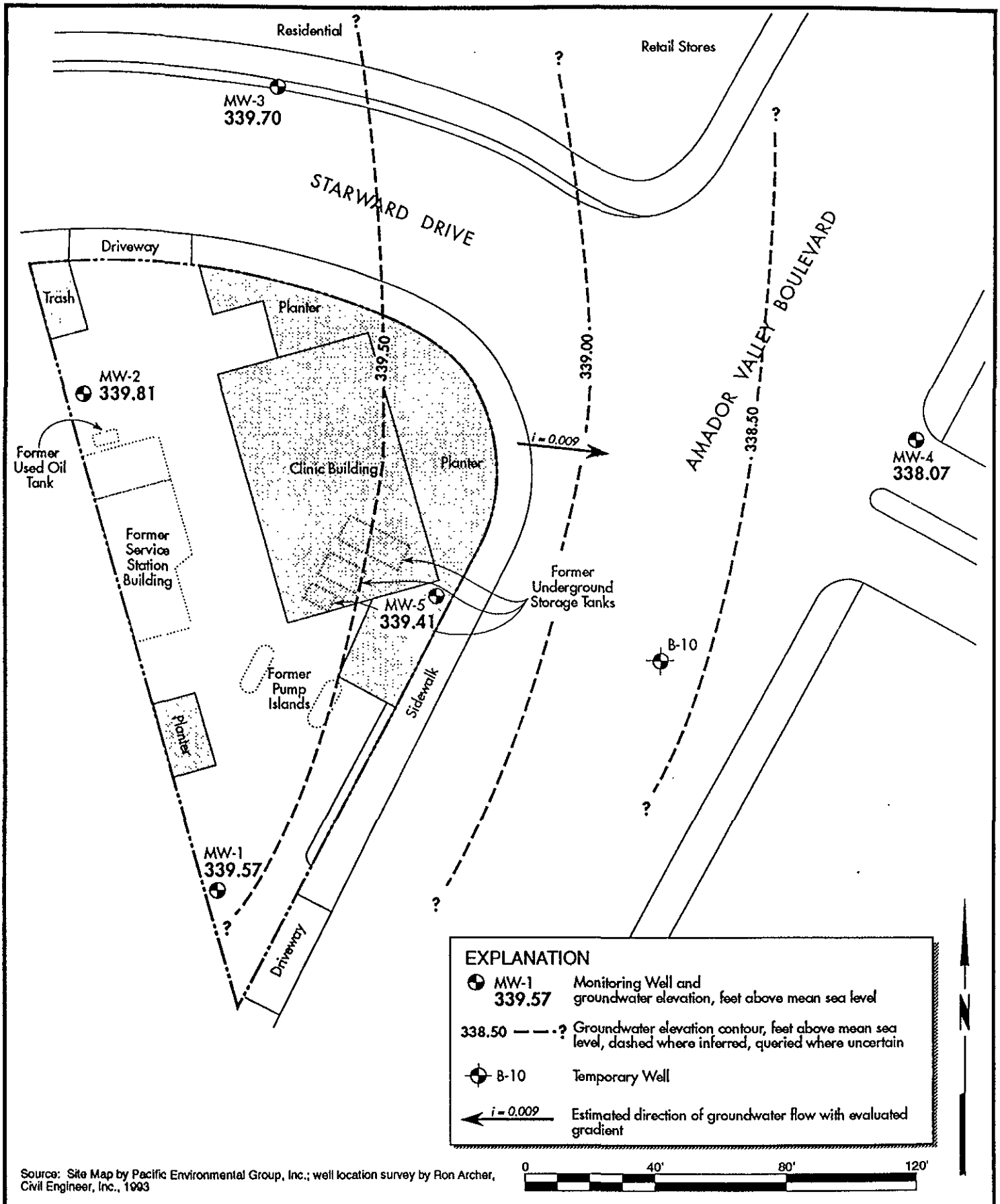
1/94

GENERALIZED SITE PLAN

Amador Valley Medical Center
7667 Amador Valley Boulevard
Dublin, California

PLATE

2



Source: Site Map by Pacific Environmental Group, Inc.; well location survey by Ron Archer, Civil Engineer, Inc., 1993

RESNA

PROJECT NO. 170111.01 | 4/94

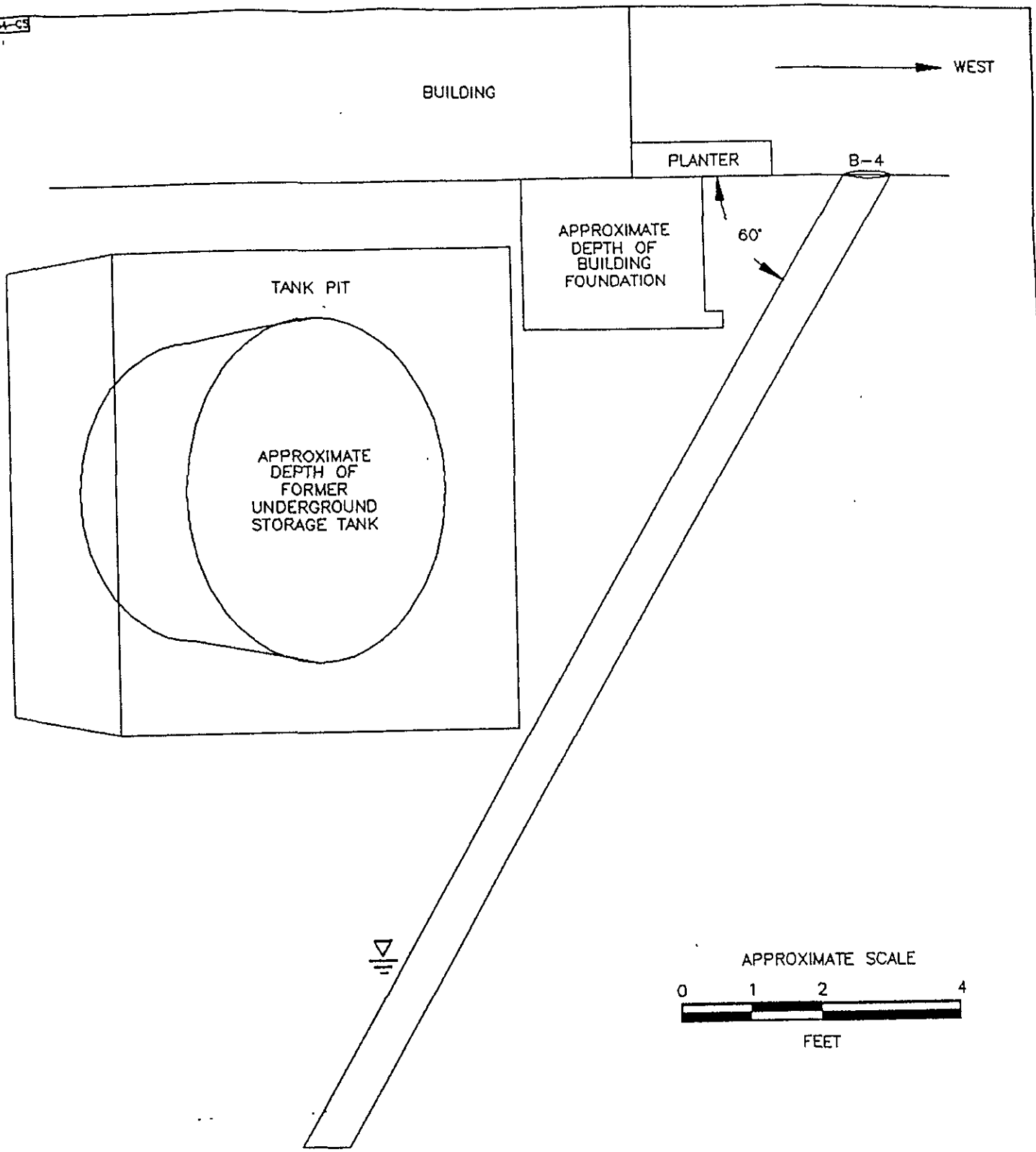
POTENTIOMETRIC SURFACE MAP

March 11, 1994

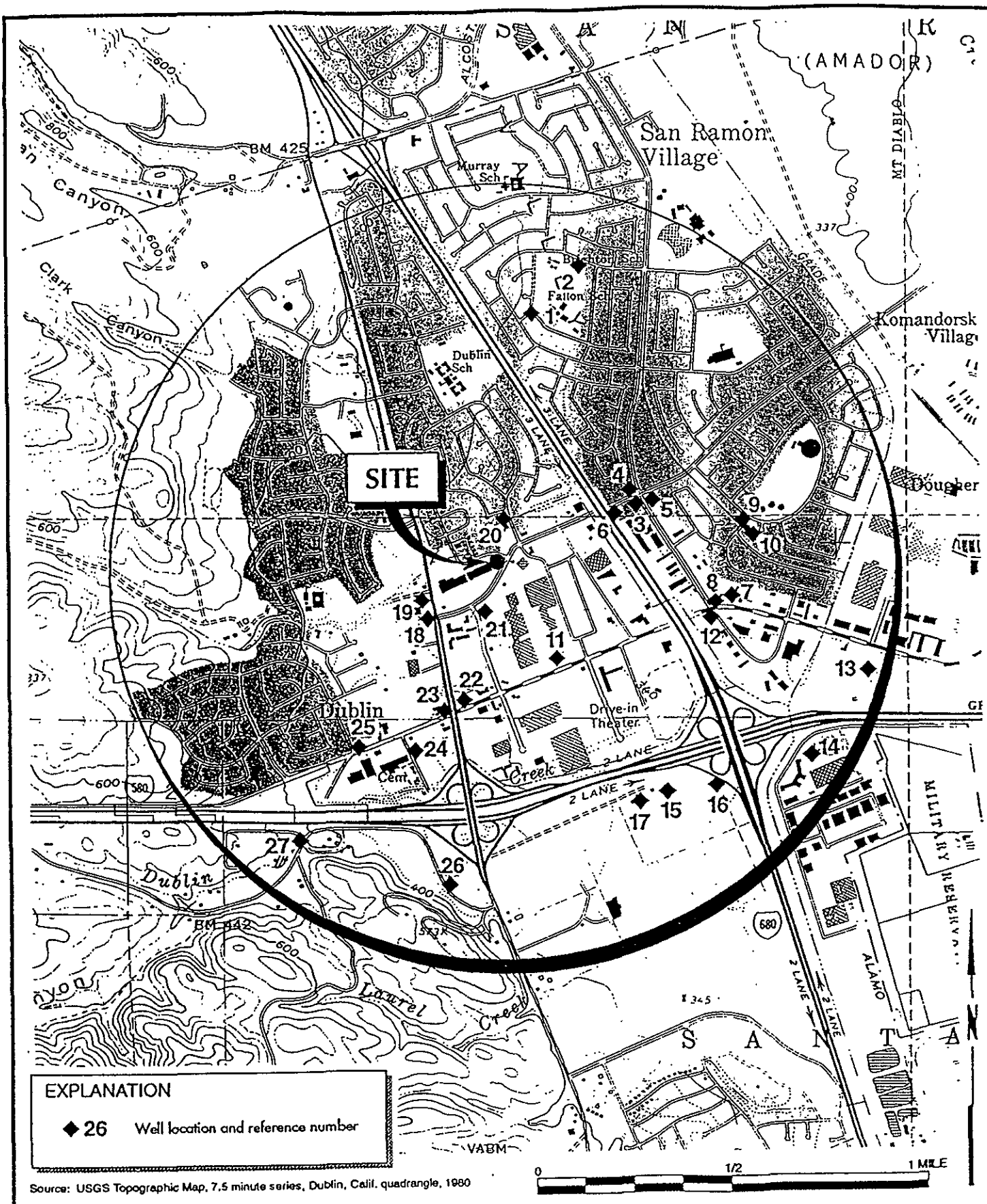
Amador Valley Medical Center
7667 Amador Valley Boulevard
Dublin, California

PLATE
3

F9234-CS



	CROSS SECTION OF ANGLED BORING B-4	PLATE
	AMADOR VALLEY MEDICAL CENTER	3
	7667 AMADOR VALLEY BOULEVARD	
PROJECT NO. F9234.11	DUBLIN, CALIFORNIA	



Source: USGS Topographic Map, 7.5 minute series, Dublin, Calif. quadrangle, 1980

RESNA

WATER WELL LOCATION MAP

Amador Valley Medical Center
7667 Amador Valley Boulevard
Dublin, California

PROJECT NO. 170111.01

10/93

Inventory of Wells Located in Township T2S Range R1W Section 36, County Alameda

	Owner	Owner's Address	Well Location	Year Drilled	Use
	Volk - McLain Co.		2S/1W - 36 E1	1960	Electric
1	Volk - McLain Co.	P.O. Box 187, Danville	corner of Aldea St. & Larkdale	1960	Domestic
2	Zone 7 Water Agency	5997 Parkside Drive	S of Brighton Dr W. of Bristol Rd	1977	Monitoring
	Volk - McLain Co.		2S/1W - 36 J 1	1960	Electric
(lls) 3.	Shell Oil Co.	1390 Willow Pass Rd, Concord	7194 Amador Valley Blvd	1988	Monitoring
lls) 4	Unocal Corporation		7375 Amador Valley Blvd	1988	Monitoring
(lls) 3	Shell Oil Co	1390 Willow Pass Rd, Concord	7194 Amador Valley Blvd.	1989	Monitoring
lls) 5	Mobil Oil		7197 Village Parkway	1989	Monitoring
lls) 6	Richard E. Dodge (Dutch Pride Dairy)	1120 Walker Avenue, Walnut Creek	7400 Amador Valley Blvd	1990	Monitoring
(lls)	ARCO Products Co		2S/1W - 36P	1991	Monitoring
(lls)	ARCO Products Co		Station No. 6041 (2S/1W - 36P)	1992	Monitoring

Inventory of Wells Located in Township T3S Range R1W Section 1, County Alameda

	Owner	Owner's Address	Well Location	Year Drilled	Use
7	Volk-McLain Co	7024 Melrose Ave., Los Angeles	100' N of Old Highway 50, 4000' E of San Ramon	1960	Domestic
	Volk-McLain Co		3S/1W - 1B1	1959	
	Volk McLain Co.		3S/1W-1B1	1960	Test Well
8	Valley Community Service Dist	Dublin	3S/1W-1B2 behind VCSD building	1972	Municipal
9	Zone 7 Water Agency	5997 Parkside Dr., Pleasanton	16' northeast of Flood Control E-4	391' NW of Maple 1976	Mon.
10	Alameda Co. Flood Control	1440 Concannon Blvd., Livermore	N side flood control Creek off Maple	1979	Test Well
11	Montgomery Ward	Dublin	3S/1W 1E	1989	Borings
12	Chevron		7240 Dublin Blvd.	1988	Monitoring
12	Chevron		7240 Dublin Blvd.	1990	Vadose
	Volk-McLain Co.	7890 Oxbow Lane, Pleasanton	2000' E of State 21, 100' N Country Club Rd	1961	Municipal
13	Dublin San Ramon Service Dist.	7051 Dublin Blvd, Dublin	3S/1W-1H2, ½ block E of Plant	1985	
14	Dublin San Ramon Service Dist		Near Johnson Dr, 0.1 mi S of I 580	1984	Monitoring
15	Mozart Development Co.	435 Tasso St, Palo Alto	0.3 mi W of I680, 239' S of I 580	1985	
16	Livermore Amador Valley Managment Agency		SW corner of 580 & 680	1979	Cathodic
17	Acme Drilling Service	832 Cleveland St, Oakland	3S/1W-1	1949	Well for Cattle
wells)	Shell Oil Company		3S/1W-1C	1989	Monitoring
wells)	Target Stores		3S/1W-1C	1991	Monitoring
wells)	ENEA Properties		3S/1W-1F	1993	Monitoring
	Bedford Properties		3S/1W-1M	1991	Monitoring
wells)	Stoneridge Chrysler		3S/1W-1N	1991	Monitoring
wells)	Clorox Corp		3S/1W-1R	1990/1992	Monitoring

Inventory of Wells Located in Township T3S Range R1W Section 2, County Alameda

	Owner	Owner's Address	Well Location	Year Drilled	Use
18	Zone 7 Water Agency	5997 Parkside Drive, Pleasanton	W of San Ramon Rd., N of Amador Valley	1976	Monitoring
19	Public Storage	2570 San Ramon Valley, San Ramon	7436 San Ramon, Dublin	1990	Destruction
20	Dougherty Regional Fire Authority		7494 Donohue Drive Dublin	1990/92	Monitoring
	R. Banke	Dublin	1 mi E of 50, turn left on N Walnut Creek	1950	Irrigation
	Murray Township School		.2 mi E of Don's, across from Standard Oil	1951	Domestic
(11) 21	Texaco		7840 Amador Valley Rd	1988	Monitoring
(11) 22	Chevron	P.O. Box 5004, San Ramon	7007 San Ramon Rd.	1990/91	Monitoring
(11) 23	Unocal Corporation	2000 Crow Canyon Rd, San Ramon	11976 Dublin Blvd (SS#3992)	1990	Monitoring
24	Dublin Historical	Donalon Way, Dublin	same	1979	Domestic
25	Arnold Fund	45 Quail Court, Walnut Creek	11746 Dublin Blvd	1983	
(11s) 26	Harbor View Investment	4 Embarcadero Center	11920 Dublin Canyon Rd	1985	
	Joe Martin, Dublin		3S/1W-2R1		
	Banke		1st house on left going into Dublin for Hayward Hill, Dublic Canyon Rd	1948	
	Spring Valley Water Co		3S/1W-2B	1912	
27	CA Dept of Transportation	150 Oak St, San Francisco	I-580 @ Post Mile 21.88	1975	Boring
	Joe Martin	Dublin	3S/1W-2R SE Qtr		
(wells)	Exxon Company		3S/1W-2A	1992	Monitoring
(wells)	Unocal Corporation	SS # 5901	3S/1W-2H	1992	Monitoring

Inventory of Wells Located in Township T2S Range R1W Section 35, County Alameda

Owner	Owner's Address	Well Location	Year Drilled	Use
City of Dublin		T2S/R1W-35K	1991	Irrigation

APPENDIX B

TABLES

TABLE 1
SOIL ANALYSES DATA
for
AMADOR VALLEY MEDICAL CLINIC

Sample Number	TPHg (ppm)	Benzene (ppm)	Toluene (ppm)	Ethyl-benzene (ppm)	Total xylenes (ppm)	TPHd (ppm)	TOG (mg/kg)
B1-1	<1.0	<0.005	<0.005	<0.005	<0.005	<1.0	NR
B1-2	11	0.018	0.054	0.036	0.016	24	NR
B2-1	<1.0	<0.005	<0.005	<0.005	<0.005	<1.0	NR
B2-2	<1.0	<0.005	<0.005	<0.005	<0.005	<1.0	NR
B3-1	<1.0	<0.005	<0.005	<0.005	<0.005	NR	<50
B3-2	<1.0	<0.005	<0.005	<0.005	<0.005	NR	<50
B4-1	<1.0	<0.005	<0.005	<0.005	<0.005	<1.0	NR
B4-2	65	<0.005	0.14	0.086	0.032	1.2	NR
B4-3	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	NR

ppm = Parts per million = mg/kg = milligrams per kilogram.
< 0.005 Not detected. Number following < indicates applicable laboratory detection limit.
NR Analysis not requested.

Table 1
Soil Analytical Data
Total Petroleum Hydrocarbons
(TPH as Gasoline, BTEX Compounds, and TPH as Diesel)

Former Chevron Service Station 9-2621
7667 Amador Valley Boulevard at Starward Drive
Dublin, California

Sampling Date: March 17, 1993

Boring Number	Depth (feet)	TPH as Gasoline (ppm)	Benzene (ppm)	Toluene (ppm)	Ethylbenzene (ppm)	Xylenes (ppm)	TPH as Diesel (ppm)
HP-1	4-6	ND	ND	ND	ND	ND	ND
HP-2	4-5	ND	ND	ND	ND	ND	NA
HP-3	4-5	ND	ND	ND	ND	ND	NA
HP-4	4-5	ND	ND	ND	ND	ND	NA

ppm = Parts per million
ND = Not detected
NA = Not analyzed
For detection limits see certified analytical reports.

Table 2
Soil Analytical Data
Halogenated Hydrocarbons (VOCs) and
Semi-Volatile Organic Compounds (SVOCs)

Former Chevron Service Station 9-2621
7667 Amador Valley Boulevard at Starward Drive
Dublin, California

Boring Number	Date Sampled	Depth (feet)	VOCs (All compounds) (ppm)	SVOCs (All compounds) (ppm)
HP-1	03/17/93	4-6	ND	ND

ppm = Parts per million
ND = Not detected

Table 3
Soil Analytical Data
Metals

Former Chevron Service Station 9-2621
7667 Amador Valley Boulevard at Starward Drive
Dublin, California

Boring Number	Sample Date	Depth (feet)	Cadmium (ppm)	Chromium (ppm)	Lead (ppm)	Nickel (ppm)	Zinc (ppm)
HP-1	03/17/93	4-6	2.5	14	ND	25	45

ppm = Parts per million
ND = Not detected

RESNA
Working To Restore Nature

Table 2

SOIL ANALYTICAL RESULTS
Former Chevron Service Station No. 9-2621
7667 Amador Valley Boulevard
Dublin, California

Sample	Date	TPHg	B	T	E	X	TOC
S-3.5-B5	9/21/93	<1	<0.005	0.006	<0.005	<0.015	NA
S-6.5-B5	9/21/93	<1	<0.005	0.006	<0.005	<0.015	NA
S-5.3-B6	9/21/93	<1	<0.005	<0.005	<0.005	<0.015	1,800
S-4.7-B7	9/21/93	<1	<0.005	<0.005	<0.005	<0.015	NA
S-3.5-B8	9/21/93	<1	<0.005	<0.005	<0.005	<0.015	NA
S-6.3-B8	9/21/93	<1	<0.005	<0.005	<0.005	<0.015	NA

Notes:

All results in parts per million (ppm)

S = Soil sample
6.5 = Sample depth in feet
B-1 = Boring 1
TPHg = Total petroleum hydrocarbons as gasoline.
TOC = Total organic carbon
B = Benzene
T = Toluene
E = Ethylbenzene
X = Total xylenes
< = Less than indicated detection limit established by the laboratory

RESNA
Working to Restore Nature

Table 2

SOIL ANALYTICAL RESULTS
Former Chevron Service Station 9-2621
7667 Amador Valley Boulevard
Dublin, California

Sample	Date	TPHg	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TOC
S-6.0-B9	3/12/94	<1	<0.005	<0.005	<0.005	<0.015	NA
S-3.0-B10	3/12/94	<1	<0.005	<0.005	<0.005	<0.015	NA
S-5.0-B10	3/12/94	<1	<0.005	<0.005	<0.005	<0.015	13,000

where was dtw, why wasn't S 7.0 B10 analyze, PID had reading

Notes:

All results in parts per million (ppm)

S	=	Soil sample
6.5	=	Sample depth in feet
B9	=	Boring B-9
TPHg	=	Total petroleum hydrocarbons as gasoline.
TOC	=	Total organic carbon
<	=	Less than indicated detection limit established by the laboratory
NA	=	Sample not analyzed

Table 4
Groundwater Analytical Data
Total Petroleum Hydrocarbons
(TPH as Gasoline, BTEX Compounds, and TPH as Diesel)

Former Chevron Service Station 9-2621
7667 Amador Valley Boulevard at Starward Drive
Dublin, California

Boring Number	Date Sampled	TPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethylbenzene (ppb)	Xylenes (ppb)	TPH as Diesel (ppb)
HP-1	03/17/93	ND	ND	ND	ND	ND	ND
HP-2	03/17/93	ND	5	9	1	10	NA
HP-3	03/17/93	85	6	15	3	18	NA
HP-4	03/17/93	4,500	8	17	23	15	NA
HP-5	03/17/93	730	4	7	0.6	5	NA
HP-6	03/17/93	5,500	5	ND	2	8	NA

ppm = Parts per billion
ND = Not detected
NA = Not analyzed
For detection limits see certified analytical reports.

Table 5
Groundwater Analytical Date
Halogenated Hydrocarbons (VOCs) and
Semi-Volatile Organic Compounds (SVOCs)

Former Chevron Service Station 9-2621
7667 Amador Valley Boulevard at Starward Drive
Dublin, California

Boring Number	Date Sampled	VOCs (All Compounds) (ppb)	SVOCs (All Compounds) (ppb)
HP-1	03/17/93	ND	ND

ppb = Parts per billion
ND = Not detected

Table 3

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GROUNDWATER ANALYTICAL RESULTS
Former Chevron Service Station No. 9-2621
7667 Amador Valley Boulevard
Dublin, California

Sample Number	Date Sampled	TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes
W-6-MW1	9/23/93	<50	<0.5	<0.5	<0.5	<1.5
W-8-MW2	9/23/93	<50	<0.5	<0.5	<0.5	<1.5
W-7-MW3	9/23/93	<50	<0.5	<0.5	<0.5	<1.5
W-5-MW4	9/23/93	<50	<0.5	<0.5	<0.5	<1.5
TB-LB	9/23/93	<50	<0.5	<0.5	<0.5	<1.5

Notes:

All results in parts per billion (ppb)

W = Water sample
5 = Water level elevation
MW1 = Monitoring Well MW-1
TPHg = Total petroleum hydrocarbons as gasoline.
< = Less than detection limit established by the laboratory
TB-LB = Travel blank

RESNA
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Table 3

GROUNDWATER ANALYTICAL RESULTS
Former Chevron Service Station 9-2621
7667 Amador Valley Boulevard
Dublin, California

Sample Number	Date Sampled	Ethyl-TPHg	Total Benzene	Toluene	Benzene	Xylenes
B-10	3/4/94	23000	120	180	1500	730
MW1	3/11/94	<50	<0.5	<0.5	<0.5	<0.5
MW2	3/11/94	<50	<0.5	<0.5	<0.5	<0.5
MW3	3/11/94	<50	<0.5	<0.5	<0.5	<0.5
MW4	3/11/94	<50	<0.5	<0.5	<0.5	<0.5
MW5	3/11/94	770	1.4	37	5.6	10
TB-LB	3/4/94	<50	<0.5	<0.5	<0.5	<0.5
TB-LB	3/11/94	<50	<0.5	<0.5	<0.5	<0.5

Notes:

All results in parts per billion (ppb)

W	=	Water sample
5	=	Water level elevation
MW1	=	Monitoring Well MW-1
TPHg	=	Total petroleum hydrocarbons as gasoline.
<	=	Less than detection limit established by the laboratory
TB-LB	=	Travel blank

RESNA
Working To Restore Nature

Table 1

GROUNDWATER ELEVATION DATA
Former Chevron Service Station No. 9-2621
7667 Amador Valley Boulevard
Dublin, California

WELL NUMBER	DATE MEASURED	TOC	DTW	ELEV./P.S.
MW-1	9-23-93	346.73	6.62	340.11
MW-2	9-23-93	348.41	8.11	340.30
MW-3	9-23-93	347.14	7.04	340.10
MW-4	9-23-93	343.52	5.12	338.40

Notes:

TOC = Top-of-Casing elevation feet above sea level (feet)
DTW = Depth to Water (feet)
ELEV./P.S. = Groundwater/Potentiometric Surface elevation above mean sea level (feet)

APPENDIX C

BORING LOGS

RESNA EXPLORATORY BORING LOG

Project Name: Amador Valley Medical Clinic
7667 Amador Valley Boulevard
Dublin, CA 94568

Project Number: F9234.11

Boring No. B-1

Date Drilled: 10/15/92

Logged By: S. Fontaine

Depth (ft.)	Sample No.	Blows/Foot 140 ft/lbs.	Unified Soil Classification	SOIL DESCRIPTION	Water Level	OVM Reading (ppm)	Well Construction
				3" Asphalt			Asphalt
1				7" gravelly sand base			
2			CL	SILTY CLAY with trace fine sand, gray to black, damp; cuttings			
3				SILTY CLAY, trace fine sand, light gray, damp; cuttings			
4			CL	SILTY CLAY, trace fine to medium sand, medium brown, damp, moderate plasticity, stiff		0.0	
5	B1-1	34					
6							
7				Product odor in cuttings			Bentonite
8							
9							
10	B1-2	42	CL	SILTY CLAY with 5% course sand/fine gravel, medium brown, damp, moderate plasticity, very stiff, strong product odor		over 9999	
11				Bottom of boring at 10.5 feet			
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							

REVIEWED BY R.G./C.E.G.

RESNA EXPLORATORY BORING LOG

Project Name: Amador Valley Medical Clinic
7667 Amador Valley Boulevard
Dublin, CA 94568

Project Number: F9234.11

Boring No. B-2

Date Drilled: 10/15/92

Logged By: S. Fontaine

Depth (ft.)	Sample No.	Blows/Foot 140 ft/lbs.	Unified Soil Classification	SOIL DESCRIPTION	Water Level	OVM Reading (ppm)	Well Construction
				3" Asphalt			Asphalt
				6" gravelly sand base			
1			CL	SILTY CLAY with 10% fine sand, medium to dark brown, slightly damp, moderate plasticity, very stiff			
2							
3							
4							
5	B2-1	43		Grading to less sand		37.7	
6							
7				*Slight product odor*			Bentonite
8							
9							
10	B2-2	35	CL	SILTY CLAY no sand, dark brown with gray mottling, damp, moderate plasticity, very stiff, slight odor		45.6	
11				Bottom of boring at 10.5 feet			
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							

REVIEWED BY R.G./C.E.G.

RESNA EXPLORATORY BORING LOG

Project Name: Amador Valley Medical Clinic
7667 Amador Valley Boulevard
Dublin, CA 94568

Project Number: F9234.11

Boring No. B-3

Date Drilled: 10/15/92

Logged By: S. Fontaine

Depth (ft.)	Sample No.	Blows/Foot 140 ft/lbs.	Unified Soil Classification	SOIL DESCRIPTION	Water Level	OVM Reading (ppm)	Well Construction
				3" Asphalt			Asphalt
				7" gravelly sand base			
1–4			SC	CLAYEY SAND with silt, fine to medium grained, dark to medium brown, granular; fill			
5	B3-1	27	CL	SILTY CLAY, 5% fine sand, medium brown with gray mottling, slightly damp, stiff		75.6	Bentonite
10	B3-2	25	CL	SILTY CLAY, trace fine sand, medium brown, damp, stiff		107	
				Bottom of boring at 10.5 feet			

REVIEWED BY R.G./C.E.G.

RESNA EXPLORATORY BORING LOG

Project Name: Amador Valley Medical Clinic
7667 Amador Valley Boulevard
Dublin, CA 94568

Project Number: F9234.11

Boring No. B-4

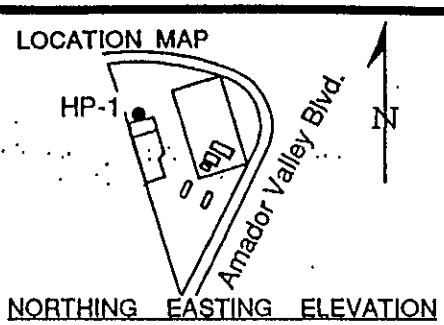
Date Drilled: 10/15/92

Logged By: S. Fontaine

Depth (ft.)	Sample No.	Blows/Foot 140 ft/lbs.	Unified Soil Classification	SOIL DESCRIPTION	Water Level	OVM Reading (ppm)	Well Construction
				4" Asphalt			Asphalt
1				6" gravelly sand base			
2			CL	SILTY CLAY with 10-15% fine sand, dark gray to black, granular; cuttings			
3				SILTY CLAY with 5% fine sand, light gray, granular; cuttings			
4							
5	B4-1	42	CL	SILTY CLAY, trace fine sand, medium brown with some gray mottling, damp, moderate plasticity, very stiff; rootholes		81.5	
6							
7				Gray, product odor			
8							
9							
10							
11	B4-2	30	CL	SILTY CLAY, trace fine sand, dark brown to black, damp, moderate plasticity, very stiff, very strong product odor		over 9999	Bentonite
12							
13							
14							
15							
16	B4-3	26	CL	SILTY CLAY, medium brown, very moist, moderate plasticity; stiff		35.6	
17				Bottom of boring at 16. 5 feet (angled)			
18							
19							
20							
21							

REVIEWED BY R.G./C.E.G.

LOCATION MAP



NORTHING EASTING ELEVATION

PACIFIC ENVIRONMENTAL GROUP, INC.

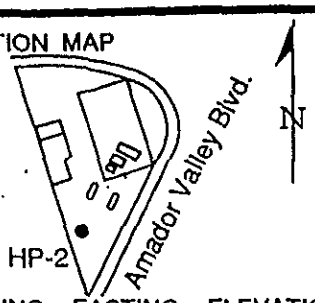
BORING NO. HP-1
PAGE 1 OF 1

PROJECT NO. 325-35.01
LOGGED BY: CM
DRILLER: ECA
DRILLING METHOD: HAMMER
SAMPLING METHOD: 1" CORE
CASING TYPE: NA
SLOT SIZE: NA
GRAVEL PACK: NA

CLIENT: CHEVRON U.S.A.
DATE DRILLED: 3-17-93
LOCATION: 7667 Amador Valley
HOLE DIAMETER: 2"
HOLE DEPTH: 10'
WELL DIAMETER: NA
WELL DEPTH: NA
CASING STICKUP: NA

WELL COMPLETION	MOISTURE CONTENT	PID	PENETRATION (BLOWS/FT)	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	GRAPHIC	SOIL TYPE	LITHOLOGY / REMARKS
Back Filled With Cement				1					2" ASPHALT; BASEROCK
				2				SC	CLAYEY SAND: olive; 20-25% clay; no product odor.
				3					
	Mst	0		4					
				5					
				6					
				7				CL	SILTY CLAY: olive; 10-15% silt; moderate to high plasticity; no product odor.
				8					@8-10': olive gray; high plasticity; <5% silt.
	Mst	0		9					
				10					BOTTOM OF BORING AT 10'
				11					
				12					
				13					
				14					
				15					
				16					
				17					
				18					
				19					
				20					
				21					
				22					

LOCATION MAP



NORTHING EASTING ELEVATION

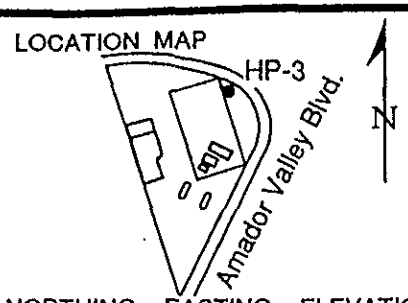
PACIFIC ENVIRONMENTAL GROUP, INC.

BORING NO. HP-2
PAGE 1 OF 1

PROJECT NO. 325-35.01
LOGGED BY: CM
DRILLER: ECA
DRILLING METHOD: HAMMER
SAMPLING METHOD: 3/4" CORE
CASING TYPE: NA
SLOT SIZE: NA -
GRAVEL PACK: NA

CLIENT: CHEVRON U.S.A.
DATE DRILLED: 3-17-93
LOCATION: 7667 Amador Valley
HOLE DIAMETER: 1 1/2"
HOLE DEPTH: 10'
WELL DIAMETER: NA
WELL DEPTH: NA
CASING STICKUP: NA

WELL COMPLETION	MOISTURE CONTENT	PID	PENETRATION (BLOWS/FT)	DEPTH (FEET)	RECOVERY / SAMPLE INTERVAL	GRAPHIC	SOIL TYPE	LITHOLOGY / REMARKS
								2" ASPHALT; BASEROCK
Back Filled With Cement				1			SC	CLAYEY SAND: olive; 15-25% clay; no product odor.
				2				
				3				
				4				
	Mst	0		5				
				6				
				7			CL	SILTY CLAY: dark gray; 10-15% silt; moderate plasticity; no product odor.
				8				
				9				
	Mst	0		10				BOTTOM OF BORING AT 10'
				11				
				12				
				13				
				14				
				15				
				16				
				17				
				18				
				19				
				20				
				21				
				22				



PACIFIC ENVIRONMENTAL GROUP, INC.

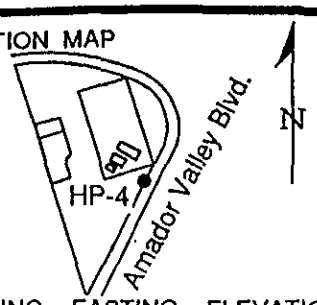
BORING NO. HP-3
PAGE 1 OF 1

PROJECT NO. 325-35.01
LOGGED BY: CM
DRILLER: ECA
DRILLING METHOD: HAMMER
SAMPLING METHOD: 3/4" CORE
CASING TYPE: NA
SLOT SIZE: NA
GRAVEL PACK: NA

CLIENT: CHEVRON U.S.A.
DATE DRILLED: 3-17-93
LOCATION: 7667 Amador Valley
HOLE DIAMETER: 1 1/2"
HOLE DEPTH: 10'
WELL DIAMETER: NA
WELL DEPTH: NA
CASING STICKUP: NA

WELL COMPLETION	MOISTURE CONTENT	PID	PENETRATION (BLOWS/FT)	DEPTH (FEET)	RECOVERY / SAMPLE INTERVAL	GRAPHIC	SOIL TYPE	LITHOLOGY / REMARKS
Back Filled With Cement				0				Planter Topsoil
				1			FL	FILL: gravel.
				2			SC	CLAYEY SAND: olive; 20-25% clay; fine sand; no product odor.
	Mst	0		3				
				4				
				5				
				6				
				7			CL	CLAY: olive gray; high plasticity; 5-10% silt; no product odor.
				8				
				9				
				10				BOTTOM OF BORING AT 10'
				11				
				12				
				13				
				14				
				15				
				16				
				17				
				18				
				19				
				20				
				21				
				22				

LOCATION MAP



NORTHING EASTING ELEVATION

PACIFIC ENVIRONMENTAL GROUP, INC.

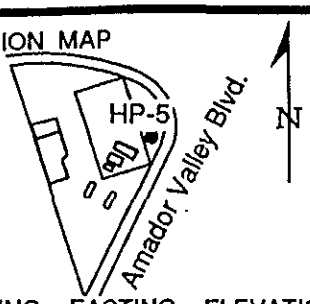
BORING NO. HP-4
PAGE 1 OF 1

PROJECT NO. 325-35.01
LOGGED BY: CM
DRILLER: ECA
DRILLING METHOD: HAMMER
SAMPLING METHOD: 3/4" CORE
CASING TYPE: NA
SLOT SIZE: NA
GRAVEL PACK: NA

CLIENT: CHEVRON U.S.A.
DATE DRILLED: 3-17-93
LOCATION: 7667 Amador Valley
HOLE DIAMETER: 1 1/2"
HOLE DEPTH: 10'
WELL DIAMETER: NA
WELL DEPTH: NA
CASING STICKUP: NA

WELL COMPLETION	MOISTURE CONTENT	PID	PENETRATION (BLOWS/FT)	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	GRAPHIC	SOIL TYPE	LITHOLOGY / REMARKS
Back Filled With Cement									Planter Topsoil
				1				FL	FILL: gravel.
				2				SC	CLAYEY SAND: olive; 15-20% clay; fine sand; *moderate product odor.*
	▼	Mst	0	4					
				5					
				6					
				7				CL	CLAY: olive gray; high plasticity; 0-5% silt; moderate product odor.
		Wt	6	8					
				9					
				10					BOTTOM OF BORING AT 10'
				11					
				12					
				13					
				14					
				15					
				16					
				17					
				18					
				19					
				20					
				21					
				22					

LOCATION MAP



NORTHING EASTING ELEVATION

PACIFIC ENVIRONMENTAL GROUP, INC.

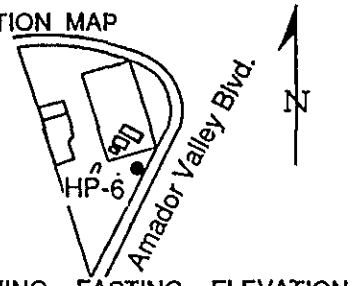
BORING NO. HP-5
PAGE 1 OF 1

PROJECT NO. 325-35.01
LOGGED BY: CM
DRILLER: ECA
DRILLING METHOD: HAMMER
SAMPLING METHOD: 3/4" CORE
CASING TYPE: NA
SLOT SIZE: NA
GRAVEL PACK: NA

CLIENT: CHEVRON U.S.A.
DATE DRILLED: 3-17-93
LOCATION: 7667 Amador Valley
HOLE DIAMETER: 1 1/2"
HOLE DEPTH: 10'
WELL DIAMETER: NA
WELL DEPTH: NA
CASING STICKUP: NA

WELL COMPLETION	MOISTURE CONTENT	PID	PENETRATION (BLOWS/FT)	DEPTH (FEET)	RECOVERY / SAMPLE INTERVAL	GRAPHIC	SOIL TYPE	LITHOLOGY / REMARKS
Back Filled With Cement				1				Planter Topsoil
							FL	FILL: gravel.
				2			SC	CLAYEY SAND
				3				
				4				
				5				
				6				
				7			CL	CLAY: dark gray; 0-5% silt; moderate product odor.
	Mst	5		8				
				9				
				10				
				11				BOTTOM OF BORING AT 10'
				12				
				13				
				14				
				15				
				16				
				17				
				18				
				19				
				20				
				21				
				22				

LOCATION MAP



NORTHING EASTING ELEVATION

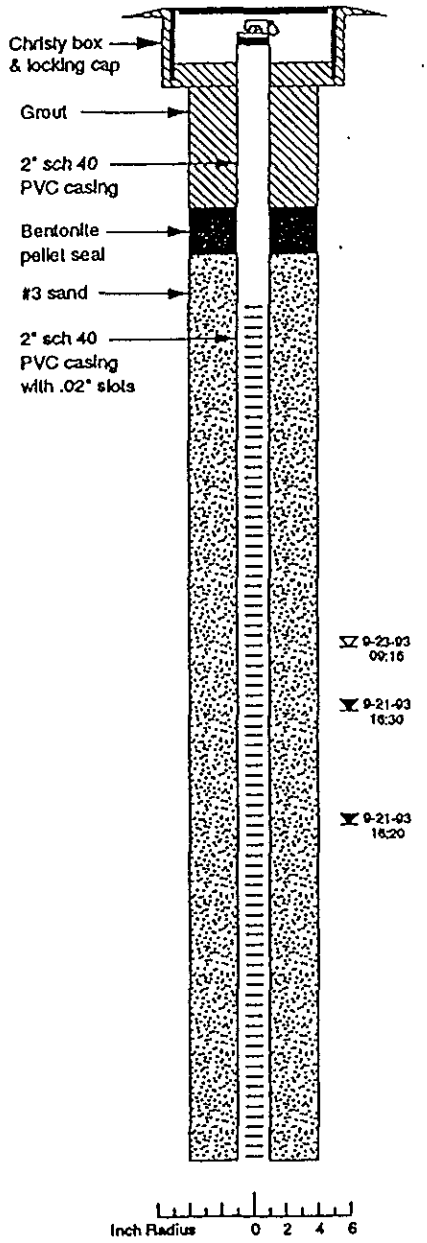
PACIFIC ENVIRONMENTAL GROUP, INC.

BORING NO. HP-6
PAGE 1 OF 1

PROJECT NO. 325-35.01
LOGGED BY: CM
DRILLER: ECA
DRILLING METHOD: HAMMER
SAMPLING METHOD: 3/4" CORE
CASING TYPE: NA
SLOT SIZE: NA
GRAVEL PACK: NA

CLIENT: CHEVRON U.S.A.
DATE DRILLED: 3-17-93
LOCATION: 7667 Amador Valley
HOLE DIAMETER: 1 1/2"
HOLE DEPTH: 10'
WELL DIAMETER: NA
WELL DEPTH: NA
CASING STICKUP: NA

WELL COMPLETION	MOISTURE CONTENT	PID	PENETRATION (BLOWS/FT)	DEPTH (FEET)	RECOVERY / SAMPLE INTERVAL	GRAPHIC	SOIL TYPE	LITHOLOGY / REMARKS
Back Filled With Cement				1				Planter Topsoil
							FL	FILL: gravel.
				2			CL	SANDY CLAY
				3				
				4				
				5				
				6				
				7			CL	CLAY: dark gray; moderate plasticity; 10-20% silt; faint product odor.
		Mst	3	8				
				9				
				10				BOTTOM OF BORING AT 10'
				11				
				12				
				13				
				14				
				15				
				16				
				17				
				18				
				19				
				20				
				21				
				22				



Measured Depth (Feet)	Blow Counts	PID (ppmv)	GRAPHIC LOG	DESCRIPTION
0				Asphalt
1				Sandy GRAVEL (GW) (fill)
2				
3		0.1		CLAY (CL); black; damp
4				
5	6	0.5		CLAY (CL); gray-black; damp; medium stiff to stiff
6	11 16			
7	5	0.0		Clayey SILT (ML); gray-black; moist; soft to stiff; some plant roots
8	8 11			
9				
10	6	0.0		Clayey SILT (ML) with fine- to coarse-grained gravel; gray; wet; medium stiff
11	10 8			
12				

continues

Logged by:	Erich Neupert
Project Mgr:	Justin Power
Dates Drilled:	9/21/93
Drilling Company:	Kvilhaug
Drilling Method:	8" Hollow Stem Auger
Driller:	Paul Santos
Well Head Completion:	Christy box & locking cap
Type of Sampler:	1½" & 2½" split spoon
TD (Total Depth):	18.0 feet

EXPLANATION

- Recovered drill sample
- Sample sealed for chemical analysis
- Sieve sample
- Grab sample
- Core sample
- est K — Estimated permeability (hydraulic conductivity) 1K = primary 2K = secondary
- NR — No recovery
- Water level during drilling
- Water level in completed well

CONTACTS:

- Solid where certain
- Dotted where approximate
- Dashed where uncertain
- Hachured where gradational

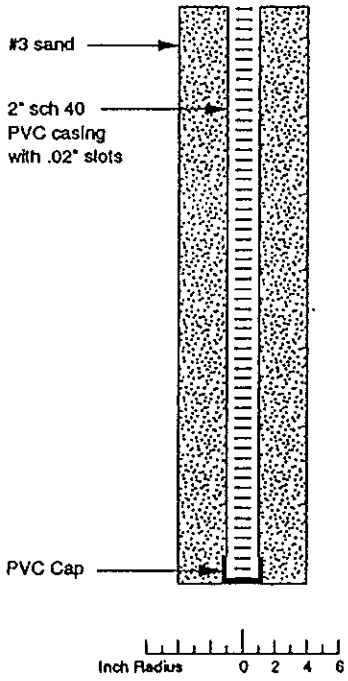
RESNA

PROJECT NO. 170111.01 | 9/93

BORING LOG—Boring B-5 (Monitoring Well MW-1)

Amador Valley Medical Center
7667 Amador Valley Boulevard
Dublin, California

BORING B-5



Measured Depth (Feet)	Blow Counts	PID (ppmv)	GRAPHIC LOG	DESCRIPTION
12				
13				Clayey SILT (ML) with fine- to coarse-grained gravel; gray; wet; medium stiff
14				
15	4			Clayey SILT (ML) with fine-grained sand; gray; wet; medium stiff
	6			
16	8			
17				
18				TD @ 18.0 ft.
19				
20				
21				
22				
23				
24				
25				
26				
27				

EXPLANATION

- Recovered drill sample
- Sample sealed for chemical analysis
- Sieve sample
- Grab sample
- Core sample
- est K — Estimated permeability (hydraulic conductivity) 1K = primary 2K = secondary
- NR — No recovery
- Water level during drilling
- Water level in completed well

CONTACTS:

- Solid where certain
- Dotted where approximate
- Dashed where uncertain
- Hachured where gradational

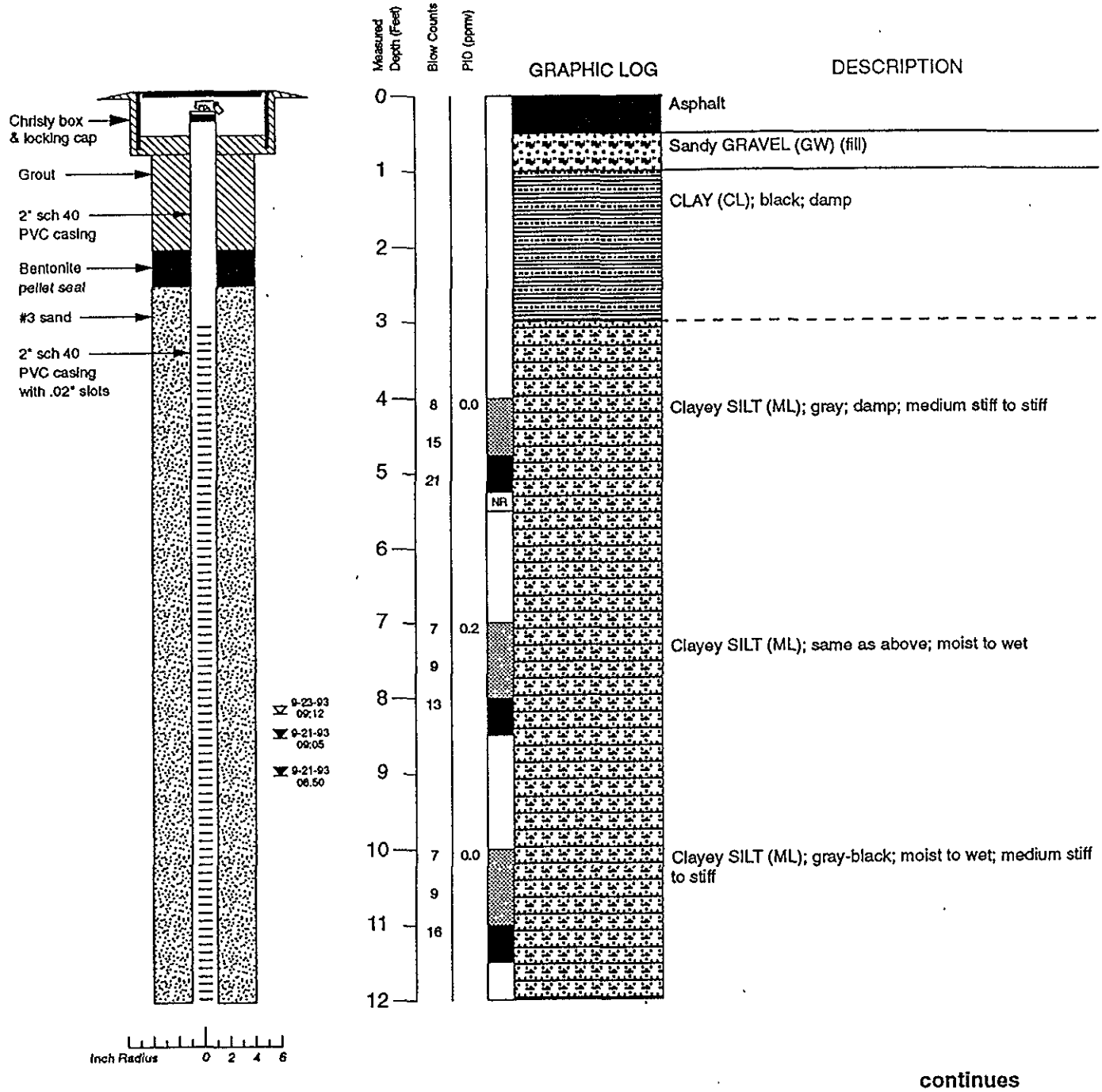
RESNA

PROJECT NO. 170111.01 | 9/93

BORING LOG—Boring B-5 (Monitoring Well MW-1)

Amador Valley Medical Center
7667 Amador Valley Boulevard
Dublin, California

BORING
B-5



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EXPLANATION

- Recovered drill sample
- Sample sealed for chemical analysis
- Sieve sample
- Grab sample
- Core sample
- est K — Estimated permeability (hydraulic conductivity) 1K = primary 2K = secondary
- NR — No recovery
- Water level during drilling
- Water level in completed well

CONTACTS:

- Solid where certain
- Dotted where approximate
- Dashed where uncertain
- Hachured where gradational

Logged by:	Erich Neupert
Project Mgr:	Justin Power
Dates Drilled:	9/21/93
Drilling Company:	Kvilhaug
Drilling Method:	8" Hollow Stem Auger
Driller:	Paul Santos
Well Head Completion:	Christy box & locking cap
Type of Sampler:	1½" & 2½" split spoon
TD (Total Depth):	19.0 feet

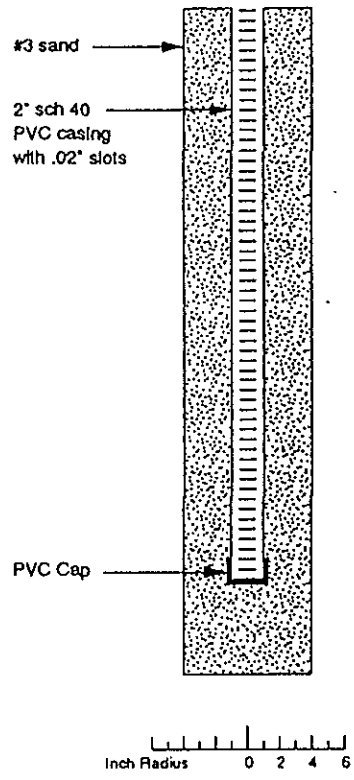
RESNA

PROJECT NO. 170111.01 | 9/93

BORING LOG—Boring B-6 (Monitoring Well MW-2)

Amador Valley Medical Center
7667 Amador Valley Boulevard
Dublin, California

BORING
B-6



Measured Depth (Feet)	Blow Counts	PID (ppmv)	GRAPHIC LOG	DESCRIPTION
12				
13	15	0.0		Clayey SILT (ML); gray-black; moist to wet; medium stiff to stiff
	30			
14	13			Silty GRAVEL (GM) with sand; gray; wet; dense
		NR		
15				
16				
17				Gravelly SAND (SW) with fine- to medium-grained gravel; gray; wet
18	5			
	8			Clayey SILT (ML); gray-brown; wet
19				TD @ 19.0 ft.
20				
21				
22				
23				
24				
25				
26				
27				

EXPLANATION

- Recovered drill sample
- Sample sealed for chemical analysis
- Sieve sample
- Grab sample
- Core sample

- est K — Estimated permeability (hydraulic conductivity) 1K = primary 2K = secondary
- NR — No recovery
- Water level during drilling
- Water level in completed well

CONTACTS:

- Solid where certain
- Dotted where approximate
- Dashed where uncertain
- Hachured where gradational

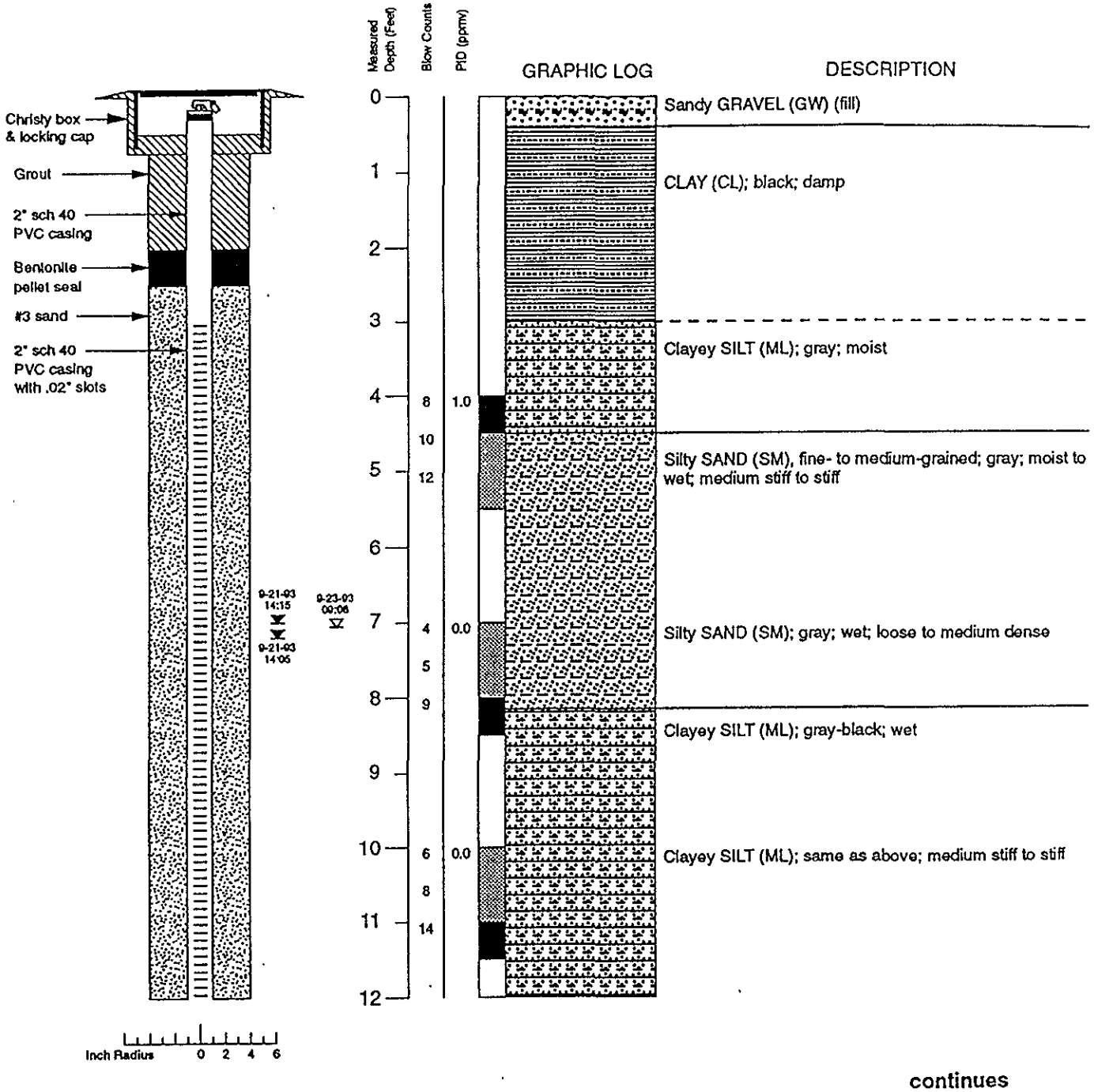
RESNA

PROJECT NO. 170111.01 | 9/93

BORING LOG—Boring B-6 (Monitoring Well MW-2)

Amador Valley Medical Center
7667 Amador Valley Boulevard
Dublin, California

BORING
B-6



continues

EXPLANATION

- Recovered drill sample
- Sample sealed for chemical analysis
- Sieve sample
- Grab sample
- Core sample
- est K — Estimated permeability (hydraulic conductivity) 1K = primary 2K = secondary
- NR — No recovery
- Water level during drilling
- Water level in completed well

CONTACTS:

- Solid where certain
- Dotted where approximate
- Dashed where uncertain
- Hachured where gradational

Logged by:	Erich Neupert
Project Mgr:	Justin Power
Dates Drilled:	9/21/93
Drilling Company:	Kvilhaug
Drilling Method:	8" Hollow Stem Auger
Driller:	Paul Santos
Well Head Completion:	Christy box & locking cap
Type of Sampler:	1½" & 2½" split spoon
TD (Total Depth):	17.0 feet

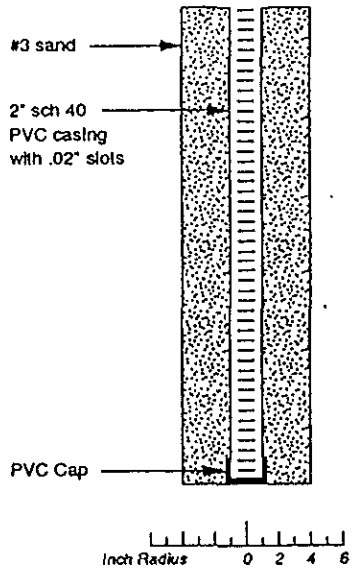
RESNA

PROJECT NO. 170111.01 | 9/93

BORING LOG—Boring B-7 (Monitoring Well MW-3)

Amador Valley Medical Center
7667 Amador Valley Boulevard
Dublin, California

BORING B-7



Measured Depth (Feet)	Blow Counts	PID (ppmv)	GRAPHIC LOG	DESCRIPTION
12				
13				Clayey SILT (ML); gray-black; wet; medium stiff to stiff
14				
15	6			
	15			Clayey SILT (ML); gray; wet; medium stiff to very stiff
16	17			
17				TD @ 17.0 ft.
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				

EXPLANATION

- Recovered drill sample
- Sample sealed for chemical analysis
- Sieve sample
- Grab sample
- Core sample

- est K — Estimated permeability (hydraulic conductivity) 1K = primary 2K = secondary
- NR — No recovery
- Water level during drilling
- Water level in completed well

CONTACTS:

- Solid where certain
- Dotted where approximate
- Dashed where uncertain
- Hachured where gradational

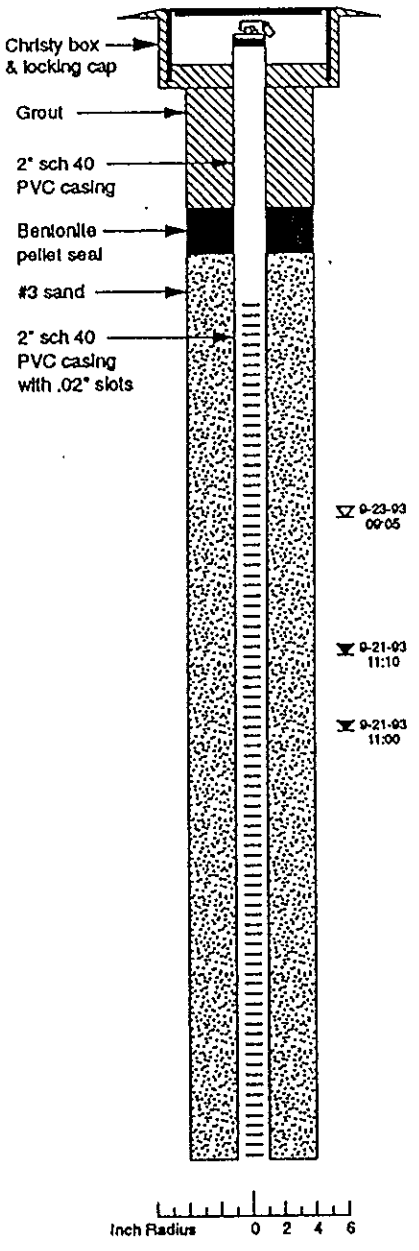
RESNA

PROJECT NO. 170111.01 | 9/93

BORING LOG—Boring B-7 (Monitoring Well MW-3)

Amador Valley Medical Center
7667 Amador Valley Boulevard
Dublin, California

BORING
B-7



Measured Depth (Feet)	Blow Counts	PID (ppmv)	GRAPHIC LOG	DESCRIPTION
0				Asphalt
1				CLAY (CL); black; damp
2				
3		0.0		CLAY (CL); same as above
4				
5	8	0.1		CLAY (CL); gray with tan mottling; damp; medium stiff to stiff
6	12 24			
7	7	0.3		Clayey SILT (ML); gray; moist to wet; medium stiff to stiff
8	10 14			
9				
10	6	0.5		Clayey SILT (ML) with trace fine-grained gravel; gray-black; wet; medium stiff to stiff
11	9 17			
12				

continues

EXPLANATION

- Recovered drill sample
- Sample sealed for chemical analysis
- Sieve sample
- Grab sample
- Core sample
- est K — Estimated permeability (hydraulic conductivity) 1K = primary 2K = secondary
- NR — No recovery
- Water level during drilling
- Water level in completed well

CONTACTS:

- Solid where certain
- Dotted where approximate
- Dashed where uncertain
- Hachured where gradational

Logged by:	Erich Neupert
Project Mgr:	Justin Power
Dates Drilled:	9/21/93
Drilling Company:	Kvilhaug
Drilling Method:	8" Hollow Stem Auger
Driller:	Paul Santos
Well Head Completion:	Christy box & locking cap
Type of Sampler:	1½" & 2½" split spoon
TD (Total Depth):	18.0 feet

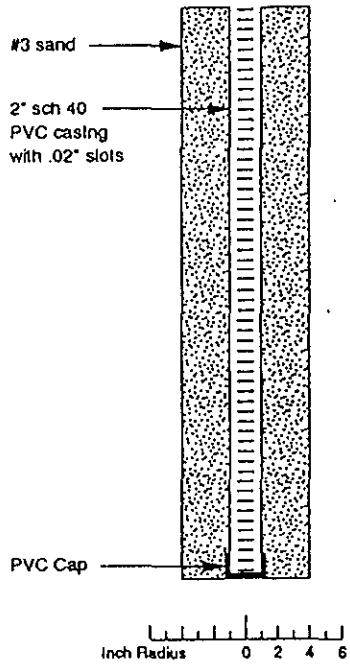
RESNA

PROJECT NO. 170111.01 | 9/93

BORING LOG—Boring B-8 (Monitoring Well MW-4)

Amador Valley Medical Center
7667 Amador Valley Boulevard
Dublin, California

BORING
B-8



Measured Depth (Feet)	Blow Counts	PID (ppmv)	GRAPHIC LOG	DESCRIPTION
12				
13				
14				
15	4			Clayey SILT (ML); gray; wet; medium stiff to stiff
16	6			
17	11			
18				TD @ 18.0 ft.
19				
20				
21				
22				
23				
24				
25				
26				
27				

EXPLANATION

- Recovered drill sample
- Sample sealed for chemical analysis
- Sieve sample
- Grab sample
- Core sample

- est K — Estimated permeability (hydraulic conductivity) 1K = primary 2K = secondary
- NR — No recovery
- Water level during drilling
- Water level in completed well

CONTACTS:

- Solid where certain
- Dotted where approximate
- Dashed where uncertain
- Hachured where gradational

RESNA

PROJECT NO. 170111.01 | 9/93

BORING LOG—Boring B-8 (Monitoring Well MW-4)

Amador Valley Medical Center
7667 Amador Valley Boulevard
Dublin, California

BORING
B-8

Total depth of boring: 17 Feet **Diameter of boring:** 8 Inch **Date drilled:** 3/4/94

Casing diameter: 2 Inch **Length:** 17 Feet **Slot size:** 0.020 Inch

Screen diameter: 2 Inch **Length:** 12 Feet **Material type:** PVC

Drilling Company: Woodward Drilling **Driller:** Charlie Lawrence

Method Used: Hollow-stem auger; California modified split-spoon **Field Geologist:** C.L.

Signature of Registered Professional: _____

Registration No.: _____ **State:** California

MEASURED DEPTH	SAMPLE NO.	BLOWS	P.I.D.	USCS CODE	DESCRIPTION	WELL CONST.
0						
2				CL	Clay, brown.	
4						
6	S-5	17	3.5 ppmv		Clay, brown, damp, stiff, no odor.	
8	S-8	15	650 ppmv	ML	Clayey silt, brown to gray, damp, stiff, hydrocarbon odor.	
10	S-10	19	150 ppmv		Becoming moist.	
12						
14						
16	S-15	15	15 ppmv	SM	Silty sand, brown, no odor, wet, dense.	
18					Boring terminated at 17 Feet. Boring Converted to monitoring well.	

RESNA

PROJECT NO. 170111.02 FILE NO 0111B2A

LOG OF BORING: B-9/MW-5

Former Chevron Service Station No. 9-2621
7667 Amador Valley Boulevard
Dublin, California

PLATE

Total depth of boring: 10 Feet **Diameter of boring:** 4 Inch **Date drilled:** 3/4/94

Casing diameter: NA **Length:** NA **Slot size:** NA

Screen diameter: NA **Length:** NA **Material type:** NA

Drilling Company: Woodward Drilling **Driller:** Stephen Leach

Method Used: Hollow-stem auger, California modified split-spoon **Field Geologist:** SL

Signature of Registered Professional:

Registration No.: _____ **State:** California

MEASURED DEPTH	SAMPLE NO.	BLOWS	P.I.D.	USCS CODE	DESCRIPTION	WELL CONST.
0						
					Asphalt	
2				CL	Clay, brown.	
	S-3		0 ppmv		Clay, brown, damp.	
4						
	S-5		0 ppmv			
6						
	S-7		16 ppmv	ML ▼	Clayey silt, brown, moist	
8					this sample not analyzed	
10						
					Boring terminated at 10 feet. Boring backfilled with cement bentonite slurry.	
12						
14						
16						
18						

RESNA

LOG OF BORING: B-10
Former Chevron Service Station No. 9-2621
7667 Amador Valley Boulevard
Dublin, California

PLATE

PROJECT NO. 170111.02

FILE NO 0111B3A

APPENDIX D

CONTINGENCY PLAN

CONTINGENCY PLAN

This contingency plan will ensure compliance with the cleanup goals for the site. The cleanup goal is maximum contaminant levels (MCLs) in ground water at the downgradient edge of the current plume. No hydrocarbons other than TPH-G and benzene have been detected in site ground water at any time, therefore, only hydrocarbon analyses will be performed to ensure that cleanup goals are not exceeded near the downgradient boundary and compliance with cleanup goals is maintained.

Ground water collected from well MW-5 will serve as a "guard point" to monitor whether concentrations within the plume remain stable. Well MW-4 will serve as a "boundary well" and will be used to confirm that the plume is not migrating across Amador Valley Boulevard. Both of these wells will be sampled quarterly through 1995, and annually in 1996. After that, if cleanup goals continue to be maintained at the alternative compliance point, monitoring will cease.

If this ground water monitoring indicates that certain conditions have been met, a contingency plan will be triggered. These conditions and contingency plan responses are summarized in Table D-1. In general, each monitoring well is assigned a "baseline" hydrocarbon concentration which represents a typical concentration detected during the last several years, and a "trigger" concentration which represents a significant concentration increase that may lead to non-compliance with the cleanup goal. As Table D-1 shows, the baseline hydrocarbon concentration for the downgradient boundary well (MW-4) is <0.5 ppb of benzene, and the trigger concentration is 2 ppb benzene. When a trigger concentration is met or exceeded for two consecutive monitoring periods, or when concentrations are increasing at a rate such that the trigger concentration might be met or exceeded before the next sampling event, the contingency plan will go into effect.

When triggered, the contingency plan calls for three responses:

1) The Alameda County Department of Environmental Health (ACDEH) is notified;

2) Ground water monitoring is increased to quarterly in all four wells, and;

3) Monitoring will continue while a suitable remedial action is identified by Chevron and accepted by the ACDEH.

Table D-1. Contingency Plan for Maintaining Compliance, Chevron Service Station #9-2621, 7667 Amador Valley Boulevard, Dublin, California. All concentrations are for benzene.

	Monitoring Well	Baseline Concentration	Trigger Concentration	Response to Trigger Concentration[1]	Additional Monitoring
Guard Point	MW-5	2 ppb	20 ppb	1. Notify ACDEH 2. Resume quarterly monitoring of all wells 3. Continue quarterly monitoring until an appropriate response is determined	Quarterly monitoring of all wells
Boundary Well	MW-4	<0.5 ppb	2 ppb		

Footnotes:

[1] Response is triggered when the trigger condition is met or exceeded, or when concentrations are increasing at a rate such that the trigger condition might be met or exceeded before the next sampling event.